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From Green Promotion to Circular Value Creation: Mapping the Intellectual Structure and Emerging Fronts of Circular Economy Marketing Through Bibliometric Science Mapping (2011–2026)

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Abstract- ***Circular economy (CE) research has expanded rapidly, yet the marketing dimension of circularity remains conceptually dispersed across green marketing, sustainable consumption, remanufacturing, product-service systems, circular business models, reverse logistics, and consumer behavior. This study maps the development, intellectual structure, and emerging research fronts of circular economy marketing (CEM) using bibliometric performance analysis and science-mapping techniques. A Scopus-derived corpus of 408 journal articles published between 2011 and 2026 was analyzed in R using the bibliometrix/Biblioshiny environment. The dataset spans 227 sources, 1,352 authors, 54,935 cited references, 1,431 author keywords, and 1,732 index keywords. The field exhibits a high annual growth rate (31.38%), with publication output rising from one article in 2011 to 93 in 2025; the 60 articles recorded for 2026 represent a partial publication year. Sustainability, Journal of Cleaner Production, and Resources, Conservation and Recycling are the leading publication outlets. Co-citation analysis identifies foundational intellectual anchors around circular-economy conceptualization, business-model innovation, sustainability transitions, and consumer-oriented methods. Thematic mapping positions "circular economy–marketing–sustainability" as a highly central basic theme, while consumer behavior and purchase-related research constitute a developed motor theme. Document coupling reveals three active fronts: circular/green marketing strategy, consumer purchase intention and acceptance, and broader integration of marketing with sustainability and circular value creation. International co-authorship accounts for 30.15% of the corpus, indicating meaningful but still expandable global collaboration. Building on these patterns, the study conceptualizes CEM as a market-shaping capability that aligns value proposition design, communication, consumer practice change, recovery systems, and ecosystem coordination with circular resource flows. The study contributes an integrative knowledge map and proposes a future agenda around trust and greenwashing, digital circularity, B2B ecosystem orchestration, behavioral rebound, emerging-market contexts, and outcome-based circular marketing metrics.***

Keywords: circular economy, marketing, green marketing, sustainable consumption, consumer behavior, bibliometric analysis, science mapping, biblioshiny, circular business models

I. INTRODUCTION

The circular economy has moved from a specialist discourse on waste minimization and industrial ecology to a central framework for rethinking production, consumption, and value creation. Its core ambition is to reduce dependence on virgin resource extraction by slowing, narrowing, and closing material and energy loops through strategies such as durability, reuse, repair, sharing, refurbishment, remanufacturing, recycling, and regenerative design (Bocken et al., 2016; Geissdoerfer et al., 2017; Ghisellini et al., 2016). This transition has stimulated extensive research in operations management, supply chains, industrial ecology, design, policy, and business models. Yet circularity cannot be achieved by production-side redesign alone. Firms may develop technically circular offerings, but the environmental and economic value of these offerings depends on whether customers understand them, trust them, adopt them, use them for longer, participate in take-back systems, accept refurbished or remanufactured

products, and modify established patterns of ownership and disposal. These are fundamentally market and marketing questions.

Marketing occupies a distinctive position in the transition from linear to circular systems because it links organizational value-creation logic with market behavior. In a conventional linear model, marketing often supports the movement of products from production to purchase and replacement. In a circular model, the marketer must address a more complex set of exchanges: access instead of ownership, repair instead of replacement, return instead of disposal, secondary rather than exclusively new products, recovery of residual value, and communication of unfamiliar forms of quality and provenance. Circular offerings may also generate perceived sacrifices, including uncertainty about hygiene, durability, aesthetics, ownership, convenience, warranty, technological obsolescence, or social status. The effectiveness of circular business models therefore depends not only on environmental design or reverse logistics but also on value communication, trust formation, market segmentation, pricing, customer education, relationship management, and the orchestration of multi-actor ecosystems.

The relationship between marketing and circularity has historically been fragmented across neighboring literatures. Green marketing examines how environmental benefits are incorporated into market offerings and communication (Dangelico & Vocalelli, 2017). Sustainable consumption research examines behavioral drivers and barriers to lower-impact consumption (White et al., 2019). Remanufacturing research investigates willingness to purchase products restored to useful life (Wang & Hazen, 2016). Circular business-model scholarship focuses on how firms capture value through strategies such as product life extension, product-service systems, sharing, reuse, and resource recovery (Bocken et al., 2016). Industrial marketing research addresses customer value propositions and interorganizational relationships in circular ecosystems (Ranta et al., 2020; Spring & Araujo, 2017). Consumer research examines identity, perceived value, trust, risk, and willingness to adopt novel circular products, including bioplastics and refurbished goods (Bigliardi et al., 2022; Confente et al., 2020). The result is a field with substantial conceptual richness but weak terminological consolidation.

This fragmentation creates three problems. First, it is difficult to determine whether “circular economy marketing” has developed into a coherent research domain or remains an intersection of otherwise separate conversations. Second, a traditional narrative review may privilege well-known themes while underrepresenting the structural relationships among authors, documents, journals, concepts, and research communities. Third, the fast growth of CE scholarship increases the need to distinguish foundational knowledge from emerging research fronts. Bibliometric analysis is particularly suitable for this purpose because it combines quantitative performance indicators with relational techniques that reveal how a knowledge field is organized (Aria & Cuccurullo, 2017; Donthu et al., 2021; Zupic & Čater, 2015).

Accordingly, this study asks four interrelated research questions. RQ1: How has the scientific production and citation profile of circular economy marketing evolved between 2011 and 2026? RQ2: Which journals, authors, and collaborative relationships constitute the field’s principal performance structure? RQ3: What intellectual foundations and conceptual themes organize the literature, as revealed by co-citation, keyword co-occurrence, thematic mapping, and bibliographic coupling? RQ4: Which research fronts and theoretical gaps should guide the next generation of circular economy marketing studies?

The study makes three contributions. First, it provides a performance-based overview of a rapidly expanding literature using a corpus of 408 articles distributed across 227 publication sources. Second, it integrates complementary science-mapping techniques rather than relying on publication counts alone. Co-citation analysis is used to identify the knowledge base; keyword co-occurrence and thematic mapping reveal the conceptual structure; bibliographic coupling captures current research fronts; and country collaboration mapping indicates the geography of knowledge production. Third, the study advances a more precise conceptual interpretation of CEM. Based on the mapped structure, CEM is defined here as the strategic market-shaping process through which firms and ecosystems identify, create, communicate, deliver,

recover, and recirculate value in ways that support product-life extension, resource-loop closure, and regenerative consumption practices. This definition shifts attention from "promoting green products" toward coordinating market practices across the entire circular value cycle.

The remainder of the article proceeds as follows. Section 2 develops the conceptual background and positions circular economy marketing relative to green and sustainability marketing. Section 3 explains the bibliometric design. Section 4 reports performance and science-mapping results. Section 5 interprets the intellectual and thematic structure of the field. Section 6 develops theoretical and managerial implications and proposes a research agenda. Section 7 discusses limitations, and Section 8 concludes.

II. CONCEPTUAL BACKGROUND

2.1 Circular economy as a value-system transformation

The CE has no single universally accepted definition, but influential formulations converge around the replacement of the linear "take–make–use–dispose" logic with systems that preserve the value of products, components, and materials for as long as possible (Geissdoerfer et al., 2017; Kirchherr et al., 2017). The literature differentiates among narrowing resource flows through efficiency, slowing flows through durability and life extension, and closing flows by reintroducing materials and products into economic cycles (Bocken et al., 2016). Other scholars emphasize regenerative design, industrial symbiosis, cascading resource use, and the need to decouple economic activity from ecological degradation (Ghisellini et al., 2016; Korhonen et al., 2018).

A central insight from this literature is that circularity is not equivalent to recycling. Recycling is only one loop, often positioned relatively low in a hierarchy of value-retention options. Repair, reuse, refurbishment, remanufacturing, resale, and service-based access can retain substantially more embedded value by preserving product functionality. This distinction is highly relevant to marketing because higher-value circular strategies require repeated customer interaction. A recycling system may operate largely after disposal, whereas repair, leasing, resale, upgrading, and product take-back require customers to understand the offering, perceive sufficient benefit, and remain connected to the provider or ecosystem.

2.2 From green marketing to circular economy marketing

Green marketing and CEM overlap but are not synonymous. Green marketing broadly addresses the development, positioning, pricing, distribution, and promotion of offerings with environmental benefits (Dangelico & Vocalelli, 2017). Its scope can include energy efficiency, low-carbon products, eco-labels, sustainable packaging, and environmental communication even when the underlying business model remains linear. Circular marketing, by contrast, necessarily engages with temporal and systemic dimensions of value: product longevity, recirculation, multiple users, reverse flows, recovery, and reduced dependence on virgin resources.

The consumer literature further demonstrates why this shift matters. Wang and Hazen (2016) show that product knowledge is central to intentions to purchase remanufactured products. Confente et al. (2020) demonstrate that green self-identity, self-congruity, and perceived value shape responses to bioplastic products. More recent research on refurbished smartphones and circular consumption similarly identifies risk, value perceptions, brand considerations, and trust as decisive factors (Bigliardi et al., 2022; Testa et al., 2022). Such findings highlight a recurring paradox: consumers may express positive environmental attitudes while still preferring new, convenient, familiar, and status-enhancing products. CEM therefore has to close an attitude–behavior and intention–action gap rather than simply increase ecological awareness.

2.3 Circular business models, B2B value propositions, and market ecosystems

CEM also extends beyond consumer markets. Circular value is frequently created across networks of manufacturers, service providers, logistics firms, recyclers, technology platforms, municipalities, and customers. Ranta et al. (2020) show that B2B suppliers articulate different innovation-driven value-creation logics when presenting circular value propositions. Spring and Araujo (2017) similarly demonstrate that product biographies and servitization alter

relationships among products, services, suppliers, and users. These studies suggest that marketing capabilities are required not only to stimulate end-user demand but also to align the incentives and interpretations of ecosystem partners.

2.4 Why bibliometric mapping is needed

The multidisciplinarity described above makes the literature difficult to synthesize through a single conceptual lens. Bibliometric methods provide a complementary approach by observing the field through publication and citation relationships. Performance analysis identifies productive sources, authors, and temporal trends, while science mapping reveals the cognitive and social organization of research (Donthu et al., 2021). Bibliographic coupling connects recent documents that cite similar prior work and is therefore useful for detecting active research fronts (Kessler, 1963). Co-citation analysis identifies references that are cited together and therefore reveals the field's intellectual foundations (Small, 1973). Co-word analysis treats keywords as indicators of conceptual proximity, while thematic mapping evaluates clusters according to centrality and density, helping to distinguish basic, motor, niche, and emerging or declining themes (Cobo et al., 2011).

In a rapidly growing domain such as CEM, no single technique is sufficient. Highly cited older papers reveal the knowledge base but may not represent current directions. Recent papers may have low citation counts because of limited exposure time. Keyword networks identify dominant concepts but may be distorted by synonymous terms. The use of multiple complementary techniques therefore improves interpretation by triangulating performance, intellectual structure, conceptual structure, and research fronts.

III. METHODOLOGY

3.1 Research design and data source

This study adopts a bibliometric and science-mapping design to analyze the evolution and structure of circular economy marketing research. The final bibliographic corpus was derived from Scopus and analyzed in R using the bibliometrix package and its Biblioshiny interface (Aria & Cuccurullo, 2017). The supplied Biblioshiny report contains 408 journal articles published between 2011 and 2026. The corpus includes 227 sources, 1,352 authors, 54,935 cited references, 1,431 author keywords, and 1,732 index keywords. All documents in the analytical file are classified as articles.

The study follows established bibliometric guidance by combining descriptive performance indicators with relational science-mapping techniques (Donthu et al., 2021; Zupic & Čater, 2015). The analytical sequence consisted of four stages: (1) corpus characterization and annual scientific production; (2) source and author performance; (3) intellectual and conceptual structure through co-citation, keyword co-occurrence, and thematic mapping; and (4) contemporary research fronts and social structure through document coupling and international collaboration mapping.

3.2 Bibliometric indicators

Descriptive indicators were used to characterize the corpus. These included annual publication output, annual growth rate, document age, average citations per document, number of references, number of authors, single-authored documents, co-authors per document, and international co-authorship. Source productivity was assessed using the number of articles published by each journal. Author productivity was assessed using both full counting and fractionalized article counts, the latter helping to reduce the inflation that occurs in heavily co-authored publications.

Citation indicators require careful interpretation because older publications have had more time to accumulate citations. The report therefore provides both mean total citations per article and mean citations per year. In the present study, citation trajectories are interpreted as indicators of visibility and intellectual influence rather than direct measures of quality. The unusually low citation rate of 2026 publications is treated as an exposure-time effect because 2026 is an incomplete publication year in the dataset.

3.3 Science-mapping procedures

Document bibliographic coupling: The coupling analysis was conducted at the document level using cited references (CR), with 250 documents considered and a minimum frequency of two. Clustering used the walktrap algorithm. Bibliographic coupling identifies documents that share references and is particularly

useful for detecting current or emerging research streams because recent publications may not yet have accumulated enough co-citations. The report identifies three principal coupled clusters comprising 92, 48, and 110 documents.

Keyword co-occurrence and thematic mapping: The thematic analysis used merged keywords (KW_Merged), 250 terms, a minimum frequency of two, unigrams, and Louvain community detection. Thematic clusters were assessed through Callon centrality and Callon density. Centrality represents the degree to which a theme is connected to other themes, while density reflects internal development. In the thematic map, highly central and dense clusters are interpreted as motor themes; highly central but less dense clusters as basic or transversal themes; low-centrality but highly developed clusters as niche themes; and low-centrality, low-density clusters as emerging or declining themes.

Co-citation analysis: Co-citation mapping was used to identify references that form the intellectual base of CEM. Nodes were evaluated using betweenness centrality, closeness, and PageRank. Betweenness captures a node's bridging role across different knowledge communities, while PageRank indicates influence in the citation network. The network reveals five recognizable clusters connecting circular-economy foundations, consumer and adoption research, empirical marketing methods, circular business-model and supply-chain research, and remanufacturing/value-retention research.

International collaboration mapping: Country-to-country co-authorship links were mapped to assess the social and geographic structure of the field. The dataset records an international co-authorship rate of 30.15%. Collaboration-edge frequencies were used to identify particularly active bilateral and multilateral connections.

3.4 Interpretation and robustness

To enhance the robustness of the bibliometric interpretation, this study relied on methodological triangulation across multiple complementary science-mapping techniques rather than drawing conclusions from a single bibliometric indicator. Performance analysis was used to identify publication growth, influential sources, productive authors, citation patterns, and collaboration characteristics, whereas bibliographic coupling, co-citation analysis, keyword co-occurrence, and thematic mapping were employed to examine different dimensions of the intellectual and conceptual structure of circular economy marketing research. The convergence of findings across these techniques provided greater confidence in the identification of dominant themes, intellectual foundations, and emerging research fronts.

Particular caution was exercised when interpreting citation-based indicators because citation accumulation is strongly influenced by publication age. Older publications have had substantially more time to receive citations, whereas papers published in recent years, particularly those from 2025 and the partial year 2026, have had limited citation exposure. Consequently, citation counts were interpreted primarily as indicators of scholarly visibility and intellectual influence rather than as direct measures of research quality. Recent research developments were therefore assessed primarily through bibliographic coupling and thematic analysis, which are less dependent on long citation windows.

The interpretation of thematic and keyword structures was also based on the substantive composition of clusters rather than exclusively on automatically generated cluster labels. Generic indexing terms produced by bibliographic databases were interpreted cautiously, and emphasis was placed on meaningful concepts such as circular economy, marketing, sustainability, consumer behavior, purchase intention, green marketing, remanufacturing, business models, and sustainable consumption. Similarly, network centrality and density measures were interpreted together with cluster size, document composition, and conceptual coherence.

Finally, the use of several complementary analytical perspectives reduced the likelihood that the study's conclusions were driven by a single ranking, citation measure, or network configuration. Nevertheless, bibliometric results remain dependent on the underlying Scopus search strategy, database coverage, bibliographic metadata, and analytical thresholds used in Biblioshiny. These methodological constraints are acknowledged explicitly in the limitations section and

should be considered when interpreting the resulting knowledge structure.

Table 1. Main characteristics of the bibliometric corpus

Indicator	Result
Timespan	2011–2026
Documents	408
Sources	227
Annual growth rate	31.38%
Average document age	2.95 years
Average citations per document	27.59
References	54,935
Author keywords	1,431
Index keywords	1,732
Authors	1,352
Authors of single-authored documents	44
Single-authored documents	47
Co-authors per document	3.51
International co-authorship	30.15%
Document type	Article (408)

Source note. Compiled from the supplied Biblioshiny report generated in R/bibliometrix from the Scopus corpus.

IV. RESULTS

4.1 Growth and temporal development of circular economy marketing research

The annual scientific production profile shows a field that remained embryonic for several years before entering a phase of rapid expansion. Only one article was recorded in each of 2011, 2012, and 2013, and no publication was recorded in 2014. Output then increased gradually: two articles in 2015, five in 2016, seven in 2017, 11 in 2018, 13 in 2019, and 19 in 2020. A structural acceleration is visible from 2021 onward, with 38 publications in 2021, 45 in 2022, 48 in 2023, 64 in 2024, and 93 in 2025. Sixty articles are recorded for 2026, although this figure reflects a partial year rather than a completed annual total.

The report calculates an annual growth rate of 31.38%, which is consistent with the steep post-2020 trajectory. Notably, 348 of the 408 articles were published from 2021 through 2026, meaning that approximately 85% of the entire corpus belongs to the most recent six-year period. The field is therefore not simply growing; it is being constituted in real time. Such a pattern has implications for interpretation. Highly cited foundational papers remain influential, but a substantial share of the field consists of recent work that has not yet accumulated long citation histories. Bibliographic coupling and thematic mapping are thus especially important complements to citation-based rankings.

The acceleration also reflects a broadening of CE research from operations and resource management toward market-facing concerns. Early publications include remanufacturing and product-life issues, whereas later outputs increasingly address green purchase intention, circular business models, value propositions, consumer perceptions, sustainable fashion, packaging, digital marketing, social media, and purchase behavior. The temporal pattern therefore signals both volume growth and conceptual diversification.

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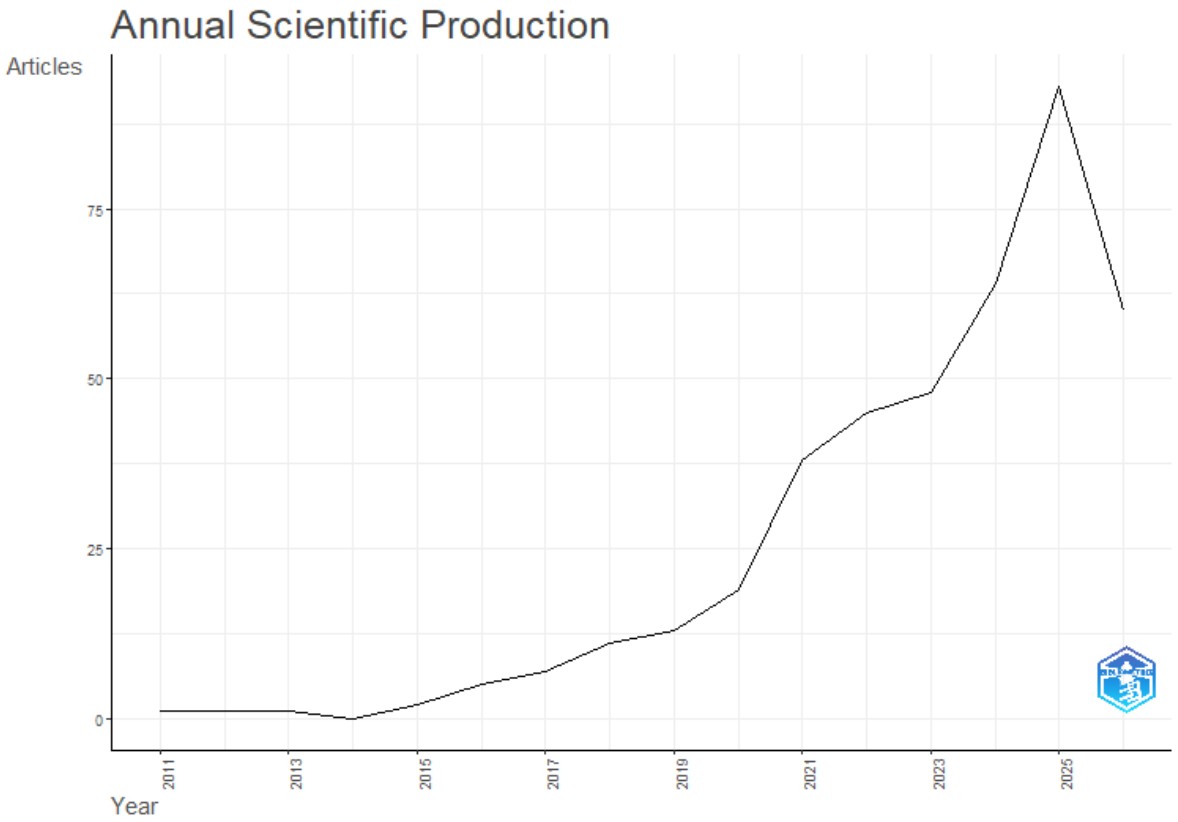

Figure 1. Annual scientific production in circular economy marketing research, 2011–2026.
Source note. Reproduced from the supplied Biblioshiny report. The 2026 count represents a partial publication year.

The citation profile follows a different pattern from publication output. Mean total citations per article are highest for older cohorts, including 193 citations for the single 2011 article, 153.2 for 2016 publications, and 115.45 for 2018 publications. Mean citations per year also show notable peaks in 2016 and 2018. More recent cohorts display lower mean total citations because of limited citable years: 31.42 citations per article in 2022, 18.48 in 2023, 12.44 in 2024, 5.41 in 2025, and 0.50 in 2026. The decline should therefore not be read as reduced scholarly impact. Instead, it demonstrates the need to normalize citation interpretation by publication age.

4.2 Most relevant publication sources

The 408 articles are distributed across 227 sources, demonstrating substantial disciplinary dispersion. The leading journal is *Sustainability (Switzerland)* with 45 articles, followed by the *Journal of Cleaner Production* with 26, *Resources, Conservation and Recycling* with 15, and *Circular Economy and Sustainability* with 13. *Business Strategy and the Environment* contributes eight articles, while *Emerald Emerging Markets Case Studies* contributes six and *Technological Forecasting and Social Change* contributes five. A group of marketing, strategy, operations, and sustainability journals each contributes four publications, including *Industrial Marketing Management*, *Journal of Business and Industrial Marketing*, *Journal of Business Research*, and *Journal of Open Innovation: Technology, Market, and Complexity*.

The top four sources account for 99 articles, approximately one quarter of the corpus, while the top ten account for 130 articles, or around 31.9%. This pattern reveals a recognizable core but not a highly concentrated source structure. CEM is published at the intersection of sustainability, operations, innovation, strategy, consumer behavior, and marketing rather than being anchored in one specialist marketing journal. The strong presence of *Journal of Cleaner Production* and *Resources, Conservation and Recycling* confirms the continuing influence of the

CE's production and resource-management origins. At the same time, the appearance of *Journal of Business Research*, *Industrial Marketing Management*, *Journal of Consumer Behaviour*, *Journal of Retailing and Consumer Services*, and *Journal of Social Marketing* indicates growing absorption into mainstream marketing conversations.

Table 2. Leading publication sources in the corpus

Rank	Source	Articles
1	Sustainability (Switzerland)	45
2	Journal of Cleaner Production	26
3	Resources, Conservation and Recycling	15
4	Circular Economy and Sustainability	13
5	Business Strategy and the Environment	8
6	Emerald Emerging Markets Case Studies	6
7	Technological Forecasting and Social Change	5
8	Business Strategy and Development	4
9	Industrial Marketing Management	4
10	International Journal of Sustainable Development and Planning	4
–	Journal of Business and Industrial Marketing	4
–	Journal of Business Research	4
–	Journal of Open Innovation: Technology, Market, and Complexity	4
–	Science of the Total Environment	4

Source note. Compiled from the "Most Relevant Sources" output in the supplied Biblioshiny report.

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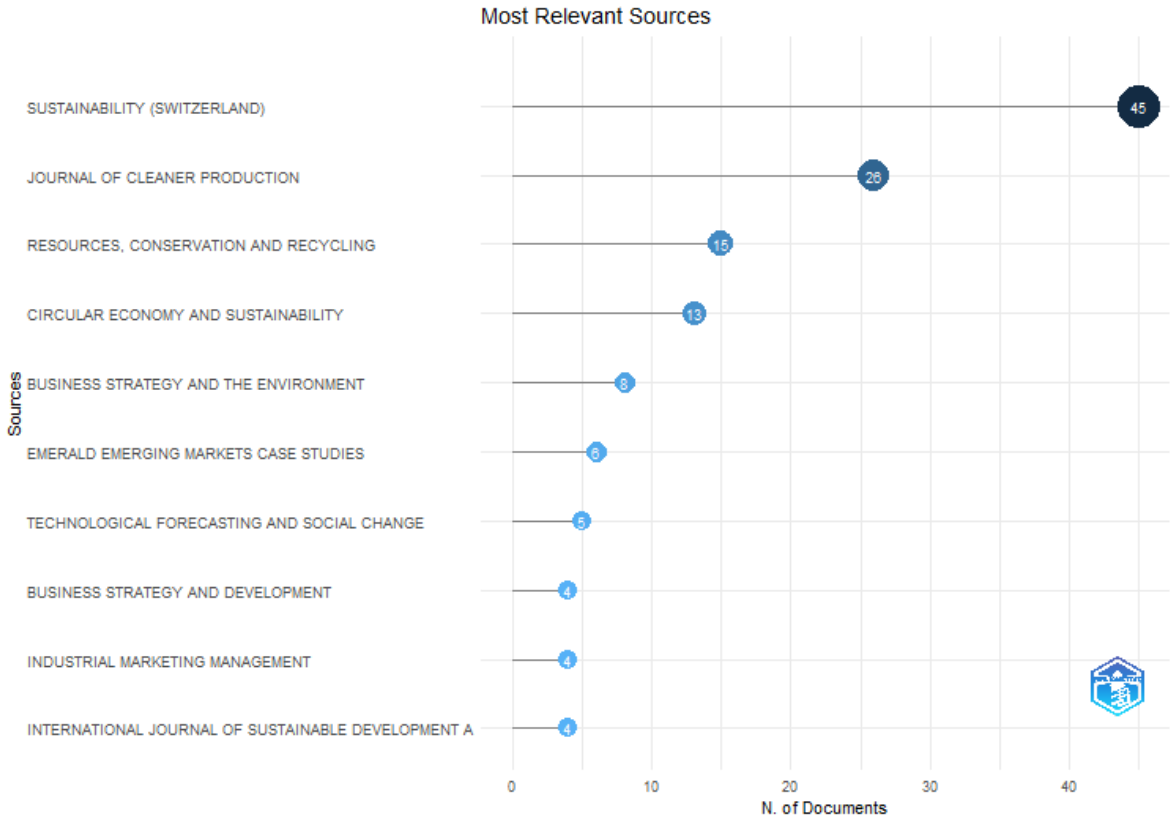

Figure 2. Most relevant sources by number of documents.
Source note. Reproduced from the supplied Biblioshiny report.

The source structure has two implications. First, CEM remains a boundary-spanning field. Scholars seeking to develop the domain need to connect environmental and operations concepts with established marketing theories rather than publishing in isolated disciplinary silos. Second, the diversity of outlets suggests an opportunity for theoretical consolidation. The field currently has many applications of marketing to specific circular contexts but relatively few journals in which "circular economy marketing" functions as a stable organizing label. This supports the argument that the research domain is emerging but not yet institutionally mature.

4.3 Author productivity and collaboration structure

The corpus contains 1,352 authors, with only 44 authors associated with single-authored documents. Forty-seven of the 408 articles are single-authored, meaning that almost nine out of ten publications are collaborative. The average number of co-authors per document is 3.51. This collaboration intensity is consistent with the multidisciplinary nature of the subject, which often requires expertise spanning marketing, sustainability, engineering, supply chains, behavioral science, and policy.

Author productivity is highly dispersed. Wang X is the most productive author with five articles, while Alam SS, Donner M, Fraccascia L, Iraldo F, Jan MT, Kokash HA, and Magnier L each have three. A long tail of authors has two or one publication. Fractionalized counts further reduce the dominance of any single author. This structure indicates that CEM has not yet developed a small, stable group of prolific specialists comparable with mature research communities. Instead, it attracts scholars from adjacent fields who contribute to specific subthemes.

Table 3. Most productive authors

Author	Articles	Fractionalized articles
Wang X	5	1.37

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Author	Articles	Fractionalized articles
Alam SS	3	0.62
Donner M	3	1.03
Fraccascia L	3	1.33
Iraldo F	3	1.03
Jan MT	3	2.20
Kokash HA	3	0.62
Magnier L	3	0.78
Aarikka-Stenroos L	2	0.83
Bocken NMP	2	0.50
Dangelico RM	2	0.83
Govindan K	2	1.33

Source note. Compiled from the "Most Relevant Authors" output in the supplied Biblioshiny report.

International co-authorship represents 30.15% of the corpus. The collaboration map shows a geographically extensive network spanning Europe, Asia, North America, Oceania, Africa, and Latin America. Strong bilateral links include India–United Kingdom, Italy–Netherlands, Italy–Spain, and Malaysia–Saudi Arabia, each with a reported frequency of four. Other notable links include Brazil–France, China–Australia, China–United States, Netherlands–Finland, and United States–Finland, each with a frequency of three. When collaboration-edge frequencies are aggregated across bilateral links, the United Kingdom, China, the Netherlands, Italy, the United States, and India occupy prominent positions.

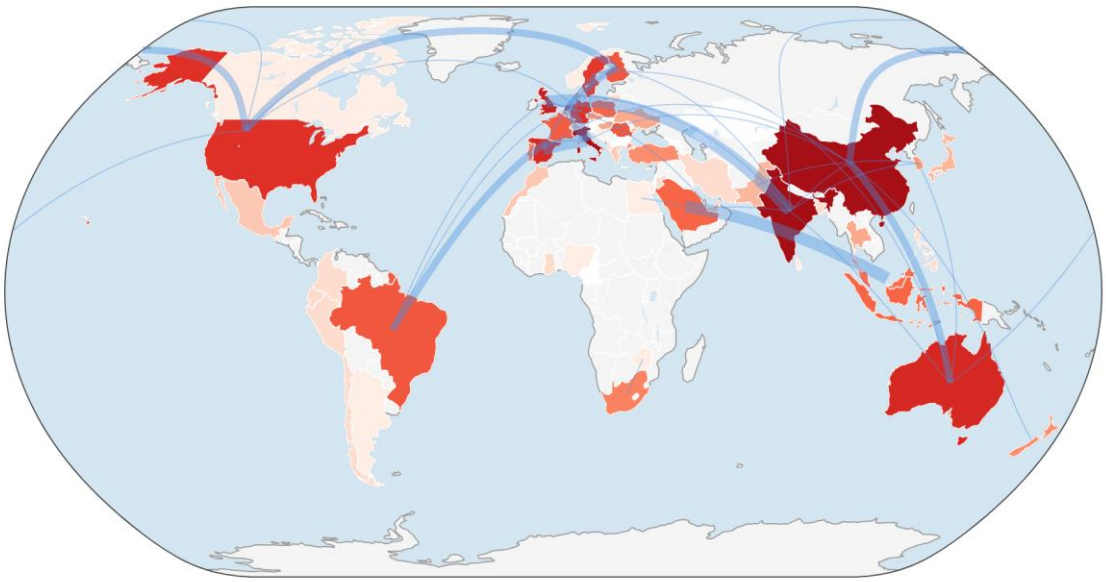

Figure 3. International collaboration map of circular economy marketing research.
Source note. Reproduced from the supplied Biblioshiny report; darker country shading and connecting lines indicate stronger publication and collaboration activity.

The collaboration pattern is encouraging but leaves room for expansion. Circular markets are strongly shaped by local waste systems, infrastructure, income, regulation, cultural meanings of used products, trust institutions, and retail systems. A field dominated by isolated national studies risks treating context-specific consumer responses as universal. Greater cross-country collaboration can therefore improve both external validity and theory development.

4.4 Document coupling and contemporary research fronts

Document bibliographic coupling reveals three principal research fronts. Because coupling links documents that share references, it is particularly useful for identifying active contemporary conversations. The first cluster contains 92 documents and is characterized by the labels "circular economy," "sustainability," and "green marketing." It has a reported centrality of 0.364 and the highest impact value among the three clusters (2.038). Highly influential documents in this cluster include Agostini et al. (2021), Wang and Hazen (2016), Confente et al. (2020), Russo et al. (2019), and work on circular and green marketing innovation. Conceptually, this cluster connects circularity with value communication, refurbished and remanufactured products, green identity, and market acceptance.

The second cluster contains 48 documents and is distinguished by "purchase intention," alongside circular economy and sustainability. Its centrality (0.322) and impact (1.106) are lower than those of the other clusters, indicating a smaller and more specialized stream. The cluster concentrates on consumer adoption, perceived value, risk, attitudes, willingness to pay, repair behavior, and behavioral-intention models. Its presence as a distinct front shows that consumer psychology has become sufficiently developed to form its own citation community.

The third cluster is the largest, with 110 documents, and has the highest centrality (0.464), indicating the strongest connection to the broader knowledge structure. Its labels are "circular economy," "sustainability," and "marketing," with marketing showing a particularly high confidence value in the report. Highly coupled publications include Mostaghel et al. (2023), work on sustainability communication, public policy, market transformation, and broader attempts to reposition marketing theory around circularity. This cluster is especially important because it represents a move from applying marketing variables within circular contexts toward theorizing the relationship between marketing and the circular economy itself.

Table 4. Document-coupling clusters and research-front interpretation

Cluster	Documents	Centrality	Impact	Dominant labels in Biblioshiny	Interpretation
1	92	0.364	2.038	Circular economy; sustainability; green marketing	Circular/green marketing strategy, value communication, remanufactured and circular-product acceptance
2	48	0.322	1.106	Circular economy; sustainability; purchase intention	Consumer adoption, perceived risk/value, willingness to buy/pay, repair and behavioral intention

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Cluster	Documents	Centrality	Impact	Dominant labels in Biblioshiny	Interpretation
3	110	0.464	1.638	Circular economy; sustainability; marketing	Integration of marketing theory with circular value creation, market transformation, and sustainability strategy

Source note. Compiled from the "Clusters by Documents Coupling" output in the supplied Biblioshiny report. Centrality and impact values are reported by Biblioshiny.

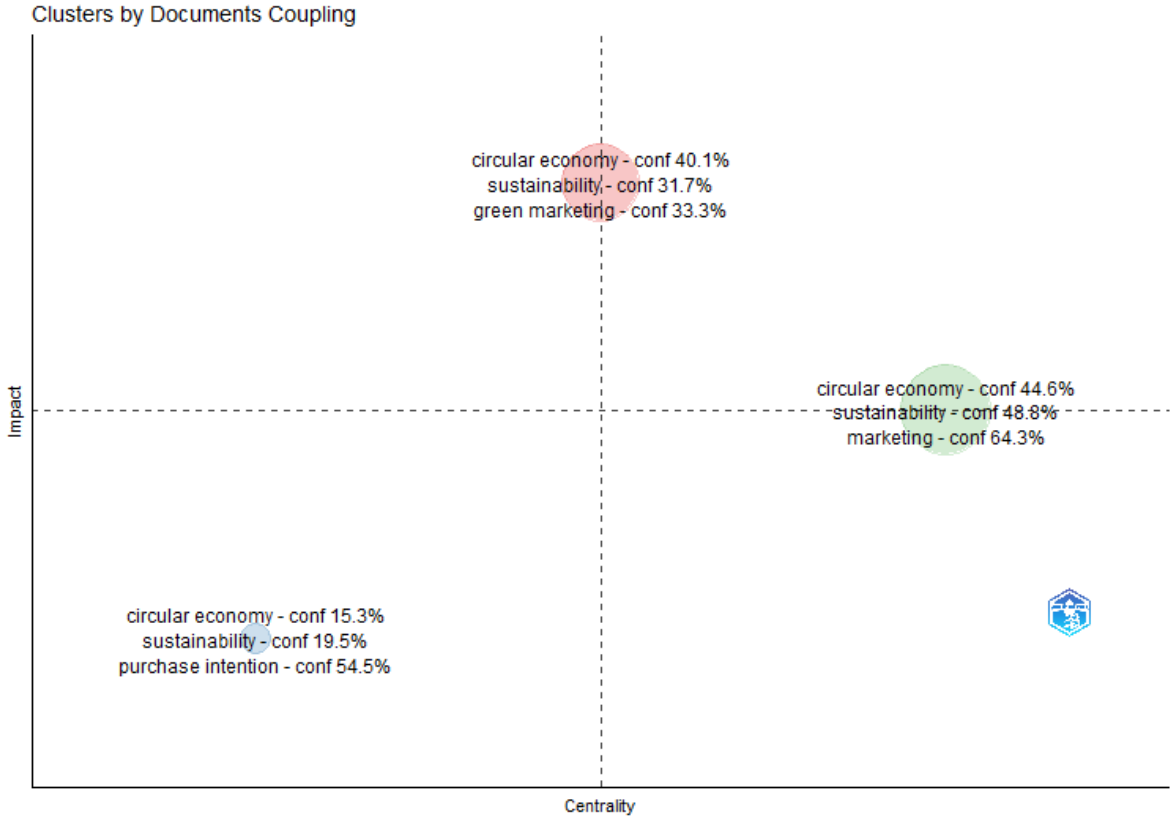

Figure 4. Clusters by document bibliographic coupling.
Source note. Reproduced from the supplied Biblioshiny report. The horizontal dimension represents centrality and the vertical dimension represents cluster impact.

The coupling results suggest a field in transition. Earlier research asked whether consumers would accept remanufactured, refurbished, recycled, or bio-based products and which attributes would influence their decisions. That stream remains active, but a newer layer asks how marketing itself must change when value is created across repeated product cycles. This is a more fundamental theoretical question because it challenges assumptions about ownership, newness, growth, customer lifetime value, channels, and the point at which exchange is completed.

4.5 Keyword co-occurrence and thematic structure

Keyword analysis confirms the central position of circular economy, marketing, and sustainability. "Circular economy" occurs 286 times, "marketing" 130 times, and "sustainability" 99 times in the merged keyword analysis. Other prominent terms include consumption behavior, green marketing, perception,

innovation, sustainable consumption, manufacturing, food waste, green economy, remanufacturing, business model, supply chain management, social media, sustainable fashion, digital marketing, sharing economy, and policy making. The network therefore connects consumer-level and system-level perspectives rather than forming two disconnected literatures.

The thematic map identifies five clusters. The largest cluster is labeled circular economy, with a cluster frequency of 1,048, Callon centrality of 16.16, and density of 40.61. It contains marketing, sustainability, consumption behavior, green marketing, perception, innovation, sustainable consumption, manufacturing, remanufacturing, business models, supply chain management, digital marketing, social media, sustainable fashion, and related terms. Its high centrality and moderate density position it as a basic and transversal theme: it is essential to the field but internally heterogeneous.

A second cluster, recycling, has a frequency of 298, centrality of 14.95, and density of 55.46. It captures resource management, recovery, and related operational concerns. Its location near the center of the thematic space indicates that recycling remains important but is increasingly embedded within broader circular strategies rather than functioning as the defining concept of the domain.

The sustainable development cluster has a frequency of 325, centrality of 14.21, and the highest density among the major clusters (66.17). It includes environmental economics, supply-chain and resource themes, and represents a well-developed but comparatively less connected knowledge area. In thematic-map terms, it behaves like a niche or specialized theme: internally mature, yet less central than the main circular marketing cluster.

The commerce cluster has a frequency of 178, centrality of 9.25, and density of 39.64. It includes decision making, product design, carbon footprint, market conditions, circular business models, cost reduction, and related economic terms. Its low centrality and density position it toward the emerging/declining quadrant. Given the overall growth of the field, “emerging” is the more plausible interpretation for parts of this cluster, particularly digital commerce, market conditions, and circular business-model applications.

The article cluster, a label derived from index-term standardization rather than a substantive theory, has a frequency of 380, the highest centrality (21.21), and high density (62.07). More informative than its generic label are the terms within it: consumer behavior, sales, purchase intention, consumer attitude, packaging, textiles, perceived value, awareness, willingness to pay, and social marketing. These terms form a coherent motor theme centered on consumer response and market adoption. The map therefore shows that consumer-oriented circularity is no longer peripheral; it is one of the most developed and connected areas of the field.

Table 5. Thematic-map clusters

Cluster label	Callon centrality	Callon density	Cluster frequency	Thematic interpretation
Circular economy	16.16	40.61	1,048	Basic/transversal theme linking marketing, sustainability, innovation, consumption, business models, and digital topics

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Cluster label	Callon centrality	Callon density	Cluster frequency	Thematic interpretation
Recycling	14.95	55.46	298	Mature resource-recovery theme positioned near the core of the field
Sustainable development	14.21	66.17	325	Highly developed specialized/niche sustainability theme
Commerce	9.25	39.64	178	Emerging/less-developed market, decision, product-design, and economic applications
Article/consumer behavior	21.21	62.07	380	Motor theme focused on consumer behavior, purchase intention, packaging, perceived value, and willingness to pay

Source note. Compiled from the thematic-map statistics in the supplied Biblioshiny report. The label “article” is retained from the software output, but its interpretation is based on the substantive terms contained in that cluster.

Figure 5. Thematic map of circular economy marketing research.

Source note. Reproduced from the supplied Biblioshiny report. Themes are positioned according to Callon centrality and density.

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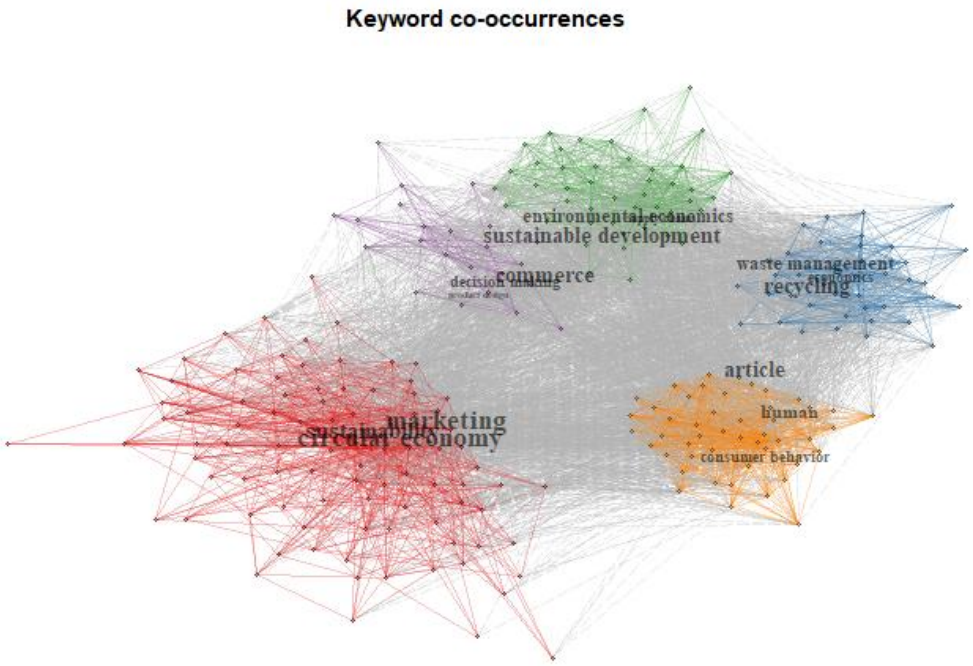

Figure 6. Keyword co-occurrence network.
Source note. Reproduced from the supplied Biblioshiny report. Node size reflects keyword prominence and network proximity reflects co-occurrence relationships.

The keyword network reinforces the interpretation that CEM is becoming a bridging domain. Sustainability, consumer behavior, green marketing, recycling, supply chains, waste, and business models appear as interconnected rather than isolated clusters. This is theoretically significant. It suggests that the next stage of CEM research should move beyond testing individual antecedents of purchase intention and instead model how market practices connect demand, product design, reverse logistics, service systems, and environmental outcomes.

4.6 Co-citation network and intellectual foundations

Co-citation analysis identifies the knowledge base upon which current CEM research is built. The network contains five clusters with distinct intellectual functions. The first cluster is anchored by Geissdoerfer, Bocken, Ghisellini, Korhonen, and related CE scholars. Geissdoerfer has high betweenness (79.96) and the highest PageRank within this cluster (0.0488), indicating a strong bridging and influence role. This cluster represents the conceptual foundation of CE as a sustainability paradigm, together with business-model and system-level interpretations.

The second cluster is centered on Kirchherr, whose betweenness centrality is the highest in the entire reported network (127.36) and whose PageRank is 0.0406. The cluster also includes work associated with Camacho-Otero, Hekkert, Piscicelli, and circular consumption. It provides a bridge between definitional clarity, adoption, and consumer-facing CE scholarship. Kirchherr et al.'s (2017) analysis of CE definitions is especially important because the marketing literature inherits the conceptual ambiguity of the wider CE field. If circularity is defined only as recycling, marketing studies will differ fundamentally from those that include repair, reuse, sharing, remanufacturing, service models, and sufficiency.

The third co-citation cluster contains methodological and marketing-oriented references such as Ringle, Sarstedt, Henseler, Hult, Podsakoff, and Dangelico. This grouping reflects the heavy use of survey-based structural models and established marketing methodology in consumer-centered CE research. Its presence reveals the methodological backbone of the purchase-intention stream. While these methods have enabled rapid theory testing, their dominance also raises a future challenge: the field needs more behavioral, longitudinal, experimental, field, and market-level outcome measures rather than continued reliance on cross-sectional intentions.

The fourth cluster links Govindan, Bocken, Jabbour, Urbinati, Chiaroni, Garza-Reyes, Mangla, Kamble, and related scholars. It represents circular supply chains, operations, organizational strategy, and business-model transformation. Chiaroni and Urbinati have comparatively high PageRank scores in this cluster. The cluster demonstrates that CEM is embedded within organizational redesign; market-facing circular strategies are unlikely to succeed without supply-chain and business-model capabilities. The fifth cluster includes Guide, Filippelli, Bigliardi, Matsumoto, and related work associated with remanufacturing, refurbished products, and value retention. Although smaller, this cluster is directly relevant to marketing because remanufacturing and refurbishment create a classic market-acceptance problem: technically restored products must compete with new products while overcoming stigma and uncertainty.

Table 6. Selected influential nodes in the co-citation network

Node	Cluster	Betweenness	PageRank	Intellectual role
Geissdoerfer M.	1	79.96	0.0488	CE and sustainability-paradigm foundation
Bocken N.M.P.	1	44.83	0.0384	Circular product and business-model strategies
Ghisellini P.	1	23.42	0.0351	CE systems and sustainability synthesis
Kirchherr J.	2	127.36	0.0406	CE conceptualization and definitional structure
Piscicelli L.	2	17.31	0.0247	Circular consumption and business-model adoption
Ringle C.M.	3	15.89	0.0323	Quantitative/PLS-SEM methodological foundation
Sarstedt M.	3	14.15	0.0311	Quantitative marketing methodology

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Node	Cluster	Betweenness	PageRank	Intellectual role
Chiaroni D.	4	27.79	0.0287	Organizational and circular business-model transition
Urbinati A.	4	14.71	0.0286	Circular business-model taxonomy and innovation
Jabbour C.J.C.	4	10.97	0.0269	Sustainable operations and circular supply chains
Matsumoto M.	5	4.44	0.0104	Remanufacturing and circular-product systems

Source note. Metrics are taken from the co-citation network output in the supplied Biblioshiny report.

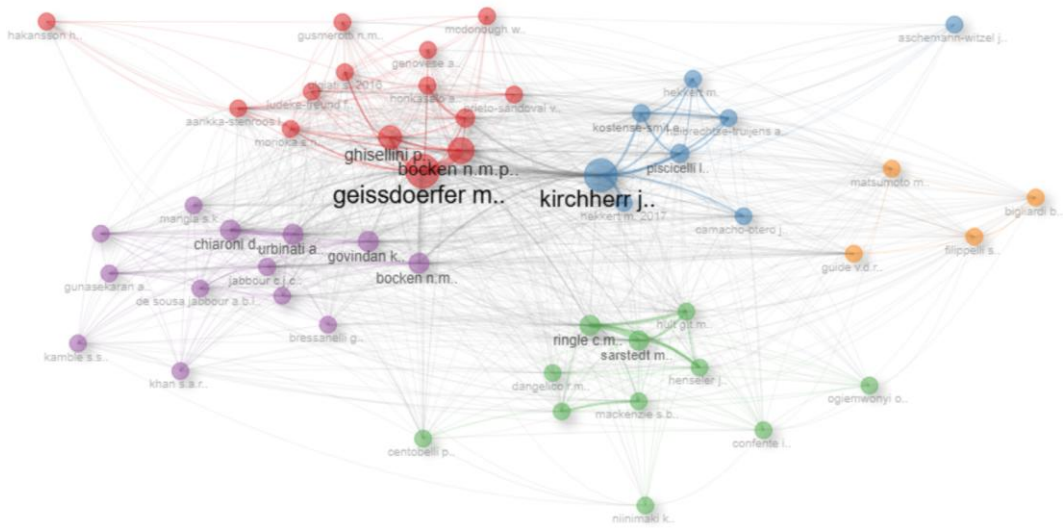

Figure 7. Co-citation network of the circular economy marketing literature.
Source note. Reproduced from the supplied Biblioshiny report. Colors represent co-citation communities; node prominence reflects network influence.

The co-citation structure provides a concise explanation for the present identity of CEM. The field combines a sustainability and CE knowledge base, an operations/business-model base, a consumer-behavior and quantitative-marketing base, and a remanufacturing/value-retention base. What has been missing is an integrative theoretical layer that explains how these components function together as a market system. The current rise of the “marketing” coupling cluster suggests that such integration is now beginning.

V. DISCUSSION

5.1 Circular economy marketing is becoming a distinct but still hybrid field

The bibliometric evidence supports the view that CEM is emerging as a recognizable research domain, but it has not yet reached full disciplinary consolidation. Three findings lead to this conclusion. First, scientific production has accelerated sharply, with most papers appearing after 2020. Second, keyword and coupling analyses show that marketing is now a central organizing term rather than an occasional application label. Third, the field remains dispersed across 227 sources and 1,352 authors, with no dominant author community and with major publication outlets located primarily in sustainability and resource-management journals.

This combination is typical of an emerging interdisciplinary field. The knowledge base comes from adjacent domains, while the research front begins to develop its own questions. In CEM, these questions increasingly concern how markets can be shaped to support circular resource flows. The important shift is from a product-centric question—"How can a circular product be marketed?"—to a systems question—"How must markets, exchanges, relationships, and customer practices be redesigned for circularity to function?"

The latter question is more demanding because circularity changes the temporal structure of customer value. A customer may buy, lease, subscribe, repair, upgrade, return, resell, or access the same product category through different channels. A single physical product may generate value across several users and several transactions. Marketing metrics centered on first purchase, sales volume, and replacement frequency can therefore conflict with circular objectives. This creates a conceptual tension that marketing theory has only begun to address.

5.2 Consumer behavior is a motor theme, but intention-heavy research risks saturation

The thematic map places consumer behavior and purchase-related terms in a highly developed and central position. This finding is consistent with the influence of Wang and Hazen (2016), Confente et al. (2020), Bigliardi et al. (2022), and related work. Consumers must accept unfamiliar value propositions if higher-order loops such as reuse, refurbishment, remanufacturing, repair, and access-based consumption are to scale.

However, the maturity of this theme also suggests a risk of incrementalism. Many studies rely on cross-sectional surveys, intention measures, and structural equation models. These methods are useful for identifying associations among attitudes, perceived value, environmental concern, risk, norms, and intention, but they do not necessarily predict repeated circular behavior. A consumer may state willingness to buy refurbished products and still choose a new product when price differences are small. A person may support repair in principle but replace a device when repair is inconvenient. A customer may participate in take-back programs only when collection is effortless and compensation immediate.

The next generation of CEM research should therefore move from intention to behavioral conversion. Field experiments, transaction data, platform data, repair histories, take-back records, A/B tests, choice experiments, longitudinal panels, and natural experiments can reveal which marketing interventions change actual behavior. Researchers should also investigate post-adoption outcomes: product retention time, frequency of repair, return compliance, resale participation, and total material displacement. These metrics would bring marketing research closer to the environmental logic of circularity.

5.3 The basic theme signals conceptual breadth but also definitional ambiguity

The "circular economy–marketing–sustainability" cluster is highly central but only moderately dense. This means it connects many parts of the field but remains internally diverse. Such breadth is both a strength and a weakness. It enables CEM to integrate consumer, business-model, supply-chain, and sustainability research. Yet it also creates a risk that any environmentally oriented marketing activity will be labeled "circular."

A stricter definition is therefore needed. Not every green product is circular, and not every sustainability claim involves circular value retention. CEM should be reserved for market activities that are explicitly

linked to one or more circular mechanisms, such as product-life extension, reuse, repair, sharing, refurbishment, remanufacturing, recycling, reverse logistics, resource recovery, regenerative sourcing, or reduced material throughput. A study of eco-friendly advertising without a resource-loop mechanism may belong to green marketing but not necessarily to CEM. This boundary matters for cumulative theory. If CEM is defined too broadly, findings from unrelated environmental contexts will be pooled, reducing conceptual precision. If defined too narrowly around recycling, higher-value loops will be ignored. The proposed definition in this study therefore emphasizes both market shaping and recirculation/value retention.

5.4 B2B and ecosystem marketing remain underdeveloped relative to their importance

The coupling and co-citation networks reveal a meaningful business-model and supply-chain foundation, but the thematic center of gravity is still consumer oriented. This imbalance deserves attention. Circular systems frequently depend on B2B coordination: manufacturers need recovery partners; retailers need reverse-channel capabilities; component suppliers need specifications for disassembly; service providers need access to product data; and remanufacturers need reliable cores. Marketing in these settings concerns value propositions, relationship governance, trust, standards, channel incentives, and ecosystem legitimacy.

Ranta et al. (2020) provide an important foundation by demonstrating that B2B suppliers articulate different circular value-creation logics. Yet many questions remain. How should firms price circular benefits that accrue across several actors? How should value be divided when one actor bears recovery cost while another captures resale value? How do companies communicate avoided risk, regulatory compliance, or material security as customer value? How can industrial brands signal credible circular capability rather than symbolic commitment? These questions connect industrial marketing with circular supply-chain design and are likely to become increasingly important as extended producer responsibility and resource-security concerns intensify.

5.5 Circular economy marketing as market-shaping capability

The integrated interpretation of the maps suggests that CEM is best conceptualized as a market-shaping capability rather than a promotional specialization. This capability has five interdependent dimensions.

First, circular value-proposition design translates technical circularity into customer-relevant benefits such as durability, lower total cost, convenience, flexibility, upgradeability, reliability, or identity value. Second, trust and meaning creation reduces uncertainty surrounding used, repaired, remanufactured, recycled, shared, or bio-based offerings. Third, behavioral activation makes circular actions easier and more rewarding through pricing, defaults, incentives, service design, and channel convenience. Fourth, reverse-market orchestration maintains customer relationships after initial use so that products, components, and materials can return to value-retention loops. Fifth, ecosystem alignment coordinates partners whose participation is required for recovery, repair, recirculation, and secondary-market development.

This view connects the consumer, supply-chain, and business-model clusters identified in the bibliometric maps. It also clarifies why marketing should be incorporated earlier in circular innovation processes. If marketers are involved only after product development, they may be asked to "sell" a circular proposition whose convenience, price, service model, or return requirements do not match customer needs. When marketing is integrated upstream, market insight can influence circular design choices themselves.

VI. IMPLICATIONS AND FUTURE RESEARCH AGENDA

6.1 Theoretical implications

The first theoretical implication is that CEM should be treated as a distinct level of analysis connecting individual behavior with market systems. Consumer theories such as the theory of planned behavior, value-belief-norm models, identity theory, signaling, and perceived-risk frameworks explain important micro-level decisions, but they do not fully explain how circular markets are created. System-level

perspectives such as institutional theory, stakeholder theory, service-dominant logic, practice theory, and ecosystem theory can complement consumer models by explaining how norms, infrastructure, actors, and exchange rules interact.

Second, the field should distinguish circular adoption from circular effectiveness. A marketing campaign may increase purchases of a recycled-content product without reducing virgin-material demand if total consumption also rises. Likewise, a rental model may increase utilization but also increase transportation or cleaning impacts. Marketing outcomes should therefore be linked to circularity outcomes. This requires interdisciplinary collaboration with life-cycle assessment, operations, and material-flow analysis.

Third, the field should theorize the relationship between desirability and sufficiency. Marketing has traditionally been associated with demand stimulation, whereas some circular strategies depend on longer product use, reduced replacement, sharing, repair, or sufficiency. This creates a productive theoretical tension. The challenge is not to make marketing "anti-consumption," but to understand how firms can create economic value through services, relationships, maintenance, upgrading, access, and recovered products rather than ever-increasing throughput of new products.

6.2 Managerial implications

For managers, the results indicate that circular marketing should not begin with environmental claims. It should begin with a clear understanding of the customer problem that the circular model solves. Refurbished products may offer affordability; repair services may provide continuity and convenience; leasing may reduce upfront cost and technology risk; reusable packaging may improve experience; take-back programs may simplify disposal; and remanufactured components may provide supply security. Environmental benefits strengthen these propositions but rarely substitute for functional value. Managers should also reduce perceived risk through warranties, certification, transparent grading, traceability, quality assurance, return policies, and credible information. The prominence of perceived value, purchase intention, consumer attitude, and greenwashing-related terms in the conceptual structure suggests that trust is a central market bottleneck. In circular markets, ambiguity about a product's prior use or material history can be more important than the environmental claim itself.

A further implication concerns metrics. Firms should monitor not only sales and campaign responses but also return rates, repair uptake, product-life extension, reuse frequency, secondary-market conversion, percentage of recovered products recirculated, and customer retention across multiple life cycles. Such metrics would align marketing performance with circular business-model performance.

6.3 Future research agenda

The bibliometric structure points to six priorities for future research.

Table 7. Future research agenda for circular economy marketing

Priority	Core research problem	Illustrative future questions	Recommended approaches
Trust, claims, and greenwashing	Circular attributes are difficult for customers to verify	Which claims create trust without oversimplifying circularity? How do labels, warranties, product passports, and third-party certification affect adoption?	Field experiments; signaling models; conjoint analysis; eye tracking; regulatory comparisons

Priority	Core research problem	Illustrative future questions	Recommended approaches
From intention to actual behavior	Survey intentions may not translate into circular actions	What converts repair, return, reuse, resale, and refurbished-product intentions into behavior? Which frictions explain drop-off?	Transaction data; longitudinal panels; randomized interventions; platform analytics
Digital circular marketing	Digital technologies can enable traceability, personalization, and recommerce	How do AI, digital product passports, blockchain, and predictive maintenance reshape circular value propositions and trust?	Digital trace data; experiments; design science; platform studies
B2B ecosystem orchestration	Circular value is jointly created by multiple organizations	How are costs, risks, customer value, and recovered value distributed across circular ecosystems? How are circular B2B value propositions sold?	Network analysis; multiple case studies; dyadic surveys; ecosystem modeling
Emerging markets and cross-cultural heterogeneity	Circular behavior depends on infrastructure, income, norms, and informality	How do repair cultures, informal reuse markets, affordability, and regulation alter CEM effectiveness across countries?	Multi-country studies; institutional analysis; mixed methods; comparative field research
Marketing–environment outcome linkage	Market success may not guarantee material circularity	When does circular marketing produce real material displacement, life extension, or emission reduction? When does rebound occur?	Life-cycle assessment linked with marketing data; material-flow metrics; causal inference

Source note. Developed by the authors from the thematic, coupling, co-citation, and collaboration patterns identified in the supplied Biblioshiny report.

A seventh cross-cutting priority concerns theory integration. The literature would benefit from studies that connect micro-, meso-, and macro-level mechanisms. For example, a customer's willingness to return a product may depend on personal attitudes (micro), the convenience and reward structure of the firm's take-back program (meso), and national waste regulation or deposit-refund systems (macro). Multi-level models can explain why the same marketing intervention succeeds in one context and fails in another.

An eighth priority concerns vulnerable and underrepresented consumers. Circular offerings can generate inclusion benefits through lower-cost refurbished products, sharing, or service-based access, but they can also create exclusion when digital access, deposits, subscriptions, or repair infrastructure are unevenly distributed. Research should examine whether circular marketing contributes to a just transition or reproduces inequalities in access to durable products and services.

Finally, scholars should pay greater attention to temporal value. Circular relationships unfold over time, yet most marketing models are cross-sectional. Research should examine how trust develops after repair, how satisfaction changes over successive product lives, how residual-value expectations affect initial purchase, and how brand relationships evolve when the same product returns to the provider multiple times. These questions could connect customer-lifetime-value theory with product-lifetime-value and material-lifetime-value concepts.

VII. LIMITATIONS

This study has several limitations. First, the corpus is based on a Scopus-derived dataset. Although Scopus provides broad coverage of peer-reviewed journals, any single database can omit relevant publications indexed elsewhere, including regional journals, books, conference proceedings, and practitioner literature. Future studies could compare Scopus and Web of Science or conduct merged-database analyses with careful deduplication.

Second, bibliometric maps are sensitive to search strategy and terminology. The phrase "circular economy marketing" is not used consistently across the literature. Relevant work may be published under labels such as remanufacturing, recommerce, product-service systems, sustainable consumption, reuse, repair, green marketing, collaborative consumption, or reverse logistics without explicitly using the term circular economy. Conversely, broad searches may retrieve documents in which marketing is peripheral. Future research should test alternative query designs and report sensitivity analyses.

Third, keyword analysis is affected by synonymy and indexer vocabulary. The thematic results include both British and American spellings of behavior/behaviour, different forms of structural equation modeling, and generic index terms such as "article" and "human." Although the merged-keyword procedure reduces some fragmentation, additional thesaurus-based normalization could further improve conceptual clarity.

Fourth, citation indicators are time dependent. The most recent publications—especially those from 2025 and partial-year 2026—have had little time to accumulate citations. The study therefore combines co-citation with bibliographic coupling and thematic mapping, but future longitudinal analyses should revisit emerging clusters as citation windows mature.
Fifth, bibliometric structure does not by itself establish theoretical validity or environmental effectiveness. A highly central theme may be popular without being conceptually rigorous, and a frequently cited circular strategy may not always deliver net environmental benefits. Bibliometric findings should therefore be complemented by systematic content analysis, meta-analysis where comparable effect sizes exist, and empirical evaluation of actual circular outcomes.

VIII. CONCLUSION

Circular economy marketing has developed from a small and scattered literature into a rapidly expanding interdisciplinary research domain. The 408-article corpus analyzed in this study shows a 31.38% annual growth rate, substantial post-2020 acceleration, and a knowledge base that spans sustainability, operations, business models, consumer behavior, and marketing. The field's publication structure remains dispersed, but its conceptual structure is becoming clearer.

The science maps reveal three central conclusions. First, the intellectual foundation of CEM is anchored in general circular-economy conceptualization and circular business-model scholarship, with influential contributions associated with Geissdoerfer, Kirchherr, Bocken, Ghisellini, and related scholars. Second, consumer behavior, purchase intention, perceived value, and market acceptance have become a motor theme, demonstrating that demand-side circularity is now central rather than peripheral. Third, document coupling shows an emerging research front in which marketing is being reconsidered as part of circular value creation itself, rather than used merely as a communication tool for environmentally preferable products.

On this basis, the article defines circular economy marketing as the strategic market-shaping process through which organizations and ecosystems identify,

create, communicate, deliver, recover, and recirculate value in support of product-life extension, resource-loop closure, and regenerative consumption. This definition highlights a fundamental shift: CEM is not simply green promotion. It integrates value-proposition design, trust formation, behavioral activation, reverse-market participation, and ecosystem coordination.

The next phase of the field should therefore move beyond repetitive intention models and toward actual behavior, longitudinal relationships, B2B ecosystems, digital traceability, market-level transformation, and measurable environmental outcomes. The most consequential question is no longer whether consumers say they support circularity, but whether marketing systems can make circular behaviors convenient, credible, desirable, economically viable, and materially effective. Answering that question will determine whether marketing becomes a peripheral communication function in the circular transition or one of its central enabling capabilities.

Conflict of Interest statement

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this article.

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