



Bibliometric Analysis of Sustainable Practices in the Hotel Industry: Current Trends and Future Research Directions

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Abstract

This research was conducted with the purpose of providing a bibliometric overview of sustainable practices in hotels. The PRISMA methodology was utilized, and the Scopus database was consulted to choose a total of 228 publications to analyze hotel sustainability trends. The results revealed that the International Journal of Hospitality Management is the prominent source of choice for the authors to publish the hotel's sustainability practice research. Additionally, the findings of prolific authors showed that Acampora A was the leading author. The thematic analysis identified three themes based on various aspects of sustainable hotel practices. The findings were analyzed, and implications and recommendations for further research were presented.

Keywords: sustainable practices, green practices, hotel, green hotels, Bibliometric

1. Introduction

Within the hospitality sector, one of the most critical topics is the effect of rising tourism on the world's precious natural resources.

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Most travellers in the United States now describe themselves as "environmentally conscious" and believe that hospitality businesses should participate in activities that promote sustainability. As consumers become more environmentally conscious, eco-friendly policies and procedures may become crucial when selecting a hotel (Berezan et al., 2013). Hotels have used many eco-friendly business methods for over a decade. These include reuse and recycling, buying local produce, and meeting strict LEED certification requirements. However, certain practices have been applied randomly without investigating how they can affect a customer's hotel decision. According to Olya et al. (2021), for businesses to make more educated choices about their environmental efforts, they must first be aware of the needs and desires of their target demographics. In addition, there is often a gap between the guest's expectations and the hotel's environmental effort (Berezan et al., 2013).

Studies on green and sustainability in hospitality were analyzed in several publications. Some studies (Kang et al., 2012; Manaktola & Jauhari, 2007) are primarily geared towards hotels, while others (S.-H. Kim et al., 2017) examined many hospitality facilities. The research on sustainable hotels has also been the subject of other reviews. For instance, dos Santos et al. (2017) investigated how academics applied the Triple Bottom Line (TBL) methodology to their studies based on the hotel industry. Similarly, Kim et al. (2019) conducted a thorough literature review on the environmental sustainability of the hospitality industry's hotels. Additionally, further studies have focused on hotels' green practices individually to synthesise and evaluate the practices' effectiveness based on past published research (Chan et al., 2014; Mensah, 2006). Academic study has always aimed to provide hotel management with specific solutions for their lodging needs.

The scholarly discourse around sustainable hotel practices have grown significantly due to the increasing focus on environmental, social, and economic concerns. In recent years, the hotel sector has seen a surge in initiatives, standards, and resources to cultivate awareness and promote sustainability among businesses and customers. The field of academic study on this issue has also seen significant growth. The expanding corpus of scholarly literature encompasses many

perspectives, approaches, ideas, and investigations across various geographical regions. Academic study has endeavoured to provide definitive responses to hotel management seeking sustainable solutions for their individual lodging establishments. However, the body of research has sometimes come under complaint for being uneven, unorganised, unconvincing, and prevalent with opposing conclusions (Kim et al., 2017; Aragon-Correa et al., 2015; Farrington et al., 2017). Moreover, limited studies have employed bibliometric science mapping techniques to divulge the current trends and developments in hotel sustainable practice research.

Therefore, this bibliometric analysis provided a thorough overview of sustainable hotel practices. This research aims to ascertain the publication structure, leading authors and sources, collaboration structure and themes studied in the hotel's sustainable practice research. The articles were selected from the Scopus database using the PRISMA framework. Moreover, the current analysis highlights areas where research is sparse in the literature, enabling future scholars to do additional research to fill the gaps.

2. Literature Review

The hospitality industry is one of the most resource-intensive sectors of the tourism business. Environmentally friendly practices, often called green or sustainable practices, involve using resources more effectively and reducing their adverse environmental effects (García-Granero et al., 2018). Because of its substantial environmental impact, the hospitality sector must prioritise sustainability in its operations. Sustainability is crucial for sustaining the industry's competitive edge and enhancing the environment. The shift towards environmentally friendly practices, known as "going green," involves reducing waste, utilising sustainable resources and suppliers, and implementing environmentally preferable practices to reduce the industry's impact on the ecosystem (Rahman et al., 2012). Goldstein and Primlani (2012) observed that since the 1960s, hotel owners and investors have become progressively more aware of the ecological and social consequences of constructing and running hotels. Because of rising environmental concerns and consumer awareness, the value of green efforts in business practices has been a hot topic in recent years. Many companies now recognise ethical behaviour as a tactic to obtain a competitive advantage thanks to gradual changes in consumer behaviour and their rising interest in the relationship between commercial organisations and the environment. Hoteliers have already discovered numerous benefits as a result of using green practices. These benefits include elevating brand value, creating a favourable impression in visitors' eyes, reducing costs and liabilities, and generating more profit (Sangeetha & Rebecca, 2019).

The hotel industry recognises the significance of environmental conservation as it is vital to ensuring a safe and attractive environment, which is fundamental to the industry's prosperity. Cohen & Winn (2007) stated that commerce and the environment reshape markets, provide new opportunities, and support sustainability in corporate operations. As the demand for ecologically friendly goods and services is rising, many industry specialists have been actively designing and advocating for ecologically sustainable goods and services. This is an attempt to reinforce their companies' dedication to sustainability. Designing and implementing sustainable practices presents significant ethical and competitive problems for hotels and the service sector (Zhang et al., 2012). These procedures aid the company in realising the triple bottom line objective, in the light of which "the long-term success of a corporation and its environment requires an emphasis on all three dimensions of sustainability economic, environmental (natural environment), and social (social environment), rather than a single, short term, emphasis on economic sustainability" (Amini & Bienstock, 2014, p. 13)

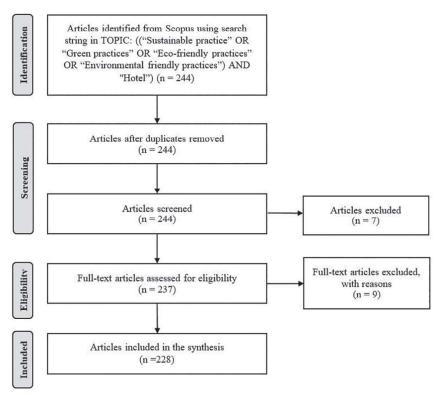
3. Methodology

In order to collect the articles related to hotel sustainable practices, the study used the search string: (("Sustainable practices" OR "Green practices" OR "Eco-friendly practices" OR "Environmental friendly practices" OR "Green friendly practices") AND "Hotel") in the Scopus database. The utilisation of the Scopus databases has become apparent in various bibliometric studies due to the significantly increased coverage of tourist journals (Bashir et al., 2022; Sharma et al., 2021). The initial search result produced 325 documents. Then, the authors used various inclusion and exclusion criteria to narrow

the articles further. The various criteria were setting the cut-off year 2022, articles published in English language only, and considering articles only. This filtration process resulted in a total of 244 articles. The publications were selected using the PRISMA framework, as specified by Moher et al. (2009) (Figure 1).

The authors then screened all 244 articles to ensure their validity based on the conceptual background of the study. The articles which did not meet the conceptual background of the study were eliminated, resulting in 237 articles. After that, the entire texts of these articles were extracted and evaluated, which helped reduce the total number of articles even further. Because of this approach, the total number of publications included in the final bibliometric study was reduced to 228.

Figure 1 PRISMA diagram



(Source: Developed by the author)

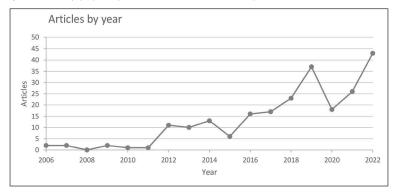
The existing literature has provided the nature of use and implication of the various bibliometric indicators. However, it is not possible to apply all in one study. Therefore, the study applied the most relevant indicators consisting of both performance and relational bibliometric indicators. Considering the performance analysis, the publication structure, leading sources, leading authors and institutions, and influential article analyses, Co-word and collaboration analyses were used for relational bibliometric analysis. The tool "bibliometrix" and its web version "biblioshiny" were used for analysis and visualisation. This bibliometric software tool is based on the fact that it follows all the standard workflows of bibliometric mapping (Aria & Cuccurullo, 2017). Furthermore, this method has been extensively utilised in prior bibliometric analyzes conducted within tourism and hospitality (Bashir & Singh, 2022; Singh et al., 2023).

4. Results

4.1. Publication structure

Figure 2 represents the structure of publication in hotel sustainable practices. 228 articles were published between 2006 and 2022, with an average of 13 articles per year. The first article was published in 2006 based on data collected from Scopus. From Figure 2, it can be observed that before 2012, only a limited number of articles on sustainable hotel practices were published. However, the number of articles per year has significantly increased after 2012. These articles garnered 7053 citations from the academic community.

Figure 2
Yearly number of papers published on sustainable practices in the hotel industry



4.2. Leading authors and institutions in sustainable hotel practices

The top ten authors who published the most articles on sustainable practices in hotels are depicted in Figure 3. Acampara A and Merli R (5 articles) have the most significant number of articles in terms of total counting (blue colour bar). However, the result differed from the total count regarding fractional count. In fractional counting (red colour bar), Chan ESW (2.50) topped the list, followed by Khonje LZ (1.50) and Han H (1.33).

Figure 3 Leading authors

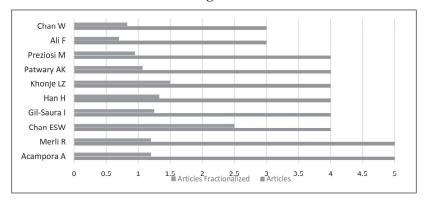


Figure 4 *Leading institutions*

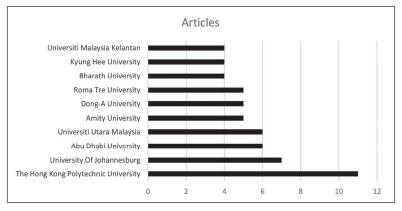
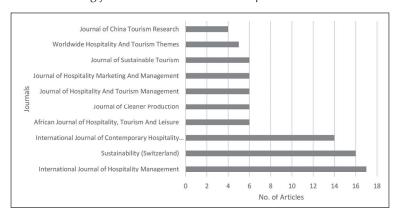


Figure 4 represents the leading institutions in sustainable hotel practice research. The findings discovered that the Hong Kong Polytechnic University is the leading research University, followed

by the University of Johannesburg and Abu Dhabi University.

4.3. Leading sources in sustainable hotel practices research

Figure 5 *Leading journals in hotel sustainable practice research*



A total of 114 journals published articles related to hotel sustainable practices. Figure 5 identifies the most prolific sources, covering the ten most essential sources. Among the list, the International Journal of Hospitality Management (IJHM) (17) featured top in the list, followed by Sustainability (16) and the International Journal of Contemporary Hospitality Management (IJCHM) (14). The leading role of IJHM and IJCHM in terms of publication is evident because both journals discuss significant trends and developments in the hospitality industry.

4.11. Influential article in hotel sustainable practice research

 Table 1

 Most cited papers on sustainable practices in hotel research

Paper	Theme	Journal	GC	LC	LGGCR	GCY
Manaktola &	Green practices	IJCHM	603	52	8.62	35.47
Jauhari (2007)						
Kang et al.	Green initiative	IJHM	407	19	4.67	33.92
(2012)						
Bohdanowicz	Environmental	IJHM	299	8	2.68	16.61
(2006)	initiative awareness					
Chou (2014)	Green organisational	TM	213	4	1.88	21.30
	climate					

Chan et al.	The relationship	IJHM	194	5	2.58	19.40
(2014)	between ecological					
	behaviour and					
	intention to					
	implement green					
	practices in hotel					
Mensah (2006)	Environmental	IJHM	172	17	9.88	9.56
	management practice					
Berezan et al.	Sustainable hotel	IJHM	161	34	21.12	14.64
(2013)	practices and its					
	relationship with					
	guest satisfaction and					
	return intention					
Zientara &	Organisational	JST	154	2	1.30	25.67
Zamojska	citizenship behaviour					
(2018)	for the environment					
Baker et al.	Customer's desire	CHQ	152	22	14.47	15.20
(2014)	for and participation					
	in green activities					
Rahman et al.	Greenwashing	IJCHM	146	6	4.11	16.22
(2015)						

Note. LGGCR: LC/GC Ratio (%), GCY: Global Citation per Year, CHQ: Cornell Hospitality Quarterly, JST: Journal of Sustainable Tourism, TM: Tourism Management

The quantification of an article's influence can be determined by the quantity of citations it has gained. According to (1973, p. 21), "The number of citations is taken to represent the relative scientific significance or 'quality' of papers". Hence, this research assesses the standard and impact of the paper by quantifying the amount of citations it has obtained. Table 1 represents the influential articles on sustainable hotel practices in terms of both global citation (GC) and local citation (LC) measures. GC refers to the number of citations by the article based on the Scopus database. LC refers to the number of times the 228 articles in this study cite an article.

The article by Manaktola and Jauhari (2007) secured the top position in both GC and LC as well as GCY. This article investigates not only the variables that impact customers' attitudes and behaviours towards green practices in the hospitality business in India but also

consumers' intentions to pay more for such practices. The findings revealed that consumers who follow environmental practices prefer to stay in hotels. They are not, however, willing to pay more for such amenities. The second highly influential article, authored by Kang et al. (2012), received 407 citations and explained the hotel industry's green initiative. This article presents a counterargument to the findings of Manaktola and Jauhari (2007) by demonstrating that hotel guests who prioritise environmental sustainability are ready to allocate a higher budget towards accommodations that adhere to greener practices.

4.5. Thematic analysis

A total of 665 keywords were used in the 228 articles. Among the keywords, the most frequently used keywords are green hotel (43), sustainability (43), green practices (37), hotel (28), hotel industry (24), hospitality industry (22), sustainable practices (15), tourism (12), green marketing (11), and eco-label (10). It is widely acknowledged that the keywords given by the authors represent the article's content and theme. Therefore, researchers use these keywords to generate themes. This study followed the same principle for generating essential themes. In order to achieve this aim, a co-word analysis was conducted (Aggarwal et al., 2022). It generates clusters representing various themes based on the co-occurring relationship among keywords.

Figure 6 represents the overview of co-word analysis. In this figure, each circle presents a keyword called nodes and the line connecting the two nodes is called edges (Singh et al., 2021). The node's size is directly related to the frequency of occurrence of the keyword, and the strength of the line represents the co-occurrence relationship (Singh, Sibi. The co-word analysis identified three clusters representing three themes.

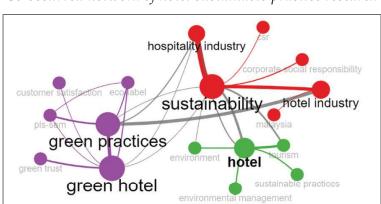


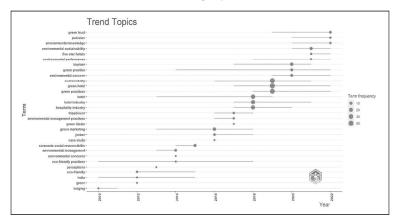
Figure 6 *Co-occurred network of hotel sustainable practice research*

Cluster 1 consists of six keywords: green practice, green hotel, green trust, customer satisfaction, eco-label and PLS-SEM. This cluster explains the green practices and their impact on hotels. For instance, Jiang and Gao (2019) investigated the elements that affect guests' choices of green hotels. The author identified that environmental concerns significantly influence attitude and overall attitude towards green practices and behavioural intention. However, the study found no significant association between the overall attitude towards green practices and behavioural intention. Acampora et al. (2022) found that customer environmental concern influences hotel environmental communication, influencing hotel's green practices hotel. The hotel's green practices impact customer satisfaction. Preziosi et al. (2022) explained that the identification of environmental practice by the guest is a specific dimension of eco-labelled hotels, which delights them if properly delivered and communicated.

Cluster 2 includes six keywords (sustainability, hospitality industry, hotel industry, CSR, and corporate social responsibility). This cluster elucidates sustainability aspects in the hotel industry with a particular emphasis on corporate social responsibility. For example, a study was done by Pereira et al. in 2021 to identify the social and environmental practices followed in luxury hotels and their benefits to hotels. The empirical research found that the hotels have reduced water consumption, waste, and carbon emissions by following sustainable practices. Also, hotels can provide quality service and create a healthy

work environment. Stylos and Vassiliadis (2015) investigated how hotel management views and employs the three-dimensional facets of sustainability. The results imply that hotel star ratings significantly impact hotel management's perceptions of what constitutes economic and social responsibility. However, this conclusion does not apply to environmental responsibility.

Figure 7 *Trending topics*



Cluster 3 consists of five keywords: hotel, environment, environmental management, and sustainable practices. This cluster focuses on the environmental aspects of sustainability practices followed in hotels. For instance, Khonje et al. (2021) discussed governance practices and their impact on the sustainability of natural resources. The study found that national tourism policy (NTP) does not assist in implementing environmentally responsible policies and procedures. In addition, Because of this hole in the NTP, hotels are missing an environment-related plan to encourage people to act in ways that are good for the environment. To further reveal the topical trends in sustainable hotel practices, a trend topic analysis has been carried out based on the author's keywords (Figure 7). As per the data, green trust, environmental knowledge, environmental sustainability, and environmental performance have been trending research topics in recent years.

4.6. Collaboration analysis

The authors used collaboration analysis to define social structure analysis in sustainable hotel sustainable practice research. For collaboration analysis, the study conducted a co-authorship analysis in terms of country and author because it is the most tangible form of scientific collaboration (Aggarwal et al., 2022; Singh et al., 2022).

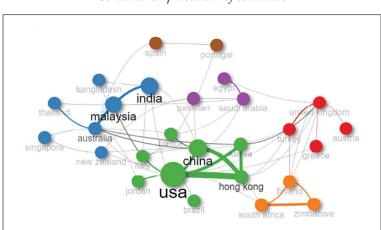


Figure 8Co-authorship network of countries

Among the 52 countries having publications in sustainable practices in hotels, researchers from the region USA (67), India (50), China (46), Malaysia (44), South Korea (19), and Spain (19) were topped in the list. Figure 8 represents the country collaboration analysis of sustainable hotel sustainable practice research. Like other research, this study also identified the USA as the leading country in collaboration with various other countries. The most intensive collaboration occurred between the USA and Hong Kong, China and Korea, China and Hong Kong, India and Australia, Korea and Hong Kong, South Africa and Malawi and Zimbabwe. The study identified six communities of countries in various colours. The cluster with the largest group of countries was the USA, China, Hong Kong, Jordan, Italy, France, Korea, and Brazil. In this cluster, the collaboration between the USA and Hong Kong was highest due to the thickness of the connecting line between these countries. The cluster with a minimum number of countries was a collaboration between Spain and Portugal.

Figure 9 represents the co-authorship network of authors. The network identified eight collaboration groups of authors indicated by clusters with five authors in one cluster, four authors in another cluster, three authors in two clusters, and two authors in four clusters. The largest cluster includes Acampora A, Merli R, Preziosi M, Ali F and Lucchetti MC. These authors publish most of the articles in collaboration addressing the concept of green hotels. The second largest group consisted of Hon AHY, Chan ESW, Okumus F and Chan W. These authors studied employee green practice intentions. In this group, all the authors are affiliated with The Hong Kong Polytechnic University except Okumus F.

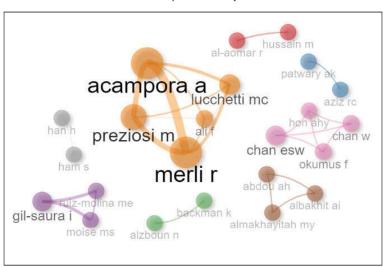


Figure 9 *Co-authorship network of authors*

5. Direction for future research

The bibliometric analysis revealed critical fields of research and areas of study into which scholars interested in sustainable hotel practice would need to widen and deepen their contributions and impact. In general, the study argues and explores the following trends, all of which are important for researchers to take into consideration in order to encourage additional research:

1. Technology's increasing importance and influence have been observed in hotel management and operations. COVID-19

has accelerated the implementation and use of technological innovation in the hotel industry. However, research on the influence of technology on hotel sustainable practices is scarce. Therefore, applying technology in hotel sustainable practice represents a field whereby researchers and practitioners should focus on its influence and contribution to sustainability.

- 2. According to Kim et al. (2019), hotel businesses must understand their costs to be sustainable and the prices that customers are prepared to pay for such services. The literature does not address the need to research ethical behaviour, training, and mindfulness from the client or business perspective. The academic literature is almost entirely devoid of research that concentrates on developing business training and enhancing environmentally responsible employee behaviour.
- 3. It has been identified that sustainable practice in hotels has mainly discussed the environmental aspects of sustainable practice by implementing the green philosophy. The social and economic aspects of sustainability are the least investigated areas in hotel sustainability practice (Acampora, Lucchetti, et al., 2022). Therefore, to make the research on sustainable practices in hotels more comprehensive and inclusive, it is mandatory to research all aspects of sustainable development to create a more socially responsible, economically viable, and environmentally responsible hotel business.
- 4. The hotel's sustainable practices and their impact on guests are an important area of investigation. Nevertheless, little research has been done in the hotel sustainability literature. Thus, future research might examine how hotel sustainability affects guest pleasure, trust, image, and behaviour.

6. Conclusion

Periodical evaluation of extant literature is a crucial aspect of academia to identify past and present trends and recommend suggestions for future research direction. Based on this assumption, this study conducted a quantitative review of the literature on hotel sustainable practices using bibliometrics principles considering the subject's importance in the tourism context. The result revealed that the literature on sustainable hotel practices has increased in recent years. IJHM, sustainability, and IJCHM have published most of this literature. Acampara A. and Merli R. were the leading authors of sustainable hotel practices. Moreover, the study identified three essential themes in sustainable hotel practice. The collaboration results identified through the co-authorship network discovered six collaboration groups of countries and eight authors. As expected, based on the previous findings and in terms of Publications, the United States of America has emerged as the world leader.

The research work presented in this has various implications for theory and practice. This study contributes significantly to greater comprehension of the epistemology of hotel sustainable practice research, including its social structure, conceptual framework, and development over time. This is an important role that this study performs. Bashir et al. (2022) state that bibliometric analysis is a technique that is becoming more necessary to deepen the conversation surrounding epistemological and ontological structures in the field in order to enhance theoretical developments. It delivers impartial and dependable findings, providing a complete view of the creation of knowledge and the development made in the sector. Moreover, bibliometric analysis is suitable for offering a macro image of sustainable hotel practice, which matches the conventional approach of literature inquiry in this area. In addition, the findings of this study may potentially assist researchers in identifying underresearched aspects of sustainable hotel practice that need future investigation. The results could guide various academic groups, such as postgraduate and doctorate students and faculty engaged in hotel sustainability research. For example, the leading writers, institutions, and countries in this subject provide prospects for those interested in working collaboratively and pursuing higher levels of study in this area. Academics can use this study to determine which journals to publish and how relevant their article is to that journal by presenting the primary sources and themes of research about sustainable hotel practices.

Although the study has contributed from theoretical and practical perspectives, it has some limitations. First, the study considers only the Scopus database to conclude the research on sustainable hotel practice. Second, in this study, we considered only scholarly articles. Third, this study considers only limited bibliometric indicators to present the research on hotel sustainability practice comprehensively. Fourth, in this investigation, a bibliometric analysis was carried out to examine the sustainable practices hotels use. Bibliometric studies often exhibit a quantitative aspect. Consequently, future research endeavours may consider conducting a systematic review to better substantiate the study's findings.

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