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Circular Economy in the Hotel Industry: A General Mapping through Bibliometric Analysis

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Abstract

This study conducts a bibliometric analysis of circular economy strategies in the hotel industry, a topic that has gained relevance but lacks comprehensive synthesis. Unlike previous studies that address sustainability in general terms, this research focuses specifically on how circular practices are being studied and implemented in hospitality, identifying gaps in geographic coverage, technological integration, and economic evaluation. By analyzing trends, key actors, and collaboration networks through Scopus and Web of Science data, the study provides a novel perspective to guide future research and policy development.

Keywords: Circular Economy, Hotel Industry, Waste Management, Sustainability.

Introduction

The growing concern for sustainability and the need to adopt responsible practices have driven various industries, including hospitality, to explore innovative strategies that minimize their environmental impact (Singh et al., 2024). In this context, the circular economy has emerged as a comprehensive approach that advocates for reuse, recycling, and resource optimization to reduce waste and emissions, improving operational efficiency (Geissdoerfer et al., 2017). The implementation of the circular economy not only addresses environmental challenges but also offers competitive advantages by promoting resource management efficiency and enhancing the sustainable corporate image of hotel organizations (Rizos et al., 2016).

The concept of the circular economy has gained prominence in recent years as a response to the unsustainable linear model of “take, make, dispose.” It is grounded in principles of resource efficiency, waste minimization, and the creation of closed-loop systems that regenerate natural systems and extend product life cycles (Geissdoerfer et al., 2017). In the context of hospitality, these principles translate into practices such as sustainable procurement, food waste reduction, energy optimization, and local sourcing. However, the integration of circular economy principles into the hotel industry remains uneven and underexplored across different regions and organizational scales.

In parallel, bibliometric analysis has emerged as a robust and systematic method for mapping the evolution of research fields, identifying influential authors and journals, and detecting

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thematic trends and collaboration networks (Zupic & Čater, 2015). This method has been increasingly applied in sustainability-related fields to uncover knowledge gaps, support evidence-based decision-making, and guide future research agendas. Despite its potential, the application of bibliometric techniques specifically to circular economy practices in the hotel industry remains limited. This study addresses this gap by combining both fields to offer a comprehensive overview of the academic landscape.

Within the hotel sector, the adoption of circular practices is linked to efficient waste management, energy and water use optimization, and the promotion of local and sustainable products (Khatter, 2023; Voukkali et al., 2021). These efforts not only contribute to sustainability but also respond to the growing demand from more conscious consumers who seek tourist experiences that minimize negative environmental impact (Iyer et al., 2019). The literature suggests that through the implementation of circular economy strategies, the hotel industry can significantly contribute to global sustainability goals and generate positive changes in business and social practices (Bittner et al., 2024).

However, despite the increasing interest in the circular economy, research gaps remain that hinder a comprehensive understanding of its implementation in the hotel industry. In particular, a thorough analysis of trends, key actors, and the impact of these strategies in the sector is needed. This study addresses that need through a bibliometric analysis, providing a detailed overview of academic productivity, institutional collaborations, and the main focus areas in research on the circular economy in hospitality.

Research Questions

1. What are the main trends, key actors, thematic focuses, and collaboration patterns in the scientific literature on circular economy strategies in the hotel industry?

Therefore, this study not only aims to identify the main trends and actors but also to fill the existing gap in the literature by providing a comprehensive bibliometric synthesis that highlights underexplored areas, such as the role of technology and the economic implications of circular strategies in hospitality.

Despite growing interest, the literature remains fragmented and lacks a consolidated overview of how circular economy strategies are addressed within the hospitality sector. Most studies focus on isolated cases, specific waste management practices, or general sustainability efforts, often overlooking comparative trends, international collaboration, and the role of emerging technologies. Furthermore, there is a limited understanding of how these strategies influence broader economic and managerial outcomes in the hotel industry. This research addresses this gap by offering a bibliometric approach that maps the intellectual and collaborative structure of the field, providing a foundation for more integrated and impactful research.

Methodology

This study adopted a systematic approach based on bibliometric analysis, guided by the PRISMA guidelines (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to ensure transparency, reproducibility, and rigor throughout the process, through a systematic approach, five essential stages were carried out to ensure the rigor and relevance of the analysis.

Database Selection

Choosing the databases was a crucial step in this study. Scopus and Web of Science (WoS) were selected due to their reputation within the academic community and their ability to provide extensive coverage for bibliometric analysis. Scopus is notable for including over 25,000 active titles, making it a valuable resource for research in various disciplines, including social sciences and business management (Burnham, 2006). On the other hand, WoS offers access to high-impact research in interdisciplinary areas, which is particularly useful for analyzing the intersection between technology and tourism services (İyibildiren et al., 2023). To ensure the inclusion of relevant documents, the Social Sciences Citation Index (SSCI) and Science Citation Index Expanded (SCI-EXPANDED) collections were used in WoS, which cover publications from 1956 and 1900, respectively (Wouters, 2006).

Search Equation Definition

The search equations were tailored to the characteristics of each database. In Scopus, the following equation was used: TITLE-ABS-KEY("circular economy") AND TITLE-ABS-KEY("hotel industry" OR "hospitality" OR "hotels") AND TITLE-ABS-KEY("waste management" OR "sustainability" OR "resource efficiency"). For WoS, the equation applied was: TS=("circular economy") AND TS=("hotel industry" OR "hospitality" OR "hotels") AND TS=("waste management" OR "sustainability" OR "resource efficiency"). Both searches were conducted on October 14, 2024, ensuring that the collected information was current and relevant.

Inclusion and Exclusion Criteria

To ensure the quality and relevance of the selected documents, clear inclusion and exclusion criteria were established for both databases (Zupic & Čater, 2015). In Scopus, all subject areas and scientific articles were included. Additionally, the search was limited to documents in English and Spanish. In WoS, a similar strategy was adopted, but the focus was restricted to articles, the most common format for disseminating high-quality research. As with Scopus, literature in English was included to maintain a fair comparison between the databases.

Bibliometric Analysis

The bibliometric analysis was structured into four key components that allow a deep understanding of the dynamics of research in this field:

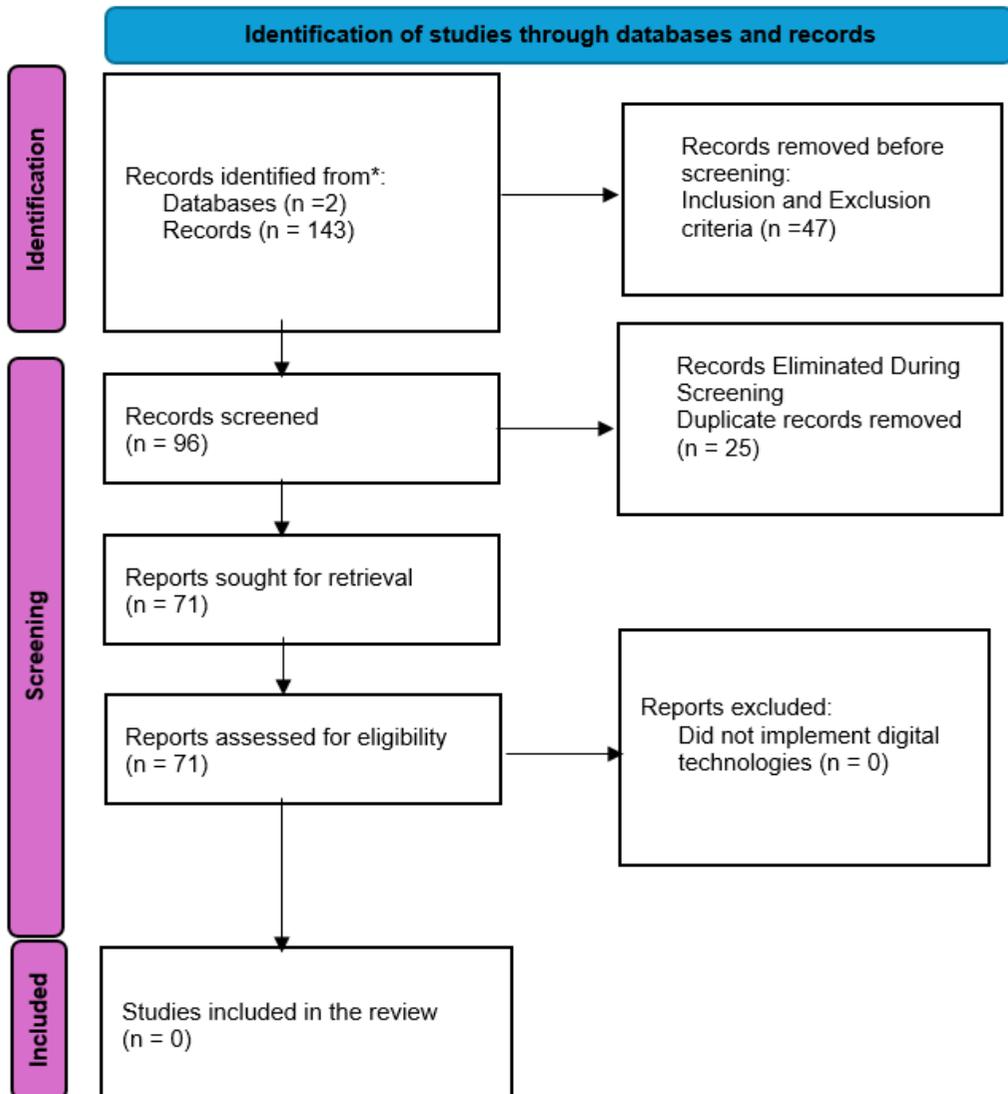
1. **Productivity and Citations:** Evaluation of academic production and the impact of publications.
2. **Sources:** Identification of the most influential journals and conferences in the area.
3. **Institutional and Country Contributions:** Analysis of the most active actors in research.
4. **Intellectual Structure:** Exploration of the co-occurrence network of author keywords.

Software Selection

For data analysis, RStudio was used in conjunction with the R language (version 4.4.1), incorporating the tidyverse library for processing and analyzing data related to authors, journals, and countries. Additionally, VOSviewer (version 1.6.20) was employed for network analysis, which allowed for the visualization of collaboration and co-citation structures among authors, as well as the identification of thematic trends through keyword analysis.

Results

The initial search yielded 101 documents in Scopus and 42 in WoS. After applying the inclusion and exclusion criteria, a total of 96 documents were selected: 59 from Scopus and 37 from WoS. Subsequently, the "left_join" function from the "dplyr" package was used to identify duplicate documents between both scientific databases, and 25 duplicate documents were found, leaving a total of 71 documents for analysis: 34 from Scopus, 12 from WoS, and 25 from both databases (Figure 1).



The bibliometric analysis was structured into several key dimensions. First, an analysis of productivity and citations was conducted to identify the most prolific authors and the most cited documents. Second, the main sources that published the documents were analyzed. In addition,

the most active institutions and countries in this research area were evaluated, identifying the main contributions at the international level. Finally, an analysis of the intellectual structure was conducted using institutional collaboration networks and keyword co-occurrence.

Productivity and Citations Analysis

Figure 1 shows the evolution of scientific productivity and citations related to the topic of study between the years 2018 and 2024.

Scientific Productivity

In terms of productivity, a general growth trend is observed over the years. In 2018, 4 documents were published, while in 2019, the number decreased to 1 document. Starting in 2020, productivity showed a significant increase with 11 publications, reaching its peak in 2023 with 15 documents. This continuous increase in academic output indicates that the circular economy in the hotel industry has gained considerable attention in recent years.

By 2024, although the year is not yet complete, 13 documents have already been recorded, suggesting that productivity will remain strong compared to previous years. The constant rise in publications highlights the growing importance of the topic, which can be attributed to the interest in promoting sustainable practices in the hotel sector.

Citations Received

The citation analysis shows that while productivity has increased, the impact in terms of citations has been more volatile. In 2018, the 4 published documents generated 143 citations, indicating a good level of impact. However, in 2019, despite only 1 document being published, it received 74 citations, also reflecting its relevance.

The year 2020 was the most notable in terms of citations, with 453 citations from the 11 documents published. This high number of citations suggests that the work from that year was highly influential in the field of circular economy and hotel sustainability. In 2021, although a greater number of documents were published (14), the number of citations decreased slightly to 323, which is still a significant number.

In the following years, citations showed a downward trend. In 2022, despite 13 documents being published, citations dropped significantly to 98. In 2023, the number of citations rose moderately to 136, and as of 2024, 63 citations have been recorded for the 13 documents already published.

Relationship between Productivity and Citations

Despite the constant growth in academic output, the number of citations has shown a decline since 2021. This may be due to several factors, such as increasing competition in research on circular economy in other sectors or simply the fact that more recent work has not yet had enough time to be widely cited.

Figure 1 reflects a positive trend in terms of academic production on the circular economy in the hotel industry. However, the impact measured by citations has been more variable, with 2020 and 2021 standing out. It is likely that citations for more recent documents will increase over time as they become more integrated into academic and practical discussions in the sector.

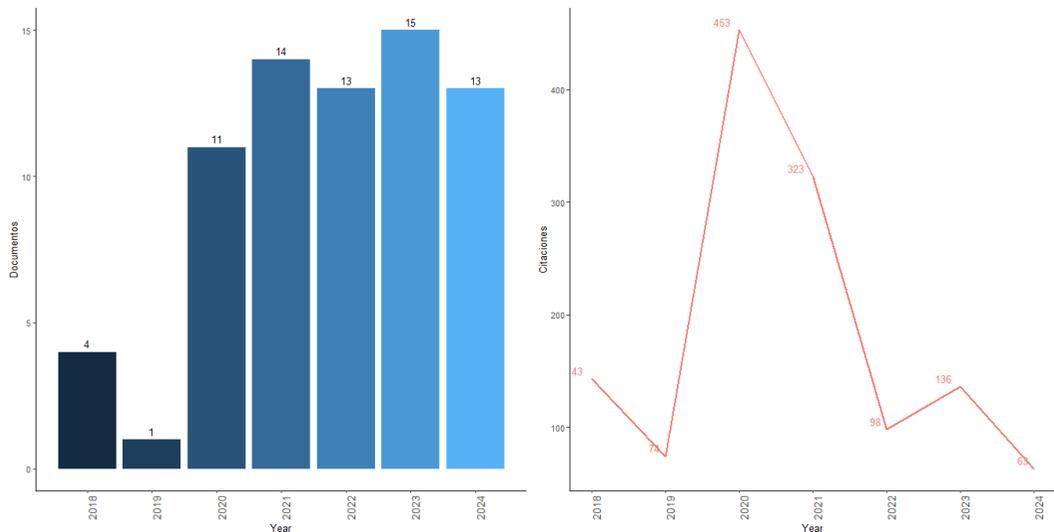


Figure 1: Annual Evolution of Publications and Citations

The first articles were published in 2018, with four studies released that year. Of these four documents, the study by Fieschi and Pretato stands out as the third most impactful document (58 citations). According to Fieschi & Pretato (2018), between 88 and 100 million tons of food waste are generated annually in Europe, with a significant environmental impact in terms of CO₂ emissions. The hospitality sector, which includes restaurants and catering services, is responsible for 12% of this waste. The choice of tableware and utensils can notably influence the management of this waste. A comparative study shows that using biodegradable and compostable tableware, combined with the recycling of organic waste, is the most sustainable option in terms of carbon, water, and resource footprints compared to traditional plastic tableware. This strategy aligns with the principles of the circular economy and can be implemented in the hotel industry to reduce its environmental impact.

In the same year (2018), the second most significant document (41 citations) was the study by Pamfilie et al. (2018) on the circular economy in Romania's hotel industry. This study addresses how the adoption of integrated management systems based on standards like ISO 9001, ISO 14001, and OHSAS 18001 can influence the economic and environmental performance of hotels. However, the authors conclude that despite progress, the Romanian hotel sector is not fully prepared to adopt circular economy principles due to a lack of effective integration of management systems and low consumer demand for sustainable practices.

Also in 2018, according to Menegaki (2018), the circular economy has emerged as a priority on the agendas of global economic, environmental, and social institutions. The author highlights that, although the European Commission has placed particular emphasis on zero waste reduction, the concept of the circular economy encompasses much more than that. Menegaki's study (2018) underscores the importance of tourism to Greece's economy, implying that Greek hotels are increasingly focused on adopting sustainable practices to improve their economic performance and attract environmentally conscious tourists.

In 2019, there was a 75% decrease in the number of publications; however, this single study achieved the second-highest impact (74 citations) among the 71 documents analyzed. The work

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by Jones & Wynn (2019) offers an accessible exploratory review of how academics and businesses approach the circular economy, natural capital, and resilience in the hospitality industry. It highlights the need to explore how information systems can better support these concepts and the general management of sustainability.

The most impactful document (338 citations) is the research by Pencarelli (2020), which analyzes the changes in the digital tourist experience before, during, and after travel, as well as the challenges for tourist destinations and ecosystems from a smart perspective. The study concludes that in the future, tourist destinations will not only need to adopt digital innovations but also incorporate circular economy principles.

Another notable document (46 citations) is the study by Camilleri (2021), which focuses on sustainable food production and consumption in tourist cities through the implementation of circular economy policies. This work analyzes practices in hotels and restaurants that aim to minimize food waste through preventive measures, recycling, and the use of technologies such as composting and energy generation from organic waste.

Source Analysis

In total, the 71 documents were published in 46 different journals. Table 1 presents the journals that have published more than one document on the topic of study, and Table 2 shows the journals that have obtained the most scientific impact measured by the number of citations.

Table 1 shows the journals with more than one published document on the topic of study. This table highlights the main academic dissemination sources where studies on this topic have been concentrated.

The journal *Sustainability (Switzerland)* leads the list with 12 documents, indicating its relevance as one of the main publishing outlets for research focused on sustainability and the circular economy. The presence of this journal in the top spot reinforces its focus on topics that combine sustainability with various sectors, including tourism and hospitality. In this journal, studies have focused on sustainable production and consumption in tourist cities through the circular economy (Camilleri, 2021). Another study published in this journal implemented a circular economy model based on waste reduction and the integration of the local community into sustainable practices. The study by Ahmed et al. (2021) describes how the leadership of the hotel (Frangipani Langkawi Resort and Spa in Malaysia) has promoted environmental and socio-economic development through the adoption of organic farming, waste management, and the use of renewable energies. In the same journal, Rubino et al. (2020) highlight the importance of adopting circular strategies in the hotel industry, such as the reuse and recycling of construction materials, particularly in urban areas where heritage preservation is key. This reinforces the need for integrated urban planning that fosters both environmental sustainability and economic development around heritage sites. Vardopoulos et al. (2023) explore how smart tourist cities can use emerging technologies to promote cultural sustainability and real estate development, directly impacting the hotel sector. This approach combines the sustainable management of urban resources with the valorization of tourist and cultural assets, creating an ideal platform for adopting circular economy principles within the hotel industry.

Following *Sustainability (Switzerland)* is the journal *Worldwide Hospitality and Tourism Themes* with 6 documents. This publication stands out for its focus on the hospitality industry, demonstrating the growing interest in applying sustainable practices within this specific sector. The most prominent document (11 citations) in this journal is the study by Stombelli (2020),

which indicates that socio-economic engagement and factual certainty should be improved, and hospitality businesses must play a role in both measuring and publishing the benefits of committing to Corporate Social Responsibility (CSR) and funding sustainability research. If this happens and the UN's Sustainable Development Goals (SDGs) are met, the future will benefit from a circular economy where resources are not discarded but maintained, repaired, reused, refurbished, and renewed before being recycled. Another study published in this journal, which reached 10 citations, suggests that the proper utilization of the SDGs would be excellent drivers of the circular economy in the hotel sector (Khodaiji & Christopoulou, 2020).

Next is the *British Food Journal* with 3 documents, indicating that the topic of the circular economy in the hotel industry is also being explored from a perspective related to food and responsible consumption. In this journal, the research by Bowen et al. (2024) stands out. The study investigates how small and medium-sized enterprises (SMEs) in the hospitality sector in the United Kingdom adopted circular economy practices in response to the pandemic crisis, implementing actions aimed at waste reduction, recycling, and strengthening local supply chains. Despite the desire of these companies to engage in circular activities, high costs and lack of resources were significant barriers. Additionally, the article highlights the importance of collaboration with the local community to overcome challenges and promote more sustainable practices. The authors conclude that circular economy strategies not only support environmental sustainability but also strengthen SMEs' resilience to economic adversity, which is especially relevant in the post-pandemic scenario.

The journals *Circular Economy and Sustainability*, *International Journal of Contemporary Hospitality Management*, *Journal of Cleaner Production*, *Scandinavian Journal of Hospitality and Tourism*, and *Sustainable Production and Consumption* each have two publications. This group of journals reflects the diverse and multidisciplinary interest in the circular economy in the hotel industry, covering everything from broader sustainability and clean production approaches to publications specifically focused on hospitality. For example, in the journal *Circular Economy and Sustainability*, Hadzi-Nikolova et al. (2022) published a study analyzing the implementation of circular economy strategies in the management of biological waste in tourist areas of North Macedonia, focusing on the use of innovative technologies like the "Pay-As-You-Throw" (PAYT) system and Autonomous Composting Units (ACUs) in Probishtip. These technologies allow the separation and composting of organic waste, encouraging hotels and restaurants to reduce waste generation and promote local sustainability through compost production. The benefits include reduced waste in landfills, lower carbon footprints, and increased environmental awareness. The study suggests that these solutions can be replicated in other tourist regions to promote the circular economy in the hotel sector. Another study highlights that although some businesses have incorporated circular economy concepts into their sustainability strategies, challenges remain to implement them comprehensively in management, proposing that information systems can play a crucial role in supporting the transition to more sustainable practices (Jones & Wynn, 2019).

Table 1 reveals that research on the circular economy in the hotel industry is mainly concentrated in journals focused on sustainability, tourism, and hospitality, underscoring the growing importance of this field in the academic domain.

Journal	Documents
Sustainability (Switzerland)	12

Worldwide Hospitality and Tourism Themes	6
British Food Journal	3
Circular Economy and Sustainability	2
International Journal of Contemporary Hospitality Management	2
Journal of Cleaner Production	2
Scandinavian Journal of Hospitality and Tourism	2
Sustainable Production and Consumption	2

Table 1: Journals with the Highest Number of Publications

Table 2 presents the main academic sources ranked by the number of citations received in the field of "Circular Economy Strategies in the Hotel Industry." This analysis allows us to identify which journals have had the greatest academic impact within this topic, measuring the influence of publications through citations.

At the top of the list is the journal *Information Technology and Tourism* with 338 citations. This figure suggests that the single study published in this journal has had a significant impact on the academic community, probably due to the growing intersection between information technology and sustainability solutions in tourism—a key area within the circular economy applied to hospitality (Pencarelli, 2020).

Next is *Sustainability (Switzerland)* with 253 citations. This is a considerable number, confirming that, besides being the journal with the most publications (according to Table 1), it is also one of the most influential in terms of citations. This reinforces its central role in the dissemination of research on sustainability, making it a key source for circular economy topics (Münster, 2024).

The *International Journal of Contemporary Hospitality Management* occupies the third place with 74 citations. Although it has only one publication compared to other journals with more than one publication, the citations received indicate its relevance within the hospitality sector.

In fourth place is the *Scandinavian Journal of Hospitality and Tourism* with 68 citations, suggesting that the studies published in this journal have also had a considerable impact, especially in the Scandinavian region, where sustainable tourism has received special attention. The study by Sorin & Sivarajah (2021) gathers opinions from ten managers of Scandinavian hotel chains. The results of the study highlight the interest of the respondents and show a level of understanding ranging from introductory to intermediate regarding the circular economy.

Waste Management and *Waste Management and Research* occupy the next positions with 58 and 51 citations, respectively. The presence of these two journals in the table reflects the importance of waste management as a key component of the circular economy, especially in the hotel industry, where waste reduction is a growing priority (Voukkali et al., 2021; Fieschi & Pretato, 2018).

The journal *Amfiteatru Economic*, with 77 citations, also has a notable impact. Although it is not at the top of the list in terms of published documents, its presence here indicates that its articles related to the circular economy are being widely cited. In this journal, the study by Pamfilie et al. (2018) suggests that the transition to the circular economy in the hotel industry will require greater integration of environmental management with quality and safety systems.

Finally, *Worldwide Hospitality and Tourism Themes* has 33 citations, suggesting that although this journal has a relatively high number of publications on the topic, its impact, as measured by citations, is lower compared to other journals mentioned.

Table 2 shows that, although some journals publish a large number of articles on the circular economy, citations are not always directly correlated with the number of documents. The most influential journals, such as *Information Technology and Tourism* and *Sustainability (Switzerland)*, have both a significant volume of publications and a high number of citations, positioning them as key sources in this field. Other journals, like *Waste Management* and *Amfiteatru Economic*, despite publishing fewer documents, have a considerable academic impact in terms of citations.

Journal	Citations
Information Technology and Tourism	338
Sustainability (Switzerland)	253
International Journal of Contemporary Hospitality Management	74
Scandinavian Journal of Hospitality and Tourism	68
Waste Management	58
Waste Management and Research	51
Amfiteatru Economic	77
Worldwide Hospitality and Tourism Themes	33

Table 2: Leading Journals by Number of Citations

Analysis of Institutional and Country Contributions

Figure 2 shows an academic collaboration graph that reflects the cooperation network among various academic and research institutions. This type of visualization is commonly used in bibliometric analyses to show the level of interaction and collaboration between different entities in scientific production.

In this graph, the nodes represent institutions, while the lines connecting these nodes indicate the existence of collaborative relationships, such as co-authorships in scientific publications. The density and thickness of the lines suggest the frequency and level of cooperation between institutions. In this case, a dense network with multiple interconnections is observed, indicating that the represented institutions work collaboratively on multiple projects or studies related to sustainability and the circular economy in hospitality.

One of the most prominent nodes is *Pieriki Anaptixiaki S.A.*, which appears to be connected with most other institutions, indicating its central role in this research network. This institution seems to act as a key point of collaboration, likely leading projects or coordinating research involving other organizations. Other notable institutions include the *Laboratory of Solid Waste & WA*, *Faculty of Natural and Technic*, *Faculty of Economy Goce Delcev*, and *Goce Delcev University Shtip*, all of which have numerous connections linking them to other entities in the network.

An interesting aspect of this network is the international collaboration. Several institutions are located in different countries, such as *Katerini, Greece*, *Yermasoyia, Cyprus*, and *Probishtip, North Macedonia*, indicating that this research group operates internationally. This type of

collaboration is common in studies addressing global issues like sustainability and waste management, topics that likely form the focus of these institutions.

Since one of the key institutions is the *Laboratory of Solid Waste & WA*, it is probable that many of the collaborations are focused on topics related to solid waste management, the circular economy, and environmental sustainability. These topics are of increasing importance in current research due to the need to find more sustainable solutions for resource management and waste minimization, especially in sectors like tourism and hospitality.

In summary, Figure 1 shows a network of academic and research institutions with a high degree of cooperation, especially in the field of sustainability and the circular economy. International collaborations stand out as a key factor for the success of these studies, suggesting that the institutions involved are committed to seeking global solutions to environmental challenges.

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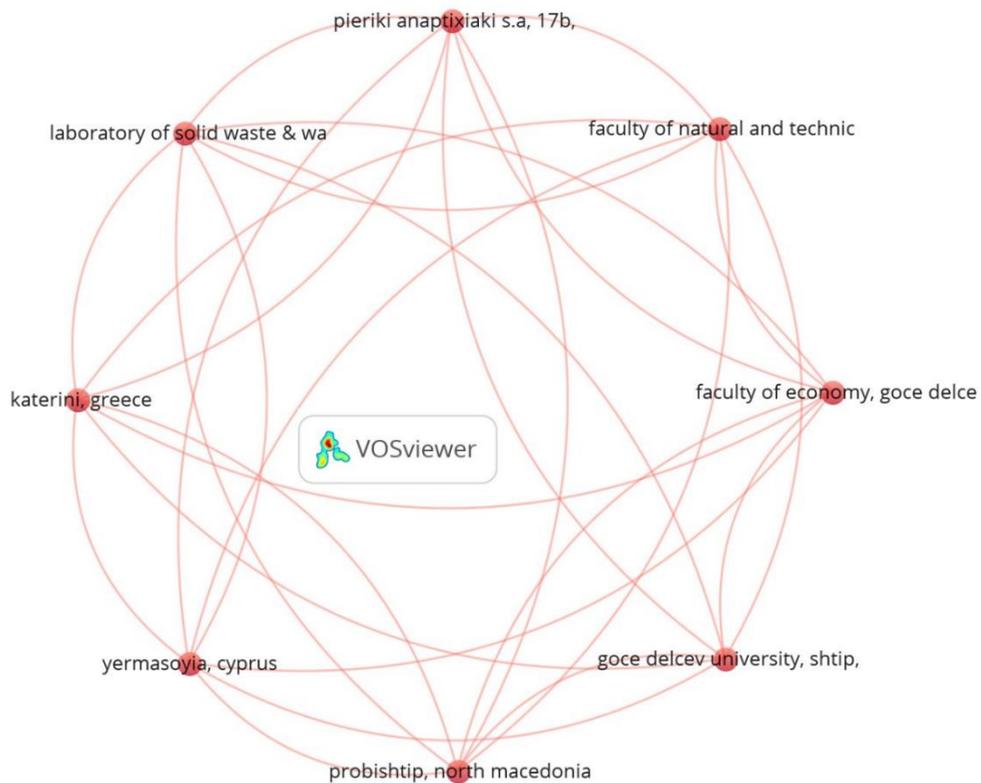


Figure 2: Academic Collaboration Network

Figure 3 presents an international collaboration network among several countries. This figure allows us to analyze how scientific collaborations are distributed across different nations, highlighting the countries that have the greatest participation in joint publications and how they interact with each other in the academic field.

Analysis of International Collaboration

The United Kingdom emerges as the most prominent country in terms of scientific collaborations, with the largest node and numerous connections with other nations. This indicates that the United Kingdom plays a key role in research on topics like the circular economy, sustainability, and tourism, acting as a hub for coordinating multiple international research projects. The strong participation of the United Kingdom underscores its importance within the global scientific community about these topics. A recent study by UK researchers explored the potential of interviewing food service providers and farmers, demonstrating that stakeholders are willing to adopt industrial symbiosis for food waste recovery. This adoption could also strengthen social capital and networks among these stakeholders. To promote greater adoption, policymakers are encouraged to foster cross-sector capacity building that connects food services with farmers, which would not only reduce food waste but also contribute to the creation of more resilient and responsive supply chains (Filimonau & Ermolaev, 2022).

At the same time, the Netherlands also stands out in the network, though with a slightly smaller node than the United Kingdom. This country shows a high level of interaction with other nations, reflecting its relevance in collaborative scientific production in areas related to sustainability and resource management. The Netherlands has been a key player in international research due to its focus on innovative and sustainable solutions for waste management and the circular economy (Bittner et al., 2024; Tomassini & Cavagnaro, 2022).

Other countries with smaller nodes, such as Russia, France, the United States, Finland, Sweden, and Canada, are also observed in the network. Although their nodes are smaller, these nations are connected to multiple countries, indicating their active participation in joint research, though on a smaller scale than the United Kingdom or the Netherlands. For example, the United States and France are well connected to other nations, suggesting strong participation in global research networks, particularly in interdisciplinary areas such as sustainability.

It is worth noting the regional collaboration among Nordic countries, such as Finland and Sweden, which show a strong interrelationship. This type of cooperation may be focused on research related to resource management and sustainability, topics in which Nordic countries have been pioneers.

Connections and Global Collaboration

The graph shows that the lines connecting the various countries are quite fluid and well-distributed, indicating widespread international cooperation. These connections allow countries to exchange knowledge and experiences, generating joint research that addresses global challenges such as climate change, waste management, and the circular economy. Countries like Russia and the Netherlands seem to act as intermediaries, connecting distant regions and facilitating the dissemination of knowledge.

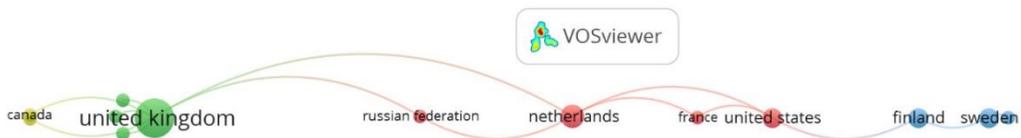


Figure 3: International Collaboration Map

Analysis of Intellectual Structure

Figure 4 presents a map of key terms in the context of research on the circular economy, generated with VOSviewer. In this graph, the nodes represent concepts or keywords that have been frequently used in studies related to the circular economy, and the lines connecting them indicate the relationship between these terms in the scientific literature. The size of the nodes reflects the frequency of occurrence of the terms, while the proximity between them indicates the correlation or co-occurrence in joint studies.

Main Concepts

The most prominent term in the graph is "circular economy," located in the center of the map and connected to a broad network of other concepts. This indicates that the circular economy is

the central theme of most of the research represented in the graph, and it is linked to various subthemes within the sustainability field (Fieschi & Pretato, 2018) and even in the context of the COVID-19 pandemic (Polinkevych & Kamiński, 2020).

Surrounding the term "circular economy," several key concepts are found, highlighting topics such as "sustainable development," "hospitality," "tourism," and "food waste." The connection of the circular economy with these themes shows how sustainable and circular practices have been integrated into various areas of the hospitality and tourism industry, particularly in terms of resource and waste management (Gruia et al., 2021; Cordova-Buiza et al., 2022; Diaz-Farina et al., 2023).

Key Subtopics

- **Sustainable Development:** The node "sustainable development" is closely connected with the circular economy, indicating that much of the literature in this field is linked to sustainable development goals (Matteucci, 2020; Domínguez Paredes, 2024). This concept is associated with terms such as "climate change," "adaptive reuse," and "environmental strategy," suggesting that circular strategies are a key approach for mitigating environmental impact and promoting sustainability (Rudan et al., 2021; Julião et al., 2020).
- **Hospitality and Tourism:** The terms "hospitality" and "tourism" are also strongly linked to the circular economy. This reflects how these sectors have adopted sustainable practices to improve their environmental impact (Estévez et al., 2022; Wiprächtiger et al., 2023). The presence of subtopics like "supply chain," "cultural tourism," and "hotel industry" indicates that circular economy initiatives have extended into various areas of hotel management, from the supply chain to cultural preservation. Circularity in supply chains promotes a more direct and efficient relationship between hotels and local suppliers, eliminating intermediaries and reducing environmental impact by purchasing local products and minimizing waste. This practice not only helps reduce waste but also strengthens local economies by supporting nearby producers and creating more resilient and sustainable sourcing systems (Renfors & Wendt, 2024).
- **Food Waste and Waste Management:** Another important subtopic is "food waste" and "waste management." Both are directly connected to the circular economy, indicating the importance of reducing waste in the hospitality and tourism sectors. The presence of concepts such as "surplus food" and "circular practices" suggests that there is a growing focus on improving efficiency and sustainability in food resource management. The study by Parsa et al. (2024) investigates various options for food waste management, demonstrating that reducing and redistributing surplus food in sectors like catering and retail not only benefits the environment but also has a positive impact on the economy and society.
- **COVID-19 and its Impact on the Circular Economy:** On the right side of the graph, a connection between "COVID-19" and the circular economy is observed, reflecting the impact of the pandemic on the implementation of sustainable practices. The crisis caused by COVID-19 has prompted a review of practices in hospitality and tourism, encouraging the adoption of more sustainable solutions (Polinkevych & Kamiński, 2020; Rubino et al., 2020).

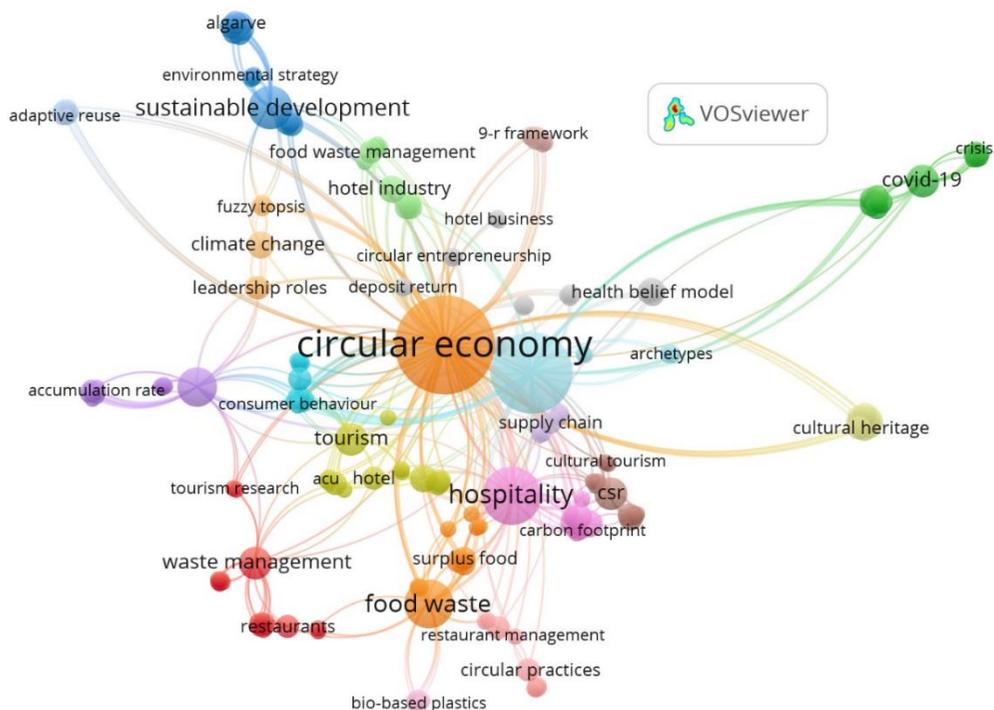


Figure 4: Keyword Co-occurrence Map

Discussion

This bibliometric analysis highlights the growing interest in the circular economy within the hotel industry, a key sector for global sustainability due to its significant impact on natural resource consumption and waste generation. As sustainability has become a priority in international agendas, the hotel industry has begun adopting circular practices to improve its environmental and economic performance. However, the analysis reveals that, despite the growth in scientific production in recent years, there are still significant gaps in research that limit a comprehensive understanding of the implementation of the circular economy in this sector.

One of the most important findings is the predominant focus on waste management, particularly food waste, as a key strategy for advancing circularity. Studies such as those by Fieschi & Pretato (2018) and Camilleri (2021) emphasize the importance of reducing waste through the use of compostable tableware and the implementation of waste management policies, respectively. These practices not only address environmental challenges but also offer competitive advantages by reducing operational costs and improving the reputation of hotels among consumers who are increasingly aware of the environmental impact of their purchasing decisions. However, the integration of these circular practices in the sector remains uneven, depending largely on factors such as geographic location, company size, and access to sustainable technologies.

Another key aspect identified in the analysis is the active participation of European countries, particularly the United Kingdom and the Netherlands, in research on the circular economy in the hotel industry. International collaboration, as reflected in the academic cooperation network,

suggests that European countries are leading research and the implementation of circular strategies, driven by strict environmental regulations and a greater demand for sustainable practices in the region. The prominence of these countries may also be related to government support for research and the development of innovative solutions for resource management. However, there is limited participation from developing countries in the international collaboration networks, highlighting the need to promote research and policies that encourage the adoption of the circular economy in regions with less access to sustainable technologies.

In terms of scientific productivity, a notable increase has been observed since 2020, coinciding with the growing global awareness of the need to transition to more sustainable economies. The surge in publications in this field appears to be driven by pressure from the Sustainable Development Goals (SDGs), which call for industries, including hospitality, to adopt more responsible practices to reduce their environmental impact. Despite this increase in scientific output, the citation analysis reveals that the influence of these studies has been volatile. In recent years, despite an increase in the number of publications, the impact in terms of citations has decreased. This could be explained by the relative novelty of the topic, implying that the research still needs time to be widely adopted and cited in academic literature.

One of the least explored areas in the literature is the relationship between the circular economy and the economic and social aspects of hotel management. While most studies have focused on waste reduction and resource efficiency (Parsa et al., 2024; Estévez et al., 2022), there has been less research on how circular practices impact financial outcomes and the relationship between hotels and local communities. The literature suggests that the implementation of sustainable practices can strengthen the competitiveness of hotel companies by improving their efficiency and reputation (Julião et al., 2020). However, empirical studies measuring the actual economic impact of these strategies in different contexts, particularly in emerging economies, are lacking. Moreover, more research is needed on the role of consumers in the adoption of circular practices, given that their preferences are shifting toward more sustainable experiences, but the extent of their willingness to pay for these services is still unknown.

The analysis also highlights the importance of certain journals, such as *Sustainability (Switzerland)* and *Worldwide Hospitality and Tourism Themes*, which have played a fundamental role in disseminating studies on the circular economy in hospitality. The prominence of these journals suggests an interdisciplinary interest that spans not only sustainability but also hospitality and tourism, reinforcing the relevance of the circular economy as a cross-cutting approach that can be applied to different sectors of the economy. However, the dispersion of studies across various journals also suggests a lack of consolidation in the field, which could hinder collaboration between researchers and the efficient dissemination of knowledge.

Another significant finding is the limited integration of emerging technologies in the implementation of circular practices in the hotel sector. Although some studies, such as Pencarelli (2020), highlight the role of digitization and technology in transforming the industry, most research on the circular economy in hospitality has not addressed how technologies like artificial intelligence or the Internet of Things can facilitate the adoption of circular models. This represents an opportunity for future research, as the use of advanced technologies could optimize resource and waste management, allowing for greater efficiency and facilitating the monitoring of the environmental impact of hotel operations.

5.1 Theoretical Contributions

This study contributes to the literature by offering one of the first comprehensive bibliometric analyses focused exclusively on circular economy strategies within the hotel industry. While previous research has addressed sustainability in hospitality in general, few have mapped the intellectual and collaborative structure of this emerging niche. By identifying key themes such as food waste, local sourcing, and digital transformation, this study provides a structured framework that can guide future conceptual developments in circular economy research. The keyword co-occurrence analysis also highlights how circularity intersects with tourism, supply chains, and technological innovation—pointing to the interdisciplinary nature of the field.

5.2 Practical Implications

From a practical standpoint, the findings can inform sustainability strategies in the hotel sector. The identification of key topics and collaborative clusters may guide hotel managers in prioritizing efforts such as waste reduction, resource efficiency, and partnerships with local suppliers. Moreover, the central role of European institutions in academic networks suggests that hotels in developing regions could benefit from international collaboration programs or public-private initiatives that transfer best practices. Policymakers can also use this data to support circular economy regulations and encourage innovation in tourism infrastructure.

5.3 Future Research Directions

Future research should explore the economic and social impact of circular practices in hospitality, especially in emerging economies where empirical data is scarce. More in-depth case studies, cross-regional comparisons, and integration of quantitative performance metrics could bridge this gap. Additionally, investigating the role of emerging technologies (such as AI and IoT) in facilitating circularity remains an underexplored yet promising area. Finally, consumer perceptions and their willingness to pay for circular practices represent a vital line of inquiry for understanding demand-side dynamics.

Conclusión

This bibliometric study has revealed that the circular economy in the hotel industry is gaining traction as a relevant and necessary research field. Circular practices, including waste management and resource optimization, not only respond to growing demands for sustainability but also represent an opportunity for the hotel sector to improve its operational efficiency and image among increasingly environmentally conscious consumers.

Despite advances in research, there are areas that require more attention, such as the long-term economic impact of circular practices and their integration into broader management systems. Additionally, future research must address the barriers that hinder the implementation of the circular economy in different hotel contexts, particularly in developing countries where lack of resources and weak infrastructure present significant challenges.

Finally, this study emphasizes the importance of international collaborations to foster a wider adoption of the circular economy in the hotel industry. It is essential that academic, governmental, and business actors continue working together to develop innovative solutions that enable an effective transition toward more sustainable and circular models in the sector.

Contributions of the Authors:

M.P.L.G.: Conceptualization of the research framework and definition of research questions.

J.T.C.C.: Data acquisition, database selection, and execution of the bibliometric analysis (including software use).

D.A.P.G.: Provided critical feedback on the manuscript drafts, revised the manuscript for clarity and coherence, and helped in the final submission process. Contributed to the interpretation of results and refining of the discussion.

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