



## Review

# A comprehensive review of circular economy research in the textile and clothing industry<sup>☆</sup>

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## ABSTRACT

The textile and clothing industry is a significant global sector due to its economic and social contributions. However, it is one of the most polluting industries. There has been a significant uptake of research on circular economy implementation to reduce its environmental impacts. Nevertheless, there is a critical gap in reviewing how the research field is evolving and what the core focus and underlying assumptions of the existing research are. This paper utilises bibliometrics, content analysis, and problematisation to comprehensively examine the state of research. Analysing 132 primary documents dating from January 2014 to April 2023, this study reveals that sustainability-oriented innovation and transition challenges are the core focus of existing research. Technology-oriented circularity and its positive impact on sustainability is the in-house assumption that almost all studies are founded on. Besides unpacking the risk of such assumptions, this study provides tangible suggestions for future research on circular economy disruption, its rebound effect, and sustainability-oriented innovation. Although the time lag and language biases may have impacted the representation of current research trends, findings from this study can facilitate academic research and industry practice in implementing circular economy practices for a more sustainable future.

## 1. Introduction

The TC industry is a significant global sector. The \$ 1.3 trillion industry employs over 300 million people throughout its value chain (Ellen MacArthur Foundation, 2023). It is the largest provider of employment in countries like Bangladesh. Approximately four million people, of which 70% are women, are directly involved in low-cost fashion manufacturing in Bangladesh. By creating an opportunity for paid employment, the TC industry has helped Bangladeshi women improve their economic condition (Saha et al., 2021). The economic and social contribution of the industry to developed economies are also substantial. Besides creating 1 in every 25 jobs in the UK, it contributes £62 billion to the economy. It also contributes significantly to the UK's global soft power (UK and Textile Association, 2023). Nonetheless, health and safety concerns have led to growing global sensitivity towards labour treatment, particularly after the Rana Plaza tragedy in Bangladesh (Saha et al., 2021). The challenges in labour welfare still persist. Three garment workers lost their lives in Bangladesh as a pay dispute escalated into a violent protest, leading to the indefinite closure

of many factories (Hossain, 2023). The immediate consequence is the loss of livelihoods for many garment industry workers. This not only threatens the economic stability of the affected workers and their families but also has a ripple effect on the broader community. As these factories play a significant role in the socio-economic fabric of the industrial sites, the closure impacts local businesses, service providers, and the overall economic ecosystem.

Moreover, the current linear system is environmentally damaging. The industry uses 20% (79 billion cubic meters) of global water consumption and emits 1.7 billion tons of CO<sub>2</sub> (10% of the global emissions) (Abbate et al., 2023, p.1). Over half of the clothing items are disposed of within a year, generating 92 million tons of waste (Abbate et al., 2023) annually. Recycling rates are low, with less than 1% of material used for clothing being recycled into new clothing. The underutilisation and material loss is estimated at \$500 billion annually. As a result, the Ellen MacArthur Foundation (2023) points to catastrophic outcomes with the potential for overwhelming environmental and societal impacts by 2050. The negative consequences include exceeding carbon budgets, massive accumulation of plastic microfibers in the ocean, and challenging management of textile waste. The foundation also forecasts that

<sup>☆</sup> there has been no significant financial support for this work that could have influenced its outcome.

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### List of acronyms

AB-PSS	Access-based product-service systems
BEEP	Blockchain-Enabled Ecosystem Platform
CBM	Circular business model
CE	Circular economy
EPR	Extended Producer Responsibility
IoT	Internet of Things
MRCs	Moral responsibility theory of corporate sustainability
SME	Small and medium size enterprises
SDG	Sustainable development goals
SOI	Sustainability-oriented innovation
TC	Textile and clothing industry
UTAUT	Unified Theory of Acceptance and Use of Technology
UoA	Unit of analysis
WTP	Willingness to pay

the industry's negative impacts may lead to declining earnings, increased reputational risks, and regulatory burden.

A CE transition is needed to reduce overconsumption, improve clothing utilisation, and increase recycling rates. Saha et al. (2021) argue that the TC industry can evolve from linear business processes (make, use, and dispose) to circular (take, make, distribute, use, and recover) ones. According to the Ellen MacArthur Foundation (2023), CE for the TC industry offers a sustainable and regenerative approach to minimise waste and environmental impact. It emphasises designing, producing, and using textiles to promote durability, reuse, recycling, and responsible disposal. Therefore, there is a significant uptake of research articles (e.g., Blomsma et al., 2022; Colucci and Vecchi, 2021; Rainville, 2021) concerning the CE approach within the TC industry, its influence on business models, implementation challenges, benefits, and consumers' preference for sustainable products recently. Similarly, several reviews have been published on various aspects of CE in the TC industry. For example, Bailey et al. (2022) reviewed the environmental impacts of fast fashion on water quality. Meanwhile, Jia et al. (2020) reviewed the drivers, barriers, practices, and indicators of sustainable performance. On the other hand, Khan et al. (2023) reviewed consumers' motivations for purchasing circular fashion.

Despite the extensive research and reviews on the CE approach within the TC industry, certain limitations must be acknowledged. Firstly, reviewers (e.g., Bailey et al., 2022; Khan et al., 2023) limited the review scope to accommodate feasibility, and others (for example, Jia et al., 2020) presented limited bibliometric studies. This could potentially result in a partial representation of the current knowledge landscape. Secondly, conceptual clarity remains challenging, as some fundamental assumptions underlying CE-TC research have not been critically examined (Blomsma et al., 2022). Such conceptual ambiguity poses challenges to developing frameworks and strategies for CE implementation (Dzhengiz et al., 2023). The uncritical acceptance of fundamental assumptions (Gond et al., 2020) can also contribute to the emergence of hegemonic scientific concepts (Alvesson and Blom, 2021). One such assumption is that CE can simultaneously promote environmental sustainability and improve economic and social performance. However, empirical evidence contradicts this claim as Saha et al. (2021) find that 'recovery' is the only field of action that positively contributes to all three (economic, environmental, and social) sustainability performances. The other four CE fields—take, make, distribute, and use—contribute to two of three sustainability performances (i.e., take—economic and environmental; make and distribute—economic and social; use—social and environmental). Their study emphasises that the variability of CE contributions to sustainability is also based on factors such as firm size and product type. These discrepancies between assumptions and empirical evidence highlight the need for a more

nuanced understanding of potential limitations and challenges associated with CE implementation.

From the review of the existing literature, we aim to understand the transition process from linear to circular and identify factors that facilitate and impede such a transition. Our objective is to identify the theoretically and practically relevant future directions for research. Therefore, we answer three specific research questions.

**RQ 1.** How has the CE-TC knowledge domain evolved in the last ten years?

**RQ 2.** what are the key thematic areas within the CE-TC research?

**RQ 3.** What are the in-house assumptions, root metaphors and theoretical assumptions in the CE-TC research field?

To address these research questions, we assess the CE-TC literature using a combination of bibliometric, content analysis and problematising methodologies. Beyond methodological triangulation, such a combination provides holistic understanding, uncovers hidden patterns, synergistically analyses the findings, and generates critical insights.

The remainder of this paper is structured as follows. First, we detail the methodological approach for the review. In section 3, we present the findings of the reviews. The discussion section highlights the contribution. Finally, we conclude by exploring future research agendas and acknowledging the limitations of this review.

## 2. Methodological approach

Our comprehensive review combined the bibliometric (RQ1), content analysis (RQ2) and problematisation (RQ3) methods (Fig. 1) in three different stages. The bibliometric analysis is conducted in the first stage, followed by the content analysis in the second stage. Problematisation takes place in the final stage. The epistemological position of the review is critical realism (Bhaskar, 1975) that embraces a mixed-method approach (Creswell and Clark, 2011) since our bibliometric methods follow a deductive and quantitative (de los Santos et al., 2022) approach while the content analysis and problematisation use an inductive qualitative (Zawacki-Richter et al., 2020) strategy. The integration of both quantitative and qualitative methodologies significantly enhances the robustness and depth of our analysis, offering a nuanced perspective that extends beyond the limitations of a single method. The deductive nature of the bibliometric analysis enables us to identify overarching trends, patterns, and the relative influence of various articles, providing a broad overview of the field's intellectual structure (de los Santos et al., 2022). On the other hand, the qualitative dimensions introduced through content analysis and problematisation bring richness and context to our understanding.

### 2.1. Identification of literature

We started with a systematic literature search using the Scopus database (Ballew, 2009) to generate our data sample. The Scopus database was selected due to its broad coverage of social science research (Malanski et al., 2021), which is necessary for problematisation and user-friendliness (Chadegani et al., 2013). Scopus analytics has shown significant growth in the research field since 2018 (appendix 1). However, we scoped the last decade of CE research within the TC industry to offer a contemporary and thorough field analysis. Pioneering works, such as Hvass (2013) and MacArthur (2013), laid the foundation for understanding and implementing CE principles. The TC industry undergoes swift transformations influenced by technology, sustainability trends, and changing consumer demands. Therefore, restricting the review to 2014–2023 ensures a comprehensive understanding of current practices. While acknowledging the exclusion of studies before 2014, we maintain that this focused approach enhances our review's precision and contemporary applicability. We have used the terms 'circular economy' and 'clothing' OR 'textile' OR 'apparel' OR 'garments' OR

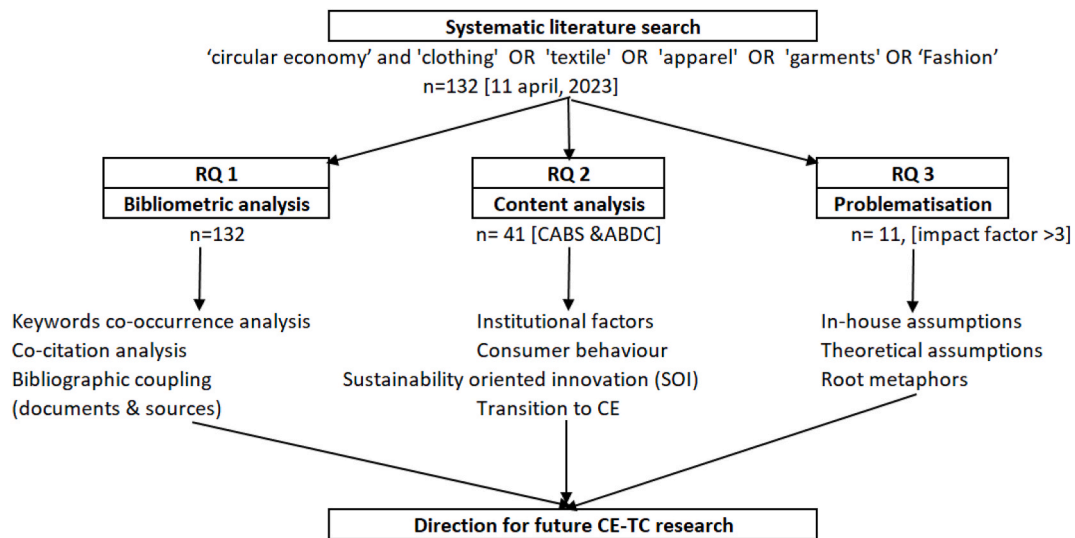


Fig. 1. Methodology for CE-TC review

'fashion' as our primary search terms (Jia et al., 2020). We were aware that the other concepts (i.e., sustainable and green fashion) were used almost interchangeably with CE (Murray et al., 2017). However, we have not captured these, as framing such concepts is not our objective. Our keyword search produced 132 primary documents dating from January 2014 to April 2023 and 20,190 secondary documents (documents that are cited by the primary documents) (Alnajem et al., 2021; Zhang et al., 2021). Thus, we derived the sample for the bibliometric analysis (Goyal et al., 2021; Zhu and Liu, 2020; Zupic and Cater, 2015).

## 2.2. Bibliometric review process

The bibliometric review uses keywords co-occurrence analysis, author co-citation and bibliographic coupling of documents to reveal various citation patterns and clustering of related documents. Keyword co-occurrence analysis identifies the frequency and strength of associations between keywords that appear together in documents, indicating their conceptual or thematic proximity within a body of literature. The author co-citation analysis identifies authors frequently cited together, suggesting shared research interests or collaborative relationships based on their co-citation patterns to reveal research trends, influential authors, and potential research communities within a specific field. On the other hand, document co-citation examines the relationships between primary documents based on the co-citation of references in secondary documents to establish the intellectual connections, influence, and thematic similarities between the cited documents. Using the coupling strength (frequency co-occurrence of secondary documents in the reference list of two primary documents), bibliographic coupling detects the current research trend and future research directions (Vogel et al., 2021). We used the VOSviewer (Van Eck and Waltman, 2017) for the bibliometric analysis.

## 2.3. Content analysis process

Content analysis is a systematic reading of literature for replicable and valid inferences from texts (Moldavska and Welo, 2017). It reveals the key concepts, research themes, constructs and sub-constructs used for analytical framework development and methodological choices (Moldavska and Welo, 2017). We conducted a staged analytical process to categorise and analyse searched literature for content analysis. The content analysis intends to capture and analyse business and management scholars' contributions to the CE-TC field. Our objective is to critically review a narrow sample of articles on CE-TC within business

and management research. Therefore, we screened articles using the Business and Management Social Science Citation Index (SSCI). Next, we used the CABS and ABDC journal index to identify articles that explicitly referred to CE-TC within the business and management research field. Such screening reveals scholars' dominant assumptions of CE adoption for the TC industry. It is essential for us to capture scholarship of this nature to understand the logical foundation of CE-TC research within the business and management field (Dzhengiz et al., 2023). This also allows us to compare and contrast particular logical foundations with scholarship beyond the narrow business and management focus in the problematisation phase outlined in section 2.4. Thus, we identified 41 influential CE articles within the TC industry from the primary sample (132) and captured the document basics, such as year, source, and publication type.

Second, we establish criteria such as contribution to the evolution of CE adoption/implementation to the key thematic areas, provide/critique theoretical foundations and propose novel research directions, frameworks, or methodologies for advancing CE-TC research for each article. During the preliminary assessment, we reviewed the abstract to confirm the relevance of the articles to our review scope. Qualified articles are then reviewed in detail for coding. The coding process captured the content (e.g., CE implementation, impact on sustainability, transition, native vs adopter, opportunities, and challenges) and methods (i.e., conceptual, applied, practice-oriented, analytical level) of these articles. At the detailed review process, the first author independently ranked each article against the three RQs using a 1 (low), 2 (medium) and 3 (high) scoring method to reach a score of relevance out of 9. The overall assessment is then determined by calculating the total score across all RQs. If the aggregated score is 7 or higher, the response is categorised as high; if it falls between 4 and 6, it is considered medium; and if the total score is less than 4, the response is labelled as Low. This approach streamlines the article evaluation process by providing a concise means of categorisation according to their relevance to our research questions. We presented the details of this categorisation in Appendix 2. The third author reviewed the scoring process and adjusted if there were discrepancies. Thus, we classified 41 articles into three categories: high (25), medium (8), and low (8). The details of these are presented in Table 1.

## 2.4. Problematisation review process

The problematising review is conducted at the last stage to uncover contradictions, ambiguities, or blind spots in the existing literature

**Table 1**  
Selected articles for content analysis.

Authors	Source Title	Journal index	Paper scope	<sup>1</sup> Relevance to review scope	Category for analysis
Abbate et al. (2023)	International Journal of Production Economics	CABS 3	Business model	high	Sustainability-oriented innovation
Alhola et al. (2019)	Journal of Industrial Ecology	CABS 2	Institutional/public procurement	low	Institutional factors
Blomsma et al. (2022)	Business Strategy and the Environment	CABS 3/ ABDC A	Disruptive CE	high	Transition to circular economy
Bocken et al. (2017)	Economics and Policy of Energy and the Environment	ABDC C	Circular business model	high	Sustainability-oriented innovation
Bressanelli et al. (2022)	International Journal of Production Economics	CABS 3/ ABDC A	CE supply chain industrial district	medium	Transition to circular economy
Brydges et al. (2022)	Journal of Cleaner Production	CABS 2/ ABDC A	Strategy for the 5 stages of CE	high	Transition to circular economy
Camacho-Otero et al. (2020)	Sustainable Development	ABDC C	Consumer behaviour	high	Consumer behaviour
Colasante & D'Adamo (2021)	Journal of Cleaner Production	CABS 2/ ABDC A	Consumer behaviour	medium	Consumer behaviour
Colucci and Vecchi (2021)	Business Strategy and the Environment	CABS 3/ ABDC A	CE adoption	high	Transition to circular economy
Daddi et al. (2019)	Corporate Social Responsibility and Environmental Management	CABS 1/ ABDC C	Sustainability paradox (TC is only a data case)	low	Transition to circular economy
D'Amato et al. (2020)	Forest Policy and Economics	ABDC B	Business model (TC is only a data case)	medium	Sustainability oriented innovation
Ecer and Torkayesh (2022)	IEEE Transactions on Engineering Management	CABS 3/ ABDC A	Process innovation	medium	Sustainability oriented innovation
Elf et al. (2022)	Business Strategy and the Environment	CABS 3/ ABDC A	Adopted CE strategies	high	Transition to circular economy
Fidan et al. (2021)	Journal of Cleaner Production	CABS 2/ ABDC A	Technology and process for CE	medium	Sustainability oriented innovation
Fischer and Pascucci (2017)	Journal of Cleaner Production	CABS 2/ ABDC A	Institutional factors	high	Institutional factors
Galatti and Baruque-Ramos (2022)	Journal of Cleaner Production	CABS 2/ ABDC A	Indicator for CE	high	Transition to circular economy
Hartley et al. (2022)	Journal of Industrial Ecology	CABS 2	Barriers to CE	high	Transition to circular economy
Holtström et al. (2019)	Journal of Strategy and Management	CABS 1/ ABDC C	Circular business model	high	Transition to circular economy
Jain et al. (2022)	Journal of Business Research	CABS 3/ ABDC A	Tech and process for CE	high	Sustainability oriented innovation
Jia et al. (2020)	Journal of Cleaner Production	CABS 2/ ABDC A	Review paper	high	Review and cases
Kazancoglu et al. (2020)	Sustainable Development	ABDC C	Barriers to CE	high	Transition to circular economy
Kim et al. (2022)	Journal of Cleaner Production	CABS 2/ ABDC A	Technology and process for CE	low	Sustainability oriented innovation
Kopnina (2022)	Australian Journal of Environmental Education	ABDC B	Education institution	low	Institutional factors
Luoma et al. (2022)	Technological Forecasting and Social Change	CABS 3/ ABDC A	Technology and process for CE	high	Sustainability oriented innovation
Ly (2021)	Cogent Business and Management	CABS 1	CE based competitive advantage for internationalisation	low	Transition to circular economy
Magnier et al. (2019)	Journal of Cleaner Production	CABS 2/ ABDC A	Consumer behaviour/willingness to pay	low	Consumer behaviour
Rainville (2021)	Research Policy	CABS 4*/ ABDC A*	Institutional/public procurement	medium	Institutional factors
Reike et al. (2023)	Business Strategy and the Environment	CABS 3/ ABDC A	Circular disruption	high	Transition to circular economy
Rossi et al. (2020)	Journal of Cleaner Production	CABS 2/ ABDC A	Indicator for CE	high	Transition to circular economy
Rovanto and Bask (2021)	Business Strategy and the Environment	CABS 3/ ABDC A	Native vs adopter of CE	high	Transition to circular economy
Saha et al. (2021)	Business Strategy and the Environment	CABS 3/ ABDC A	CE adoption	high	Transition to circular economy
Salmi and Kaipia (2022)	Journal of Cleaner Production	CABS 2/ ABDC A	Transition to CE	high	Transition to circular economy
Salo et al. (2020)	Business Strategy and the Environment	CABS 3/ ABDC A	Technology and process for CE	high	Transition to circular economy
Siderius and Poldner (2021)	Journal of Cleaner Production	CABS 2/ ABDC A	Rebound effect	high	Transition to circular economy
Stål and Corvellec (2022)	Business and Society	CABS 3/ ABDC A	Business model/collection of used of clothing	medium	Institutional factors
Stål and Jansson (2017)	Sustainable Development	ABDC C	Business model	medium	Sustainability oriented innovation
Stewart and Niero (2018)	Business Strategy and the Environment	CABS 3/ ABDC A	Sustainability reporting	low	Transition to circular economy

(continued on next page)

Table 1 (continued)

Authors	Source Title	Journal index	Paper scope	<sup>1</sup> Relevance to review scope	Category for analysis
Thatta and Polisetty (2022)	FIIB Business Review	CABS 1	Business model	low	Sustainability oriented innovation
Tunn et al. (2021)	Business Strategy and the Environment	CABS 3/ ABDC A	Criticism of business model	high	Consumer behaviour
Vătămănescu et al. (2021)	Journal of Cleaner Production	CABS 2/ ABDC A	Consumer behaviour/covid 19	high	Consumer behaviour
Yousef et al. (2020)	Journal of Cleaner Production	CABS 2/ ABDC A	Technology and process for CE/innovation	high	Sustainability oriented innovation

<sup>1</sup> Please see appendix 2 for the categorisation details.

(Alvesson and Sandberg, 2020). We followed the four key principles (i. e., reflexivity, reading more broadly but selectively, not accumulating but problematising, and less is more) of problematisation. Alvesson and Sandberg (2020) suggested that reflexivity avoids reproducing taken-for-granted assumptions while reading more broadly but selectively involves carefully selecting influential articles and introducing articles from different fields or sub-domains. Not accumulating but problematising ensured deep reading of foundational and representative texts to identify and challenge problematic assumptions (Alvesson and Sandberg, 2020). By the less is more principle, Dzheniz et al. (2023) propose reviewing studies that reflect broad and pluralistic views instead.

To understand the underlying assumptions and CE framing, we first selected and screened articles using the SSCI, CABS and ABDC indexes as mentioned earlier in the methodology. Recognising that there might also be influential CE-related articles which do not necessarily rank high in the CABS or ABDC lists, we screened articles from journals with good impact factors (>3.00 and above). However, we only selected reputed journals using the citation reports and the definition of a predatory journal presented in Oviedo-García (2021) for quality control purposes. We thus selected 11 articles from the initial stock of 132 for problematisation. We have applied similar coding and categorisation methods (Appendix 2) outlined in the content analysis. Table 2 provides the selection criteria for these articles.

### 3. Results and analysis

This section presents the findings of our bibliometric review, content analysis and problematisation.

Table 2

Selected articles for problematising in addition to the content analysis.

Authors	Source title	Journal index (Impact factor)	Paper scope	<sup>2</sup> Relevance to review scope	Category for analysis
Dhonde and Patel (2020)	Acta Logistica	3.721	TC freight impact on urban logistics	low	Transition to circular economy
Howard et al. (2022)	Resources, Conservation and Recycling	13.716	transition to CE	medium	Transition to circular economy
Majumdar et al. (2020)	Resources, Conservation and Recycling	13.716	tech and process for CE	medium	Sustainability-oriented innovation
Monticelli and Costamagna (2022)	Environment, Development and Sustainability	3.972	Comparative business model	low	Sustainability-oriented innovation
Musova et al. (2021)	Journal of Competitiveness	3.2	consumer behaviour	medium	Consumer behaviour
Qu et al. (2019)	Resources, Conservation and Recycling	13.716	regulation/institution	low	Institutional factors
Repp et al. (2021)	Resources, Conservation and Recycling	13.716	CE impact on employment/social sustainability	high	Transition to circular economy
Salemdeeb et al. (2022)	Resources, Conservation and Recycling Advances	13.716	recycling	low	Sustainability-oriented innovation
Schmutz and Som (2022)	Resources, Conservation and Recycling	13.716	absence of market	medium	Institutional factors
Staicu (2021)	Industria Textila	3.721	business model	low	Sustainability-oriented innovation
Zhang and Dong (2021)	Resources, Conservation and Recycling	13.716	consumer behaviour	high	Consumer behaviour

<sup>2</sup> Please see appendix 2 for the categorisation details.

#### 3.1. Bibliometric review: evolution of CE-TC knowledge domain (RQ 1)

##### 3.1.1. Keywords co-occurrence analysis

As we used 'circular economy' as the research keyword, the frequency of it is always the highest (96 occurrences). 'Sustainability' and 'sustainable development' occupy the second (71) and third (47) most frequently occurring keywords, indicating that these topics are still of great research interest. Fig. 2 shows the keywords visualisation in the CE-TC research domain and presents the top 40 keywords.

We find emerging research topics, such as 'LCA' (Fidan et al., 2021), 'innovation', 'consumer', 're-commerce' and 'upcycling' (Chadegani et al., 2013), reflecting CE-TC research's new and potential development trends. For example, LCA assesses the environmental impact of textile products from production to disposal. Re-commerce encourages consumers to buy second-hand clothing (Jain et al., 2022), extending the lifespan of garments and reducing overall textile waste. Similarly, upcycling involves transforming discarded or old materials into new, higher-value products. Resonating upcycling research (e.g., Han et al., 2017), the Vogue (2021) magazine recently declared it as the biggest fashion trend, with celebrities like Pharrell Williams and Will.i.am (Twirl.store, 2020) promoting them. Thus, we suggest future researchers pay more attention to these promising research topics.

##### 3.1.2. Author co-citation analyses

The author co-citation analysis depicts the network of co-cited authors to show the interrelationships among authors (Nerur et al., 2008). Co-citation strength refers to the frequency with which two secondary documents are co-cited by primary documents. In this case, the UoA is 'cited authors'.

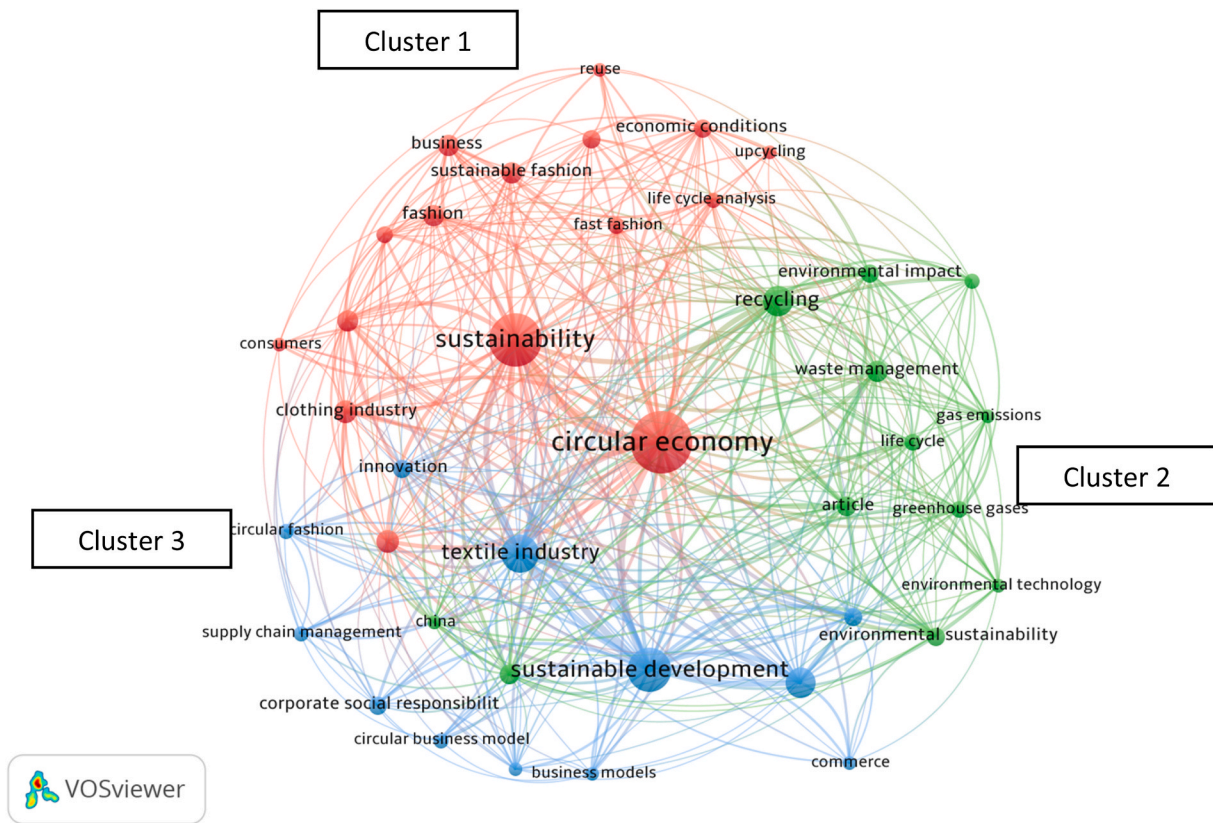


Fig. 2. Keywords co-occurrence analysis [Minimum number of occurrences of a keyword = 5].

As the research in CE-TC is a recent phenomenon, we have used 15 as the minimum number of citations. A citation threshold enhances statistical significance by excluding authors with scant citations, minimising the risk of chance associations, and ensuring robust co-citation

relationships (Van Eck and Waltman, 2017). However, a high threshold significantly reduces qualifying authors in emerging fields like CE-TC research, where article citation counts are low due to limited time—for instance, selecting 20 as the threshold results in only 48 qualifying

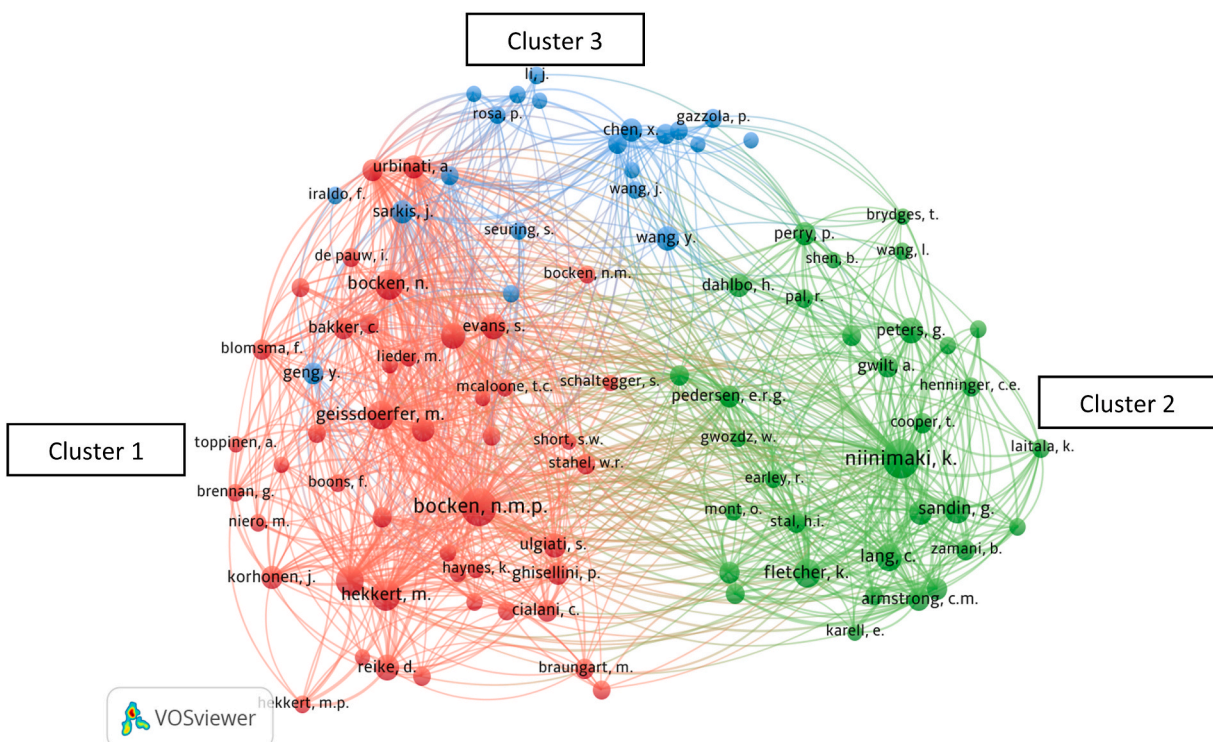


Fig. 3. Co-citation analysis (UoA: cited authors) [Minimum number of citation = 15].

authors in our case. Choosing a citation threshold of 15 can strike a strategic balance between inclusiveness and statistical rigour (Van Eck and Waltman, 2017). With a threshold of 15, we include 100 qualifying authors, offering a nuanced and diverse representation of our intellectual landscape. This approach explores emerging trends, key players, and influential works while mitigating potential noise or less statistically significant connections (Van Eck and Waltman, 2014). Fig. 3 presents the co-citation network of cited authors in CE-TC research. The network is clustered in three clusters (1. red, 2. blue, and 3. green). Each node in the network represents an author, and the edge between the two nodes shows the co-citation relationship between authors.

Moreover, the size of the node bubble represents the citation strengths. The largest five nodes in Fig. 3 indicate that the leading scholars in the CE-TC research field are Bocken, Niinimäki (primary documents), Geissdoerfer, Hekkert, and Kirchherr (secondary documents). Cluster 1 (red) shows the interrelationship of authors dealing with the CBM, while cluster 2 (green) grouped CE authors from the clothing industry and thus has a sectoral focus. Cluster 3 (blue) has authors (e.g., Rosa and Seuring) who discussed technology for CE adoption. Table 3 presents the statistics for the co-citation analysis.

### 3.1.3. Bibliographic coupling (documents)

Bibliographic coupling provides analytical implications by providing a current field view. We applied documents as the UoA and a cut-off point of five as the minimum number of primary document citations ( $n = 74$ ). The coupling analysis returned 66 papers in five clusters. Fig. 4 shows that Todeschini et al. (2017) (Cluster 1) have the largest co-citation strength (citation strength 217), followed by Fischer and Pascucci (2017) (citation strength 183). However, regarding total link strength (191), Rovanto and Bask (2021) tops the table. This paper compares CBM applications between CE native and adopter companies. We attribute the importance of this document to at least two major factors: (i) comparison of the complexities and challenges facing the CE natives and adopters and (ii) relevance to practice, as most TC companies are adopters.

Table 4 presents the details of the clusters. There are two unmissable aspects of the papers analysed through bibliometric coupling: (1) the field of CE-TC research is fragmented, as evidenced by the number of clusters, and (2) papers within the clusters are thematically and scope-wise diverse. For example, the themes and scopes of the four most cited papers from Cluster 1 reviewed innovative sustainable business models (Todeschini et al., 2017), corporate sustainability reports (Stewart and Niero, 2018), gender and generational differences in sustainable fashion perception (Gazzola et al., 2020), and circularity indicators (Rossi et al., 2020). Among other works, Hartley et al. (2022) and Saha et al. (2021) analysed the CE implementation opportunities and barriers, whereas Pluskal et al. (2021) proposed recycling possibilities of textile waste in the Czech Republic.

We discovered similar traits in other clusters as well. In cluster 2 (green), the two most cited papers investigated the institutional incentives for CE for material use in the Dutch textile industry (Fischer and Pascucci, 2017) and chemical recycling (Meys et al., 2020). Cluster 5

**Table 3**  
Co-citation analysis data.

Clusters	Paper counts	Total citations	Average Citation	Citation %	Highest cited paper [citations]
<b>Cluster 1 (CBM)</b>	46	2233	23.50	34	Bocken, n.m. p. [75]
<b>Cluster 2 (CE in TC)</b>	33	2301	23.48	35	Niinimäki, k. [79]
<b>Cluster 3 (Technology for CE)</b>	21	2019	22.94	1	Wang, y. [32]
<b>Total</b>	100	6553		100	

(purple) holds two papers (i.e., Dobrotà et al., 2020; Gigli et al., 2019) looking into textile recycling from tyres.

On the other hand, Yousef et al. (2020) is the most cited paper among the eight non-clustered papers that proposes and tests technology for recovering cotton fibres and polyester from textile waste in a similar fashion as Meys et al. (2020) from cluster 2 and Pluskal et al. (2021) from cluster 1. Such thematic variety and scoping fragmentation are not abnormal for a nascent field of study such as this. However, as the field matures, bibliographic clustering will be more consolidated. The results of the bibliographic coupling provide a lens on the current and trending direction of the field. Next, we examine the content of the top documents that emerged from the bibliometric methods.

### 3.2. Content analysis: key thematic areas within the CE-TC research (RQ 2)

A timeline-based approach assesses how the research questions and objectives have evolved over the last ten years. We see a pattern emerging in three distinctive periods (Table 5). During the early period of CE in TC, scholars focused on requirements for CE transition, while CBM and consumer behaviour took centre stage during 2019–2020. More recent research themes include environmental regulation, institutional features of the market, consumers' perception and buying behaviour, recycling/upcycling, and data technologies, rebound effect, sustainability paradox, and the role of media (Table 6).

The findings from the bibliometric analysis offer valuable insights when linked with the content analysis results. The correlation between the most cited papers, influential authors, and common research topics is evidenced. For example, Todeschini et al. (2017) study on the entrepreneurial drivers for innovative and sustainable business models has the largest co-citation strength in bibliographic coupling (documents) analysis. The diversity in thematic focus in bibliometric analysis, exemplified by Yousef et al. (2020) on technology for textile waste recovery, reflects the evolving circular material innovation research field identified through the content analysis.

#### 3.2.1. Institutional environment and its influence on CE in TC

The institutional literature mainly focused on public procurement policies (Alhola et al., 2019; Rainville, 2021), means-end decoupling (Stål and Corvellec, 2022), waste management policies, inter and intra-organisational collaboration (Fischer and Pascucci, 2017) and institutional voids (Saha et al., 2021; Schmutz and Som, 2022) that hinder CE adoption.

Governments can incentivise the development and adoption of CBMs by setting criteria and requirements for procuring products and services that support CE (Alhola et al., 2019). Given the complexities of the public procurement process, Rainville (2021) states that intermediaries can coordinate between government and industry, facilitate cooperation among industry players and collaborate with the buyer to push for higher resource efficiency.

Meanwhile, means-ends decoupling creates a disconnect between a company's actions and its stated values or goals. For instance, Stål and Corvellec (2022) feared these disconnects could allow TC businesses to claim circularity without aligning their values and actions with sustainability. To address this, Rainville (2021) identified status quo (SQ) arrangements, while Fischer and Pascucci (2017) suggested the AB-PSS model. These are discussed in business model innovation later in this paper.

Among the institutional voids, educational policy and the absence of markets are prevalent. Saha et al. (2021) revealed a lack of waste management infrastructure, critical skill shortage, and understanding of CE practice in the textile industry. For educational policy, Kopnina (2022) argues for embedding posthumanism in education curricula to focus on the interconnected nature of technology, culture, and nature to promote circularity.

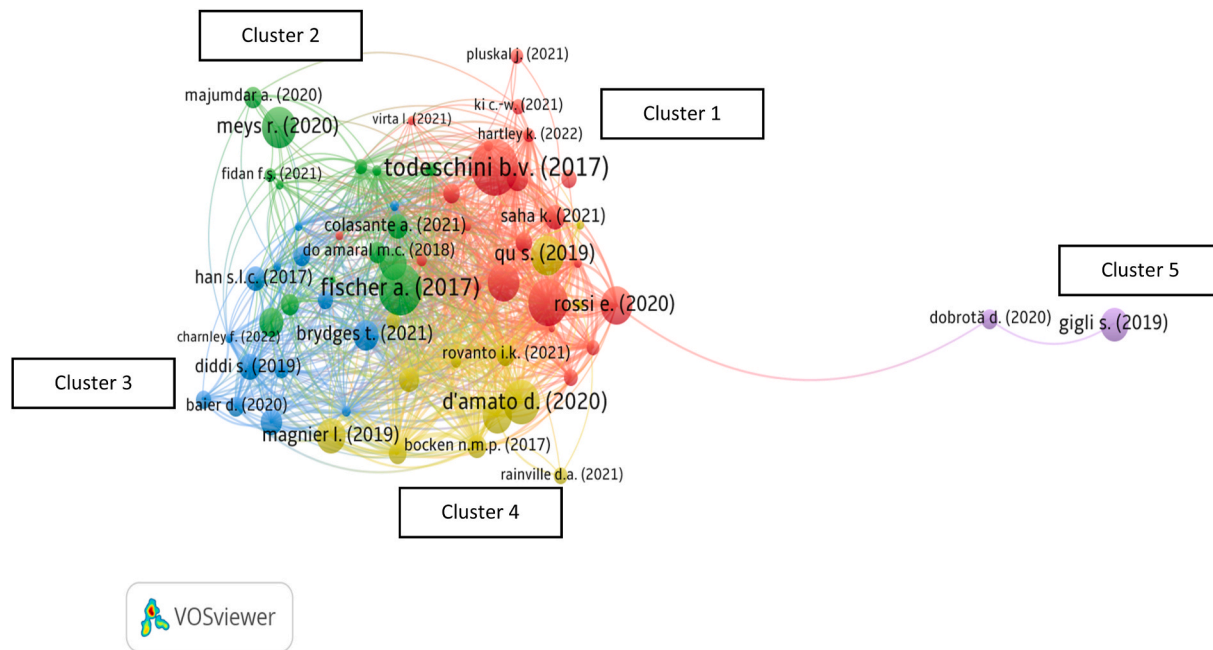


Fig. 4. Bibliographic coupling (UoA: documents).

Table 4  
Clusters data.

Clusters	paper count	Citations	Most cited paper	Citation
Cluster 1	22	865	Todeschini et al. (2017)	217
Cluster 2	15	637	Fischer and Pascucci (2017)	183
Cluster 3	14	352	Brydges et al. (2022)	63
Cluster 4	13	607	D'Amato et al., (2020)	133
Cluster 5	2	104	Gigli et al. (2019)	77
	66	2484		

Table 5  
Timeline based research focus.

Time period	Themes of research questions	Illustrative examples
2014–2017	Organisational requirements for CE	Fischer and Pascucci (2017)
	Organisational actions required for CE	Stål and Jansson (2017)
2019–2020	Development of value propositions	Holtström et al. (2019)
	Circular business models (CBM)	D'Amato et al. (2020)
	Consumer perception and willingness to participate in CBM.	Yousef et al. (2020) Camacho-Otero et al. (2020)
2021-onwards	Institutional environment and its impact on CE implementation	Rainville (2021)
	CE implantation challenges	Fidan et al. (2021)
	Technology (digital and manufacturing) as the enabler for CE	Rovanto and Bask (2021) Tunn et al. (2021)

3.2.2. Influence of consumer behaviour on circularity in the TC industry

The literature (e.g., Vătămănescu et al., 2021) discusses consumer behaviour for circular fashion in two broad terms: i) motivating factors and ii) challenges for adoption.

One approach proposed to address the consumption and subsequent waste generation issue is AB-PSS, which involves businesses offering products for temporary use rather than ownership (Khitous et al., 2022). However, adopting the AB-PSS model is very slow due to the limitations outlined by Fischer and Pascucci (2017) and Magnier et al. (2019). Tunn

et al. (2021) hypothesise that the duration of use and the product type would influence the importance of different adoption barriers.

Colasante & D'Adamo (2021) discovered that consumers were willing to pay 23% more for bio-based clothing and 57% less for second-hand clothing. Consumers' WTP is often influenced by conscience, recognisability, and perceived safety (Khan et al., 2023). For example, Napapijri (an Italian clothing brand) has embraced CE practice by simplifying the design of its high-performance jackets. They understood that consumers' WTP for their circular jackets is crucial and offer a 20% discount on future purchases when customers return their used jackets (Ellen MacArthur Foundation, 2021).

The luxury industry, however, faces specific challenges, such as limited opportunities to reuse prototypes and personalise products (Colucci and Vecchi, 2021). On the other hand, non-luxury brands often pay their workers low wages and compromise safety measures and well-being to offset the higher costs of sustainable fashion manufacturing, as Saha et al. (2021) identified from their research that surveyed the non-luxury supply chain.

3.2.3. Sustainability-oriented innovation (SOI)

There are four major SOIs (Salo et al., 2020) that current literature has focused on, i.e., business model, product, process, and technological innovation that facilitates CE adoption.

Circular business model (CBM) innovation.

We found a prevalence of case study methodologies (e.g., Brydges et al., 2022; Stewart and Niero, 2018; Rovanto and Bask, 2021) for CBM research. Bocken et al. (2017) suggested that CBM transformation would bring broader system changes to the industry. Thatta and Polisetty (2022) showed that lean start-ups and tested business modelling tools are valuable for CBM innovation. However, CBMs often rely on public support (D'Amato et al., 2020) for survival.

In contrast, Holtström et al. (2019) shed light on the complexity and multi-layered nature of creating a truly sustainable business model in the apparel industry. For example, threadUP.com is a multilayered on-line marketplace for second-hand women's and kids' apparel. Other multilayered fashion resellers such as treet.co, poshmark.com, refluant.com, and recurate.com allow affordable brands for both buyers and sellers, enabling individuals to earn money from unused clothes while contributing to environmental sustainability. Their business model



**Table 6**  
Key research questions, theoretical underpinnings, and methodological choices.

Category	Commonly investigated RQs	Representative examples	Commonly applied methodologies
Institutional factors	Institutional requirements for CE transition	Fischer and Pascucci, 2017; Rainville, 2021; Stål and Corvellec, 2022	Qualitative case study
Sustainability oriented innovation	Process of value creation through CBM Opportunities, challenges and barriers for CBM Various methods of waste processing for reuse and upcycling Role of 14.0 in promoting CBM	Blomsma et al., 2022; D'Amato et al., 2020; Ecer and Turkayesh, 2022; Fidan et al., 2021; Holtström et al., 2019; Jain et al., 2022; Luoma et al., 2022; Rovanto and Bask, 2021; Stål and Jansson, 2017; Yousef et al., 2020	Conceptual, qualitative interview data, fuzzy logic, technical experiment, quantitative survey, disaggregative Delphi method, comparative case study.
Consumer behaviour	Motives of circular fashion consumption Investigations of various CBM	Camacho-Otero et al., 2020; Colasante & D'Adamo, 2021; Galatti and Baruque-Ramos, 2022; Hartley et al., 2022; Kazancoglu et al., 2020; Rossi et al., 2020; Tunn et al., 2021; Vătămănescu et al., 2021	Qualitative interview data, quantitative survey, mixed method, focus group,
Transition to CE	Opportunities, challenges, and barriers of CE transitions CE impact on sustainable performance Firm characteristics for linear to Circular transitions. Impact of transition Indicators to measure various CE and sustainability aspects.	Bressanelli et al., 2022; Brydges et al., 2022; Colucci and Vecchi, 2021; Elf et al., 2022; Ly, 2021; Saha et al., 2021; Salmi and Kaipia, 2022; Reike et al., 2023; Siderius and Poldner, 2021	Mixed method, qualitative case study, secondary data, qualitative multi-method study, quantitative survey

aligns with the CE goal of keeping clothes in use longer, reducing environmental impact. They also extend the resale-as-a-service to brands and retailers (Ellen MacArthur Foundation, 2021).

### 3.2.4. Circular material innovation

Several technical papers (e.g., Fidan et al., 2021; Kim et al., 2022; Yousef et al., 2020) have been published on regenerative and recycled fibres. However, their environmental impact varies depending on the type of fibre and the production process. Fidan et al. (2021) found that using recycled cotton fibres saved 4% of global warming potential and 0.42% of water usage for denim fabric. Similarly, Kim et al. (2022) and Yousef et al. (2020) proposed novel recycling methods using non-toxic and biodegradable solvents. However, Han et al. (2017) found that early sourcing of fabrics and information on the availability of source materials are critical to achieving design consistency for the upcycling Industry.

### 3.2.5. Technological innovation for circularity

The prevalence of data and increasing digitalisation are transforming

the way TC business functions. Jain et al. (2022) proposed blockchain technology to satisfy customers' hygiene concerns, highlighted earlier as a barrier to the AB-PSS model. Their study suggests SMEs can use BEEP to address key barriers to buying second-hand apparel, such as economic and environmental concerns, fashionability and hedonic values, budget constraints, fair pricing, and bargaining power. BEEP can improve the buying process for second-hand apparel by providing transparency and trust in the market. However, this requires suitable technological and information systems, including data-oriented infrastructure and digital technologies such as well-designed IoT systems and Big Data analytics (Luoma et al., 2022).

### 3.2.6. CE transition

CE transition varies for the native and adopter companies (Reike et al., 2023). Rovanto and Bask (2021) argued that adopters primarily implement CE as extensions of their linear business models to capture economic value, while natives make economic decisions based on environmental and social sustainability. Colucci and Vecchi (2021) found that adopters normally opt for green sourcing and pollution control instead of remanufacturing. Galatti and Baruque-Ramos (2022) and Rossi et al. (2020) proposed various indicators for both natives and adopters to measure their social (i.e., employment, labour relations, occupational health and safety, training and education, diversity and equal opportunity, and fair distribution of income) and environmental (material use) impacts.

Blomsma et al. (2022) introduced the 'circular disruption' concept to accelerate the transition. Using the WaveS model, they propose a framework for the three-phase disruption: (i) the pre and post disruption phases, (ii) circular growth and (iii) circular synergy. They identified five key components for circular disruption: (i) being systemic, (ii) impacting all aspects of the industrial life cycle and social institutions, (iii) achieving widespread change across sectors and regions, (iv) ensuring desirability by not only preserving but also creating a better version of the good life; and finally (v) prioritising sustainability at its core to generate positive environmental, social, and economic outcomes.

Circular disruption can reduce the risk of rebound effects as the industry's negative impacts are predominantly driven by consumption behaviour. The rebound effect occurs when adopting sustainable practices leads to lower production costs. As a result, clothing prices may drop, potentially prompting increased consumer demand and consumption. Siderius and Poldner (2021) examined the Dutch textile industry's vulnerability to the rebound effects. They suggested raising awareness about the consequences of rebound among stakeholders, implementing EPR programs to enhance product lifecycle management, and engaging consumers in responsible consumption practices to minimise the potential rebound effect.

It is unavoidable that authors internalise the assumption that a technology-based solution can influence consumer behaviour for circular TC products. Such internalisation leads to conceptual vagueness and a form of activism in the extant scholarship. Therefore, we problematise the literature next.

## 3.3. Problematization of the CE-TC research field (RQ 3)

Problematization identified the in-house assumptions, root metaphors and theoretical assumptions prevalent in the CE-TC literature.

### 3.3.1. In-house assumptions of CE in TC research

CE would positively contribute to the TC industry's sustainable performance, which seems to be a widely accepted assumption within the CE in the TC research community. Another in-house assumption related to CE-based sustainable performance is that the transition will be built on business model transformation (Bodenheimer et al., 2022). As we found in the content analysis, assumptions related to business model transformation also involved predictive framing statements of bringing a

'paradigm shift,' leading to potential utopian or dystopian futures. The AB-PSS proposed earlier by Fischer and Pascucci (2017), and Tunn et al. (2021) can perpetuate fast fashion consumption patterns and contribute to the rebound effect (Monticelli and Costamagna, 2022; Siderius and Poldner, 2021).

In clothing repair, Diddi et al. (2019) discovered that limited time or skills to mend had a negative impact on how often mending was done. Positive motivations, such as wanting to save money and reduce waste, influenced attitudes toward mending, the frequency of mending, and adopting sustainable post-consumption behaviours. Stål and Jansson (2017) showed how Swedish firms incorporate sustainable textiles, repair, and take-back systems into their value proposition.

Unfortunately, Bodenheimer et al. (2022) provided empirical evidence of how small businesses with circular models faced difficulty acquiring/retaining customers due to their unfamiliarity with fashion rental and poorly perceived price-performance ratio. Monticelli and Costamagna (2022) critiqued the negligible impact of circular fashion businesses on the industry and economic unviability. Therefore, Pedersen et al. (2019) stressed coordination and collaboration among stakeholders to implement CE solutions effectively.

Demographic differences among consumers play a critical role in circular fashion use. For example, Gazzola et al. (2020) and Lin and Chen (2022) found that CE is essential for young consumers in Italy, and Taiwan. Stöcker et al. (2021) found that consumer attraction for various circular fashion offerings (e.g., returning used products for recycling, discounts for sustainable products, sustainability level indicators, and biobased materials) depends on demography and attitude towards sustainability. These findings suggest the need for multi-generational marketing strategies to address consumers' choice dilemmas (Bang and DeLong, 2022).

Social and cultural factors can influence the adoption of circular fashion. Some societies may prioritise owning and displaying new fashionable clothing, making it difficult for circular fashion to gain acceptance. However, circular fashion may be more widely accepted in societies with a strong focus on sustainability and environmental responsibility (Camacho-Otero et al., 2020; Diddi et al., 2019). Consumers in developed (e.g., Finland, Italy, the Netherlands, U.K., U.S.), developing (e.g., Brazil, China, Colombia, India, Taiwan), and transitional economies (e.g., Slovakia) (Musova et al., 2021) have shown an increased interest in sustainable clothing.

In-house assumptions on SOIs are the possibilities of using recycled fibre and 14.0. Majumdar et al. (2020) found that blending small amounts of recycled polyester with cotton improved recyclability without deteriorating the quality of knitted fabric. However, with little demand for such recycled materials, companies may be less motivated to invest in the infrastructure and technologies needed to recycle and repurpose waste materials (Schmutz and Som, 2022).

On the other hand, Alves et al. (2022) and Chadegani et al. (2013) proposed using blockchain technology and the IoT to resolve hygiene concerns and improve traceability throughout the supply chain. However, challenges remain in securing metadata and integrating blockchain technology into existing systems. Sahimaa et al. (2023) called for the end of fast fashion as they saw the limit of technology-based solutions.

### 3.3.2. Theoretical assumptions in CE in TC research

One of the central theoretical assumptions of CE in TC research is neo-institutionalism, which aims to regulate and facilitate material exchange through policies. In this strand, Fischer & Pascucci (2017) propose policy instruments supporting adopting the CE, such as stronger corporate responsibility legislation, environmental taxation, and eco-labelling of goods and services. However, the optimal strategy for promoting sustainable fashion may involve trade-offs between different policy alternatives. The ideological assumption identified here corresponds to Dzhengiz et al. (2023), revealing how the nation-state's role is presented as an institutional force to promote CE's economic potential.

On the other hand, consumer behaviour towards circular fashion is influenced by MRCS. Consumers expect fashion businesses to take more responsibility for their products, and their perceptions of corporate moral responsibility affect their attitudes towards CSR offerings (Ki et al., 2021). Experiential dimensions, such as diverse sensory, affective, behavioural, cognitive, and social aspects, shape how consumers experience reused and recycled clothes, as highlighted by Zhang and Dong (2021). However, the WTP depends on consumers' values, beliefs, and social norms (Saha et al., 2023). The UTAUT is also used (Jain et al., 2022) to study the adoption of blockchain-enabled e-commerce platforms that promote CE principles.

Elf et al. (2022) and Salmi and Kaipia (2022) embedded their research on the dynamic capability theory. To successfully transition towards circularity, companies must develop and utilise dynamic capabilities that allow them to act agile and innovatively. Among other dominant theories in CE-TC research are circular disruption (Blomsma et al., 2022), eclectic paradigm (Ly, 2021), environmental rebound effect (Siderius and Poldner, 2021) and social network theory (Camacho-Otero et al., 2020; Rainville, 2021).

These theoretical assumptions collectively shape academic discourse and practical approaches. For example, Neo-institutionalism can guide inquiries into the impact of policies on material exchange regulation and the nation-state's role in promoting CE's economic potential. The moral responsibility theory, on the other hand, informs studies on consumer expectations and attitudes toward corporate social responsibility initiatives. The UTAUT and dynamic capability theories are particularly relevant for organisations to sense, seize, and respond to new opportunities and challenges (Teece and Pisano, 2003). As the TC industry faces rapid technological advancements, shifting consumer preferences, and unpredictable market conditions, research on these theories can guide TC companies in gaining skills, processes, routines, and technologies to proactively shape and influence their future.

### 3.3.3. Root metaphors in CE in TC research

Our analysis suggested that circularity, closed circuit, circle of life, material loop, renewable resource, ecosystem, regenerative system, and upcycling movement are some of the metaphors central to CE in TC research. However, alternative metaphors like slowing instead of closing material loops are more realistic (Dzhengiz et al. (2023). Such metaphors acknowledge the limit of CE-induced environmental sustainability by acknowledging the possible rebound effect.

Articles that suggest stakeholder collaboration (e.g., Fischer and Pascucci, 2017; Pedersen et al., 2019; Rainville, 2021; Siderius and Poldner, 2021) propose an emerging but influential metaphor: the puzzle (Grazzini et al., 2021). This root metaphor views circular fashion as a complex system that requires all the pieces to work together to create a sustainable industry. Each piece represents a different aspect of circular fashion, such as sustainable materials, CBMs, or waste management. It shifts the focus from the current business-centric neoliberal view to a more stakeholder engagement by incorporating NGOs and public bodies. For example, collaborations between industry, academia, and the third sector, such as the UK Research and Innovation (UKRI) funds for a sustainable fashion and textiles industry and the Ellen MacArthur Foundation's efforts in a circular fashion, are encouraging circular design competitions and knowledge-sharing platforms. These initiatives have the potential to significantly impact the adoption of circular practices, inspiring the industry to embrace a more sustainable and regenerative model.

## 4. Discussion

We utilised a methodological triangle (bibliometric, content analysis and problematisation) and identified and interpreted how the CE knowledge domain has evolved in the last 10 years, its current intellectual debates, structure, and trends. Our findings lead to two unavoidable issues that are discussed below.

#### 4.1. Dissemination and robustness of the current literature

An important insight from our review is the significant difference in the journals where articles are published. For the content analysis, the Research Policy (CABS 4\*/ABDC A\*) is the highest-ranked journal, while the Journal of Cleaner Production (CABS2/ABDC B) is the leading publisher with the highest number of papers (14). However, for problematisation, we noticed that the most influential papers were published in journals such as Resource Conservation and Recycling (Impact Factor 13.716). There is also a trend of publishing in interdisciplinary (i.e., Forest Policy and Economics; Sustainable Development) and sector-focused (i.e., Fashion Style and Popular Culture; Fibres and Textiles in Eastern Europe) journals. A wider acceptance of CE-TC research in elite journals could advance academic growth.

According to the bibliometric analysis, a lack of strong theoretical underpinning is detrimental to the future growth of CE-TC research. The institutional theory can provide a solid foundation for stakeholder engagement, collaboration, facilitation, and market infrastructure research to promote CE. Similarly, consumer behaviour theories from the wider marketing literature can explain the motives and purchasing behaviour while supporting companies in building their CE-based branding and positioning strategies. As we notice four dominant innovations (business model, product, process, and technology) that drive CE adoption, innovation theories can promote information and production technology for viable CBM.

The most frequently applied methodology in CE-TC research is single and contextual cases. These are good sources of information about companies' efforts and actions to become more sustainable. However, their questionable operational and economic viability (Grazzini et al., 2021; Monticelli and Costamagna, 2022) make them unsuitable for business model examples. In addition, they are not representative of the TC value chain or generalisable. This was also presented by Jia et al. (2020); however, not much has changed in methodology yet.

#### 4.2. Potential disruptive and rebound effects of SOI based CE

Our review suggested that SOI is critical for circularity within the TC industry. We must not ignore that most of the production of TC takes place in the least developed or developing countries where the environment, resources, and skills central to SOI are often absent. Therefore, internal drivers (e.g., cost reduction) are more influential in promoting SOIs than external drivers (e.g., customer demand). On the other hand, the initial cost of innovation and lack of demand for circular products are the most significant barriers to SOIs. Additionally, our problematisation evidences the limits of the in-house assumptions of SOI-based circularity.

In this context, the disruptive effect of technology-oriented CE can potentially displace jobs from developing countries to economically advanced countries (Repp et al., 2021). Such displacement can severely destabilise developing economies. According to our review, only Saha et al. (2021) investigated the socio-economic impacts of CE besides the positive environmental impacts. The emergence of interest in SOI, the disruptive impact of CE transition on social sustainability and the rebound effect will influence the focus of future research if it is not already doing so.

To this end, we identified institutional requirements for CE implementation. Institutional isomorphism (DiMaggio and Powell, 1983; Guarnieri et al., 2023) and means-end decoupling (Nava and Tampe, 2023) are critical research areas. It is evidenced earlier that firms in the TC industry adopted formal structures for sustainability without corresponding practices and are often used to protect the legitimacy and operational efficiency of the company (Huq et al., 2016). Similarly, poorly designed regulations incentivising recycling without considering the full life cycle impacts of recycled materials may result in using energy-intensive processes or harmful chemicals in recycling, offsetting the intended environmental benefits.

The current overconsumption of TC products is directly linked to the rebound effect (Castro et al., 2022) of existing efficiency in the value chain, which has reduced prices and fuelled consumption across the globe. Improved recycling processes or sustainable manufacturing techniques may increase overall resource consumption if the cost savings or efficiency gains achieved through these technologies are reinvested in expanding production rather than reducing resource use.

#### 4.3. Promoting academic growth

This review contributes to the CE-TC literature in at least three ways. First, our bibliometric method investigates the evolution of the CE-TC knowledge domain over the past decade to provide insights into the growth and development of research in this field. Using keywords co-occurrence, co-citation analysis, and bibliographic coupling, we present the relative influence of different research articles and identify how these documents are interconnected in an intellectual network (Vogue, 2021). Moreover, it reveals patterns and trends in the CE-TC discourse that may not be apparent in typical meta-analyses or content reviews.

Secondly, our content analysis revealed that SOI is the key enabler for the CE transition of the TC industry. Moreover, the institutional environment and consumer behaviour influence how the SOI-based CE transition will take shape. It is apparent that the transitions necessitate substantial transformations in the economic system and warrant a deeper understanding of how firms can effectively manage and utilise resources, foster a culture of sustainability, and adapt their cognitive frameworks. Consequently, this will have far-reaching implications for key theories and frameworks within business and management studies.

And third, we problematise the assumptions underlying the CE conceptualisations by Business and Management scholars. We found that moral responsibility, choices, and generational aspects are a few in-house assumptions that motivate consumers to adopt circular fashion. In contrast, price, socio-cultural factors, trade-offs between choices, and hygiene concerns are barriers. However, this assumption can be problematic if it ignores the concerns outlined here. This allows us to expose the limitations of CE models within business contexts and explores transformative futures for a circular TC industry. Thus, we shed light on the potential risks of conceptual ambiguity within the field of CE and offer critical insights into the growing literature on CE.

## 5. Conclusion

The purpose of this paper was to provide a comprehensive, objective, and integrative review of the CE-TC field. While our findings present unique opportunities for a sustainable TC industry, they revealed several gaps, including a lack of studies covering the entire supply chain, particularly the recycling and reuse stages.

On that note, academic and practice-oriented literature needs to capture the entire supply chain of the TC industry to fully understand the barriers to CE adoption and offer a comprehensive solution to overcome such barriers. This provides the potential for future investigations within the current paradigm of CE-TC research. Another prospective avenue for future research is the disruptive effects of CE within the TC industry. Future research must study adopter organisations' various disruptive phases while implementing CE to identify ways to minimise those disruptions. Otherwise, such disruptions may deter TC companies' willingness to become circular. Correspondingly, researchers could pursue studies at multiple levels (firm, industry, and country) to capture the disruption at the micro-meso-macro levels.

Examining the potential job displacement resulting from technology-oriented CE is essential. This displacement could have profound consequences for the stability of developing economies and their pursuit of SDGs. Therefore, future research should adopt a multi-level approach, encompassing firm, industry, and country perspectives, to capture and understand disruptions at micro-meso-macro levels. The need for social impact assessment methodologies also remains high on the agenda.

Considering the resource requirement and complexities of innovation activities, more research on how frugal innovation encourages recycling, repurposing, and upcycling for efficient production processes in developing countries can have a significant contribution to the CE theory and play a critical role in TC industry practice.

Investigating the CE rebound effect (Castro et al., 2022) for a balance between promoting circularity and managing potential negative impacts appeared critical in our research. Future research can address consumption patterns, promote sustainable design, educate consumers about the environmental impact of their choices, and implement regulations and policies that consider the full life cycle of products. To provide robust theoretical foundations for these new research streams, future researchers can use the institutional theory (stakeholder engagement, collaboration, facilitation, and market infrastructure), consumer behaviour theories from the wider marketing literature (motives, purchasing behaviour, branding and positioning), innovation theories (sustainable innovation, information, business model, process and product), CE rebound (possible negative impact) and disruption (industry life cycle) and underpin their work accordingly. Methodologies applied by Ecer and Torkayesh (2022), Luoma et al. (2022), and Saha et al. (2021) can guide future studies.

As with all research, the present study is not immune to limitations. First, although the keywords chosen have face validity, selecting specific keywords to describe the CE-TC field might influence our results. For example, our keywords excluded 'sustainability' or 'green'. However, the advantage of the bibliometric methodology is that it uses citation patterns to determine if those themes are, in fact, dominant. Our results did not highlight any problems with not including those keywords. We acknowledge the inherent limitations of bibliometric methodologies, including the time lag and language biases, which may have impacted the timeliness and representation of current research trends and excluded valuable research in languages other than English. Second, our (high, medium, and low) ranking criterion and four categorisations in the content analysis were designed with a meticulous approach to counteract potential biases in an otherwise relatively objective bibliometric approach. We applied a rigorous screening process (appendix 2) and interpreted the findings of our content analysis in accordance with the bibliometric and problematising studies. Such methodological triangulation is critical to address any inadvertent bias in interpreting our results.

The theoretical and practical implications of our findings are multifaceted. By identifying the varying impact of journals and recognising that elite journals foster wider acceptance, we offer a roadmap for advancing academic growth in the wider sustainability research domain. Proposed theoretical lenses from institutional theory, consumer behaviour theories, and innovation theories will support such growth. Furthermore, our work identifies potential pitfalls in relying solely on single and contextual case studies in CE-TC research. We advocate for a more comprehensive approach, capturing the entire supply chain to overcome operational and economic viability challenges.

The findings and future research agenda are equally important for other industries in transition. For example, the implication of the SOI is significant for industry practitioners, as we found. The complex interplay of internal and external drivers, the initial cost of innovation and the demand for circular products are critical elements of SOI. Nonetheless, the CBMs identified here can be replicated by other industries (e. g., footwear, packaging, electronic goods) facing challenges similar to those of the TC industry. Sustainable material sourcing, supply chain optimisation, and consumer behaviour insights related to the repaired, reused, and recycled products have wider implications.

We believe that the potential disruptive effects of technology-oriented CE, especially in displacing jobs from developing to advanced economies, necessitate a comprehensive understanding of the socio-economic impacts of CE. Industry stakeholders are encouraged to adopt a nuanced approach that considers the broader institutional requirements for CE implementation, addressing issues like institutional

isomorphism and means-end decoupling. Similarly, industry leaders should carefully consider how cost savings and efficiency gains are reinvested to avoid inadvertently causing rebound effects.

### CRediT authorship contribution statement

**Krishnendu Saha:** Writing – review & editing, Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Conceptualization. **Prasanta Kumar Dey:** Writing – review & editing, Writing – original draft, Methodology. **Vikas Kumar:** Writing – review & editing, Methodology.

### Declaration of competing interest

I wish to confirm that there are no known conflicts of interest associated with this publication, and.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed.

We further confirm that the order of authors listed in the manuscript has been approved by all of us.

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have followed the regulations of our institutions concerning intellectual property.

The Corresponding Author is the sole contact for the Editorial process (including Editorial Manager and direct communications with the office). He is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs. We confirm that we have provided a current, correct email address, which is accessible by the Corresponding Author.

### Data availability

Data will be made available on request.

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### Appendix A. Supplementary data

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