

Bibliometric Analysis of Circular Economy & Consumer Behaviour

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ABSTRACT

This study conducts a comprehensive bibliometric analysis of 1,520 articles indexed in Scopus from 2015 to 2024, examining the evolving research landscape on the relationship between the Circular Economy and consumer behaviour. The primary objective is to map the scientific network and contributions within this domain. The analysis highlights a significant increase in research interest, with 2022 and 2023 recording the highest publication output, amounting to 124 articles. Among the leading contributors, R. Mugge stands out for making substantial scholarly contributions, while Delft University of Technology emerges as the most affiliated institution in this field.

From a geographical perspective, the United Kingdom leads with 62 indexed publications, closely followed by Italy with 61, reflecting global engagement in this area of study. The majority of these research articles fall under the Environmental Science category, emphasizing the interdisciplinary nature of the topic. Additionally, the Horizon 2020 Framework Programme is identified as the primary funding source, further highlighting the academic significance of this research.

A key finding of this study is that the strong correlation between the Circular Economy and consumer behaviour plays a crucial role in fostering customer loyalty. These insights hold substantial value for researchers, industry professionals, and policymakers, particularly in the field of economics, as they navigate strategies for sustainable consumer engagement.

Keywords: Bibliometric Analysis, Circular Economy, Consumer Behaviour, Sustainability, Economics.

1. Introduction:

In recent years, interest in the Circular Economy (CE) has been steadily increasing across various sectors, including society, businesses, and government entities. Traditionally, the dominant economic model was the linear approach, which prioritized continuous growth and relied heavily on resource consumption. However, the Circular Economy has emerged as a sustainable alternative, offering significant environmental benefits. Its unique role within the economic system distinguishes it from conventional models.

Shifting towards a Circular Economy necessitates a fundamental transformation at the corporate, industrial, and economic levels. This shift is primarily influenced by evolving societal values, norms, behaviours, and attitudes, which play a crucial role in driving this transition.

1.1 Consumer Behaviour and the Circular Economy

Consumer involvement in promoting the Circular Economy has been explored through various lenses, including studies on green consumer behaviour and the adoption of circular packaging. More broadly, recent research has focused on behavioural theories and their real-world application

to encourage consumers to embrace circular consumption practices. This includes analysing the effectiveness of marketing campaigns that emphasize the benefits of durable products and the environmental advantages of reusable alternatives over single-use items. Additionally, businesses are increasingly leveraging multiple touchpoints to engage more effectively with consumers and foster sustainable consumption habits.

2. Methodology

Bibliometric analysis, as defined by scholars, involves applying statistical techniques to publication data, including books and journal articles. This method is widely used to assess the academic influence of authors, research groups, and publications within a particular field. Various quantitative techniques, such as citation analysis, co-authorship analysis, keyword analysis, and journal analysis, are employed to examine scholarly contributions.

Citation analysis evaluates the impact of specific works, authors, or journals by assessing their citation frequency. Co-authorship analysis maps collaborative networks and interdisciplinary research patterns, while keyword analysis helps identify dominant themes and emerging research trends. This study utilizes bibliometric techniques to analyse 1,520 Scopus-indexed publications from 2015 to 2024. The dataset was sourced from SCOPUS, a widely recognized database for bibliometric research. Previous studies have explored author productivity and citation influence, offering valuable insights into publishing trends and research impact.

2.1 Data Source & Retrieval Strategy

The data for this study was retrieved from the Scopus database using a structured search query designed to capture relevant publications on the Circular Economy and consumer behavior.

The search was conducted using the following query:
TITLE-ABS-KEY ("circular" AND "economy" AND "consumer") AND PUBYEAR > 2014 AND PUBYEAR < 2025 AND (LIMIT-TO (EXACTKEYWORD, "Circular Economy") OR LIMIT-TO (EXACTKEYWORD, "Sustainable Development") OR LIMIT-TO (EXACTKEYWORD, "Sustainability") OR LIMIT-TO (EXACTKEYWORD, "Waste Management") OR LIMIT-TO (EXACTKEYWORD, "Consumption Behavior")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (DOCTYPE, "ar"))

This search strategy ensured the inclusion of relevant research articles published between 2015 and 2024 in peer-reviewed journals, focusing on key themes related to the Circular Economy, sustainability, and consumer behaviour. Only English-language articles were considered to maintain consistency in analysis.

2.2 Interpretation: Number of publications by year

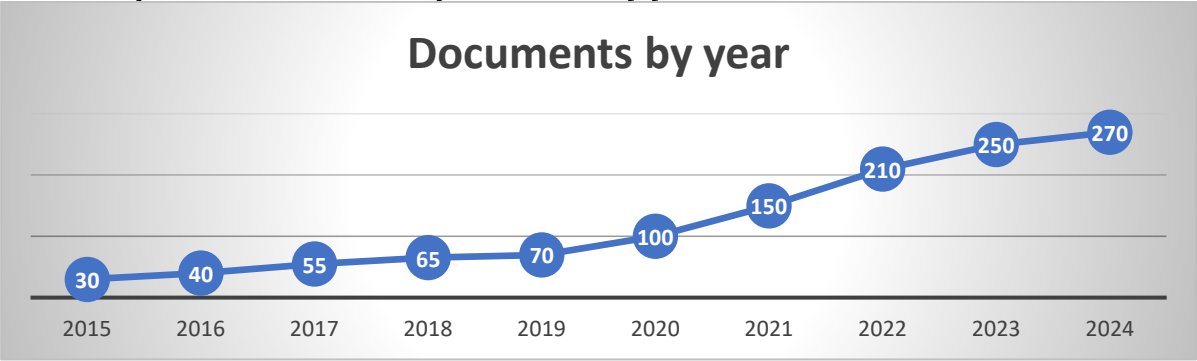


Fig. 1. Number of Publications by year

Fig. 1 illustrates the annual growth in research publications from 2015 to 2024, highlighting a steady upward trend in academic output. The data reveals a significant rise in the number of

publications in 2024, reaching 270, compared to 250 in 2023, 210 in 2022, 150 in 2021, 100 in 2020, 70 in 2019, and 65 in 2018. This consistent increase suggests a growing emphasis on research, likely influenced by emerging academic trends, increased funding availability, and evolving research priorities.

The period from 2015 to 2024 demonstrates sustained growth in scholarly contributions, reinforcing the importance of research in the academic and scientific communities. While there were fewer publications in the early years, the recent surge reflects the expansion and diversification of research domains globally. These findings underscore the increasing significance of publishing in indexed journals, such as those in Scopus, for enhanced visibility and academic impact.

2.3 Interpretation: Publications by subject area

Table 1. Top 10 Publication by subject area

Rank	Subject Area	Publications
1	Environmental Science	700
2	Energy	400
3	Engineering	350
4	Business and Management	320
5	Social Sciences	310
6	Computer Science	160
7	Decision Sciences	50
8	Medical Sciences	30
9	Mathematics	20
10	Arts and Humanities	18

The distribution of research documents across various subject areas underscores the diverse and interdisciplinary nature of academic research. Environmental Science leads with 700 publications, highlighting its crucial role in both practical applications and technological advancements. Energy follows with 400 publications, reflecting the growing academic interest in sustainable energy solutions. Engineering ranks third with 350 publications, emphasizing its importance in innovation and technical problem-solving.

Business and Management secure the fourth position with 320 publications, demonstrating their relevance in economic and organizational research. Social Sciences contribute significantly with 310 publications, providing insights into human behavior and societal trends. Computer Science, with 160 publications, showcases the increasing reliance on digital advancements in research. Decision Sciences (50 publications), Medical Sciences (30 publications), Mathematics (20 publications), and Arts and Humanities (18 publications) further illustrate the wide-ranging scope of academic exploration.

Recent studies emphasize the impact of publishing in SCOPUS-indexed journals on citation metrics and academic recognition. Research findings suggest a strong correlation between SCOPUS-indexed publications and increased citation rates, reinforcing their contribution to a researcher's visibility and scholarly influence.

2.4 Interpretation: Publication by Type

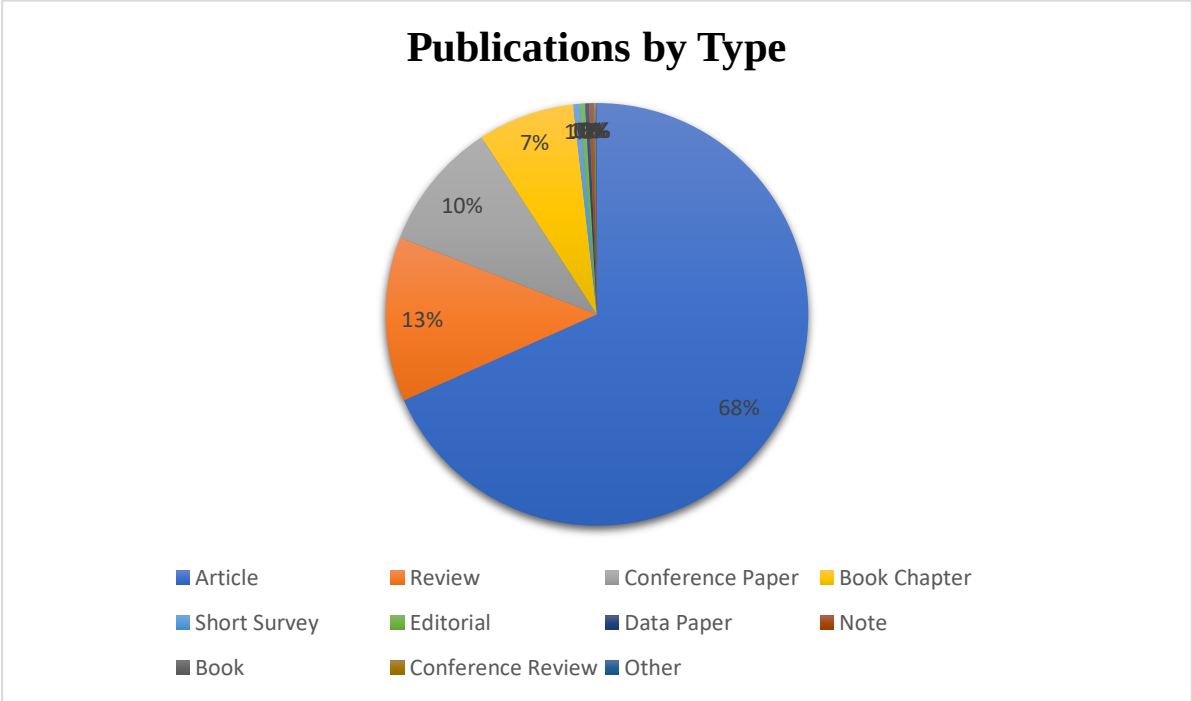


Fig. 2 Publications by Type

The dataset provides valuable insights into the types of academic publications, showcasing the diverse range of research contributions. Articles make up the largest portion, accounting for 68.4% of the total publications, emphasizing their prominence in scholarly communication. As comprehensive research papers, articles serve as a primary medium for disseminating detailed studies and findings across various disciplines.

Conference papers represent 9.9% of the dataset, highlighting the significance of academic conferences as platforms for presenting and sharing research insights. The inclusion of 7.4% book chapters suggests that many contributions are part of larger edited volumes, allowing researchers to focus on specific subjects within a broader academic work.

Table 2. Publication by Type

Top 10	Document Type	Percentage
1	Article	68.4
2	Review	12.6
3	Conference Paper	9.9
4	Book Chapter	7.4
5	Short Survey	0.5
6	Editorial	0.4
7	Data Paper	0.3
8	Note	0.3
9	Book	0.1
10	Conference Review	0.1

Reviews make up 12.6% of the dataset, indicating a substantial amount of literature dedicated to summarizing and critically evaluating existing research. Other document types, including short surveys (0.5%), editorials (0.4%), data papers (0.3%), and notes (0.3%), are less common, reflecting their specialized nature. Books (0.1%) and conference reviews (0.1%) are the least frequent, suggesting that full-length books and conference summaries are not the primary focus of this dataset.

The distribution of document types demonstrates the varied approaches scholars take to disseminate research. The predominance of journal articles suggests a strong focus on peer-reviewed contributions, while the presence of conference papers and book chapters underscores the importance of multiple publication formats. These findings align with trends observed in SCOPUS-indexed journals, where research articles, reviews, and conference papers remain the most prevalent publication types.

2.5 Interpretation: Publications by Countries

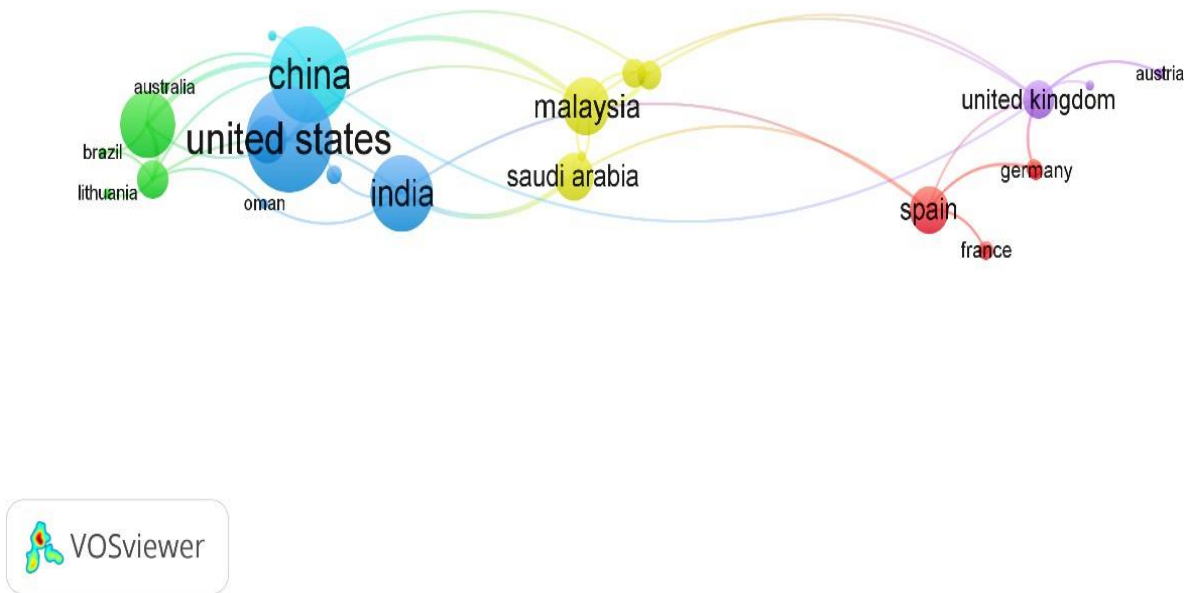


Fig. 3 Publication by Countries

Table 3. Top 10 Country’s Publication

Sr. No.	Country	Publications
1	United Kingdom	220
2	Italy	190
3	United States	135
4	India	125
5	Spain	120
6	Germany	115
7	China	100
8	Netherlands	95
9	Portugal	75
10	France	70

2.6 Interpretation: Publications by Author

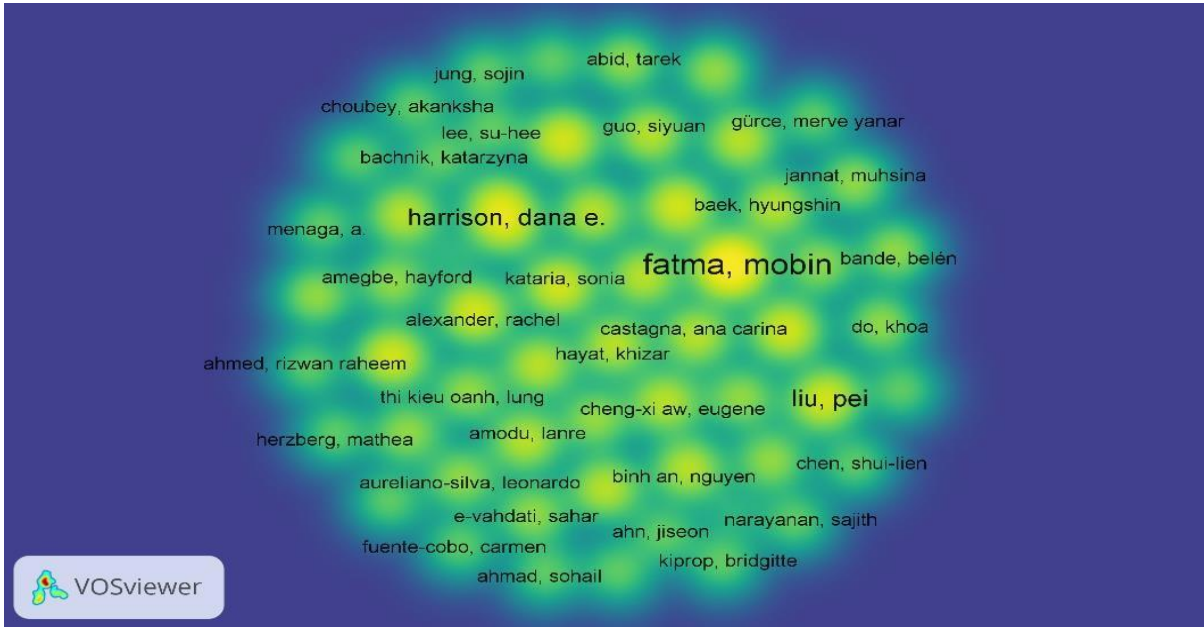


Fig. 4. Publications by Author

The distribution of research publications across different countries illustrates the diverse and international nature of scholarly contributions. The United Kingdom ranks first with 220 publications, demonstrating its significant role in academic research. Italy follows closely in second place with 190 publications, showcasing its strong research presence.

The United States ranks third with 135 publications, reflecting its continued impact in the academic sphere. India, Spain, and Germany occupy the next positions, emphasizing their contributions to global research. China ranks seventh with 100 publications, highlighting its increasing influence in international academic collaboration.

Completing the top ten, the Netherlands, Portugal, and France exhibit strong research engagement, contributing to a dynamic and collaborative global research landscape. These rankings suggest diverse academic priorities and the evolving nature of research productivity worldwide.

Global Research Trends and Implications

The international distribution of scholarly output underscores the growing participation of emerging economies in academic research. Previous studies have indicated that countries such as the United States, China, and leading European nations play dominant roles in research dissemination. Additionally, the increasing contributions from countries like India and Portugal highlight the shifting dynamics of global research collaboration.

These trends emphasize the importance of international cooperation in advancing scientific knowledge. As research output continues to expand across diverse regions, collaboration among countries will play a crucial role in fostering innovation and knowledge exchange in the academic community.

Table 4. Top 10 publications by Author

Rank	Author	Publications
1	Mugge, R.	10
2	Bocken, N.M.P.	9
3	Dalhammar, C.	9
4	De Meester, S.	8
5	Murakami, S.	8
6	Aldaco, R.	7
7	Babbitt, C.W.	7
8	Fogarassy, C.	6
9	Hobson, K.	6
10	Hussain, A.	6

Table 4 presents the ranking of authors based on their research contributions, highlighting the key scholars shaping the academic discourse on the topic.

- Mugge, R. (10 documents): Mugge leads the list with the highest number of publications, demonstrating a significant contribution to the field.
- Bocken, N.M.P. (9 documents): Bocken closely follows, reflecting a strong presence in academic research on the subject.
- Dalhammar, C. (9 documents): Dalhammar shares the second-highest ranking, underscoring their noteworthy contributions.
- De Meester, S. (8 documents): De Meester has made a substantial impact, contributing extensively to the topic.
- Murakami, S. (8 documents): Murakami's research output ties with De Meester, highlighting their role in advancing the field.
- Aldaco, R. (7 documents): Aldaco has made a notable contribution, reinforcing their academic influence.
- Babbitt, C.W. (7 documents): Babbitt shares the same ranking, indicating a consistent research presence.
- Fogarassy, C. (6 documents): Fogarassy has made valuable contributions, showcasing their engagement in the scholarly community.
- Hobson, K. (6 documents): Hobson's research work reflects a strong academic footprint in the field.
- Hussain, A. (6 documents): Hussain completes the top 10, emphasizing their role in advancing research in this domain.

The data suggests that these authors have played a crucial role in shaping the academic landscape of this research area. Their collective contributions significantly impact ongoing discussions and advancements in the field.

2.7 Interpretation: Occurrence of Keywords



Fig. 5 Keyword Occurrence

The keyword analysis in Figure 6 offers valuable insights into the primary themes and research trends within the literature. The term "Circular Economy" (CE) is the most frequently used

keyword, appearing 206 times, underscoring its central role in academic discussions. Closely associated terms, such as "Sustainable Development" (144 mentions) and "Life Cycle" (122 mentions), highlight the key objectives pursued through circular economy principles.

Additionally, keywords like "Consumer Behavior," "Consumer Attitude," and "Circular Economy" each appear 48 times, emphasizing their significance in the context of customer relationship management (CRM) and customer satisfaction. These terms suggest a strong focus on understanding consumer responses to circular economy practices.

Furthermore, "Recycling Process" and "Recycling Consumer Waste" illustrate the integration of marketing strategies with CRM to achieve customer-centric sustainability goals. The concepts of "Customer Experience" and "Customer Engagement" appear 17 times each, reflecting the increasing attention given to consumer interactions and their role in supporting circular economy initiatives.

This keyword analysis underscores the growing interdisciplinary interest in circular economy research between sustainability, consumer behavior, and data-driven marketing strategies. The findings suggest that effective data management, customer engagement, and recycling initiatives are essential components in advancing circular economy objectives.

2.8 Interpretation: Publications by Sponsors

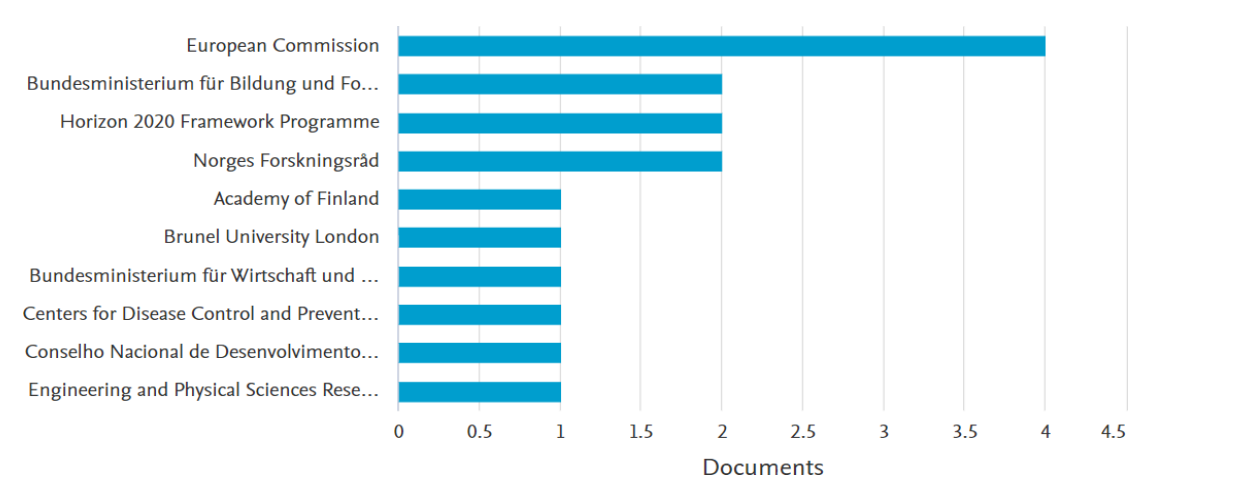


Fig 6. Top 10 Publication Sponsors

The analysis of Figure 6, which examines research publications based on their funding sponsors, provides valuable insights into the key organizations supporting advancements in the field. The top 10 funding sponsors demonstrate a strong commitment to fostering research in Circular Economy and related disciplines.

Among the leading sponsors, the European Commission stands out as a significant contributor, supporting four publications, highlighting Europe’s dedication to promoting sustainable research initiatives. Additionally, institutions such as the Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research, Germany), the Horizon 2020 Framework Programme, and Norges Forskningsråd (Research Council of Norway) have each sponsored two publications, reflecting a collaborative effort in advancing Circular Economy research. Further contributions come from institutions such as the Academy of Finland, Brunel University London, and the Bundesministerium für Wirtschaft und Energie (Federal Ministry for Economic Affairs and Energy, Germany), each funding one publication. Their involvement underscores the

growing interest in sustainability, waste management, and resource efficiency, signaling an expanding research landscape.

Previous studies have analyzed the role of funding sources in shaping academic research, exploring how industry sponsorships influence publication trends and potential biases. Research findings suggest that funding bodies significantly impact the direction, content, and dissemination of scholarly work.

The increasing investments in Circular Economy research indicate a promising trajectory, with expected growth in funding opportunities and broader integration into business strategies. As environmental challenges continue to intensify, research-driven innovations supported by these funding sponsors will play a crucial role in developing sustainable solutions to mitigate ecological risks.

3. Discussion & Conclusion

The analysis of the dataset provides a deep understanding of the current research landscape in the Circular Economy (CE) and its related domains. The data reflects a dynamic and continuously evolving academic field, offering valuable insights into key aspects of circular economy and consumer behavior.

Growth in Circular Economy Research. The steady increase in research publications over the years underscores the growing significance and sustained momentum within this field. The sharp rise in publication volume from 2015 to 2024, along with the consistent maintenance of a high research output, highlights the field's continued relevance and resilience.

The comparatively lower number of publications in the early 2000s, followed by a significant increase in recent years, suggests a notable shift in research focus. This transformation likely reflects the expansion of research domains and the globalization of academic investigations, reinforcing the Circular Economy as a vibrant and interdisciplinary field with increasing academic and practical applications.

Diversity in Research Subject Areas

The categorization of research articles by subject areas highlights the multidisciplinary nature of Circular Economy research. While Environmental Science, Energy, Engineering, Business, and Management remain the most published topics, the presence of other fields such as Computer Science, Decision Sciences, and Medical Sciences reflects the holistic approach required to understand and implement CE principles.

Additionally, contributions from Mathematics, Arts, and Humanities, though less frequent, provide specialized perspectives and theoretical frameworks, further enriching the field. The diverse range of subject areas illustrates the importance of interdisciplinary collaboration in advancing CE research.

Publication Types and Research Contributions

The analysis of publication types offers insights into the nature and emphasis of research contributions within Circular Economy studies. Among various document types:

- Articles (68.4%) are the most prevalent, emphasizing the commitment to in-depth, peer-reviewed research that advances the understanding of the Circular Economy.
- Reviews (12.6%) indicate a strong focus on synthesizing existing knowledge and providing critical assessments of CE research trends.
- Conference Papers (9.9%) highlight the active participation of researchers in academic discussions and knowledge dissemination through conferences.

- Book Chapters (7.4%) suggest ongoing collaborative contributions to edited volumes, providing specialized knowledge within broader research compilations.
- Short Surveys (0.5%), Editorials (0.4%), Data Papers (0.3%), and Notes (0.3%) represent concise and specialized scholarly contributions, adding varied perspectives and methodological insights to the research landscape.
- Books (0.1%) indicate the production of comprehensive academic works, making a significant impact on Circular Economy literature.
- Other document types, such as Conference Reviews, Letters, and Exam Papers, though less frequent, showcase additional forms of scholarly communication within the field.

Conclusion

The analysis of the data provides valuable insights into the evolving landscape of Circular Economy (CE) research, highlighting its consistent growth and increasing significance. Over the years, research in this field has expanded, covering a wide range of subject areas, publication types, and contributions from scholars and institutions worldwide.

Key themes emerging from recent studies include sustainable development, life cycle analysis, consumer behavior, consumer attitude, circular economy, and recycling processes. These topics reflect the multidimensional nature of Circular Economy research, emphasizing both environmental sustainability and consumer engagement.'

As this research domain continues to expand, it presents numerous opportunities for scholars, industry professionals, and policymakers to explore new insights, develop innovative solutions, and contribute to the advancement of Circular Economy principles. The diverse and dynamic nature of this field ensures that it will remain a critical area of academic and practical interest in the years to come.

Future Recommendation

Given the continuous evolution of the Circular Economy (CE) landscape, future research should focus on exploring the specific implications of CE strategies in addressing environmental and economic challenges.

One key area that requires deeper investigation is "Consumer Behavior", with relevant themes including consumer preferences, sustainable consumption, and green purchasing habits. Understanding how consumers engage with and react to CE initiatives is essential for developing targeted strategies that promote sustainable practices and align with global environmental priorities.

Additionally, there is a growing need to examine the role of advanced technologies, particularly "Blockchain Technology," in enhancing CE practices. Blockchain's capabilities in ensuring transparency, traceability, and efficiency could provide valuable insights into its potential to improve supply chain sustainability, waste management, and resource optimization.

By focusing on these emerging areas, researchers and industry practitioners can contribute to the advancement and refinement of CE business models. The ultimate objective is to enhance environmental sustainability, encourage responsible consumption, and optimize firm performance. This proactive and forward-looking approach ensures that CE strategies remain effective, adaptable, and responsive to evolving global challenges and opportunities.

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