

Shasha, Ziphozakhe Theophilus; Weideman, Melius; Sun, Huaping; Liu, Guifeng

Article

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Review

A Bibliometric Review of Research Progress, Trends, and Updates on Smart Tourism Research

Ziphozakhe Theophilus Shasha ^{1,*}, Melius Weideman ¹, Huaping Sun ^{2,3}  and Guifeng Liu ⁴ 

¹ Department of Information Technology, Faculty of Informatics and Design, Cape Peninsula University of Technology, Cape Town P.O. Box 8000, South Africa; melius@gmail.com

² School of Economics and Management, Xinjiang Institute of Engineering, Urumqi 830023, China; shp797@163.com

³ School of Management Science and Engineering, Shandong University of Finance and Economics, Jinan 250014, China

⁴ Institute for Science and Technical Information, Jiangsu University, Zhenjiang 212013, China; liuguifeng29@163.com

* Correspondence: ziphozakheshasha@yahoo.com

Abstract

Scholars are showing a growing interest in smart tourism, a promising trend in destination development. The current research studies have established a strong theoretical foundation on the functions of technology and the impacts of smart tourism on travelers. Nevertheless, little is known about the comprehensive and systemic effects on the growth of smart tourism in a particular destination. This study employs bibliometric analysis to examine the scientific literature of smart tourism research, based on 563 relevant publications retrieved from the leading database Web of Science Core Collection between 2000 and 2024 and analyzed using VOSviewer software 1.6.20 packages. The results show that the total number of relevant publications has gradually increased in recent years. Key journals include Tourism Management, Sustainability-Basel, and Annals of Tourism Research. The results also show that authors from the People's Republic of China have the most publications and international co-authorships, while the most influential institution is the Hong Kong Polytechnic University. Moreover, research keywords have been identified, including smart tourism, smart cities, Internet of Things and big data. The research findings of this study provide valuable insights to further improve smart tourism research.

Keywords: tourism; smart tourism; bibliometric analysis; network analysis



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1. Introduction

Smart tourism is a way to improve the tourism experience through the integration of digital technologies and data-driven services (Cuomo et al., 2021; Gretzel et al., 2015a; Ionescu & Sârbu, 2024; Sustacha et al., 2023; Wu et al., 2024; Xu et al., 2025). It is still a developing and dynamic field that uses big data, artificial intelligence (AI), mobile applications, internet-based systems, and the Internet of Things (IoT) to provide individualized, effective, and sustainable tourism services (Florida-Benítez & del Alcázar Martínez, 2024; Khan et al., 2024; Siddik et al., 2025; Suanpang & Pothipassa, 2024; Y. Zhang & Deng, 2024). Gretzel and Koo (2021) and W. Wei et al. (2024) claim that smart tourism is the result of the fusion of smart technology with tourism, opening up new channels of communication and value co-creation between travelers, companies, and the government. Smart tourism ecosystems are built on technology infrastructure, business innovation, and stakeholder collaboration,

which together shape the transformative potential of tourism in the digital age. Concepts like experience co-creation, location-based services, digital concept platforms, and real-time engagement were all included in early studies (Alharmoodi et al., 2024; Borges-Tiago & Avelar, 2025; Buhalis & Sinarta, 2019; Yin et al., 2024) on the evolution of tourism systems. Later, the idea of a smart tourism ecosystem where different stakeholders interact through ICT-enabled platforms was established by scholars (Buhalis & Amaranggana, 2015; Chuang, 2023; Gelter et al., 2022). Since then, research on smart tourism has expanded across various dimensions, including user behavior, data analysis, service design, and technology infrastructure (Shen et al., 2020).

Scholars' interest in smart tourism has grown dramatically in recent years (El Archi et al., 2023; Alsharif et al., 2024; Kusumawardhani et al., 2024). Numerous studies have empirically investigated the use of smart technology in the tourism industry, including mobile tourism applications (Dorcic et al., 2019; Si-Tou, 2024), destination management systems (Sorokina et al., 2022; Qin & Pan, 2023), smart hospitality (Buhalis et al., 2023; Y. Liu et al., 2023), big data analysis (Ardito et al., 2019; S. Park, 2021), and IoT services (Novera et al., 2022). The literature on thorough bibliometric analysis in the topic of smart tourism is noticeably lacking despite this growing interest. This research work seeks to fill that gap by providing a thorough bibliometric study that identifies important contributors, current trends, and the development of smart tourism research. By examining patterns of publication, co-authorship, and keyword co-occurrence, the study offers a structured overview of the field's intellectual landscape. This comprehensive analysis enables scholars and practitioners to better understand the evolution of smart tourism and to identify emerging areas that warrant further exploration.

Bibliometric analysis is a quantitative method involving published academic literature that plays a crucial role in mapping a field's knowledge structure (Ellegaard & Wallin, 2015; Öztürk et al., 2024; Yan & Zhiping, 2023; Zheng et al., 2023). Bibliometric studies are increasingly being used in fields including business, information systems, tourism, and hospitality (Shasha & Weideman, 2025). Previous research studies have focused on publication trends within specific journals (L. Zhang et al., 2022), most-cited articles (Madeira et al., 2023), leading authors (Kontogianni & Alepis, 2021), influential journals (Nadee et al., 2024), and top-ranking universities (W. Wei et al., 2024). To the best of our knowledge, this study is among the recent contributions to the evolving body of bibliometric research on the smart tourism literature indexed in the Web of Science database.

Performing a bibliometric analysis in the domain of smart tourism is crucial for comprehending the structure, evolution, and dynamics of the research environment (De Bruyn et al., 2023; Rosário & Joana, 2024; G. J. Wei & Ab-Rahim, 2025). It enables academics to evaluate the evolution of important technologies over time, find prominent authors, organizations, and journals, and methodically map core research issues (Mohammad et al., 2025; Nielsen et al., 2023; Rojas-Sánchez et al., 2023). This approach not only highlights intellectual foundations but also reveals underexplored areas, such as regional disparities and the limited integration of interdisciplinary perspectives. Furthermore, bibliometric analysis provides valuable insights into patterns of global collaboration, author influence, and institutional productivity, which are critical for advancing knowledge and informing strategic partnerships (Lim et al., 2024; Ogondiek, 2025; You et al., 2024). In the context of smart tourism's rapid technological advancement, particularly with the rise of AI, IoT, and big data, bibliometric evidence supports the identification of innovation trends and ensures that both theoretical and practical implications are grounded in a comprehensive understanding of the field (Asif & Fazel, 2024; L. Wang, 2024). Therefore, this method contributes significantly to shaping future research agendas and guiding policy development in smart tourism.

Following the methodological approach of [Chen et al. \(2021\)](#), this report emphasizes bibliometric analysis in smart tourism, a relatively new but rapidly evolving domain that deserves greater scholarly attention. The scope of this study is broad and aims to identify the most active countries, institutions, journals, and researchers by employing multiple bibliometric indicators. This study focuses on the following core questions:

1. What are the annual trends in publication and citation related to smart tourism between 2000 and 2024?
2. Which countries and higher education institutions contribute most significantly to smart tourism research?
3. Who are the most prolific authors and what are their citation impacts?
4. Which journals have published the highest volume and most impactful work on smart tourism?
5. What patterns emerge from co-citation and bibliographic coupling among authors, institutions, and journals?
6. What are the most frequently occurring keywords, and what do they suggest about research themes and future directions?

This research will offer a comprehensive overview of the most influential countries, institutions, journals, and authors, alongside a review of the cited papers and future research directions in smart tourism. The insights from this research study will be valuable to journal editors aiming to guide the field's development, scholars seeking fertile ground for future research, and policymakers who wish to identify global leaders in smart tourism innovation.

2. Materials and Methods

2.1. Brief Overview of the Bibliometric Technique

Understanding prior research is crucial to the advancement of any academic area ([Ebidor & Ikhide, 2024](#); [Snyder, 2019](#)). It allows researchers to build upon existing knowledge, identify gaps, and refine theories, ultimately leading to more informed and impactful research. Methods such as quantitative literature reviews and qualitative literature reviews can be utilized to synthesize the previous literature. Examples of quantitative analysis that provide an objective view of the body of existing literature are science mapping and meta-analysis. Science mapping looks at the relationships between different fields, disciplines, individual papers, and authors using bibliometric methodologies.

In the form of maps, it provides a spatial depiction of the results. The primary goal of science mapping or bibliometric analysis is to depict the intellectual framework of a research field using various factors, such as papers, writers, journals, terms, and countries. This approach is more comprehensive and objective compared to narrative literature reviews. A quantitative review of the literature is helpful in synthesizing the literature because it gives readers a more objective, unbiased perspective.

Scholars are now interested in bibliometric analysis because of the widespread use of computers and the availability of easily accessible bibliographic data from databases like EBSCO, PubMed, Scopus, Science Direct, Google Scholar, and Web of Science. This study selects Web of Science since it is a comprehensive, high-quality database, with detailed citation indexing and the ability to analyze research trends. It provides in-depth coverage of the older literature, offers cited reference searching, and allows for analysis by author, affiliation, and subject category. Its rigorous selection criteria ensure a curated collection of reputable scholarly literature. In recent years, bibliometric methods have been used to perform bibliometric analysis of journals, disciplines, organizations, and countries using different databases ([Öztürk et al., 2024](#); [Zupic & Čater, 2014](#); [Donthu et al., 2021](#); [Wallin, 2005](#); [Ellegaard & Wallin, 2015](#)).

In this study, we employed two main aspects of bibliometric analysis research. Science mapping and performance are two main facets of bibliometric information that are utilized in bibliometric approaches. While performance analysis measures production and effect in terms of publications and citations, science mapping illustrates the field's dynamics and structure. To fulfill the purpose of our study, we made an effort to incorporate the following analysis:

- Citation and co-citation analysis;
- Bibliographical coupling;
- Keyword co-occurrence analysis.

The data citations are used to evaluate similarity and influence in bibliographic coupling, co-citation, and citation. Citation analysis assists in determining the journal's, paper's, or author's impact and influence (Rüdiger et al., 2021), while co-citation analysis is a measure of correlation that arises when two documents receive citations from a third document (H. Park & Shea, 2020; Sanguri et al., 2020). It is presumed that the content of the two documents that are co-cited is the same. Bibliographic coupling occurs when two different, distinct documents quote the third document in their reference list. Bibliographic coupling measures the degree of similarity between two published texts based on the number of common sources (R.-L. Liu & Hsu, 2019; Nandy et al., 2024; Yun, 2022). The greater the number of mutual references, the greater the resemblance.

2.2. Database

Smart tourism research publications were found using the Web of Science (WoS) database. WoS is considered one of the most comprehensive peer-reviewed research repositories, particularly valuable for researchers in the social sciences and disciplines. For analytical and quantitative analysis, the repository is frequently utilized and acknowledged (K. Li et al., 2018). The study used the following search query: "smart" combined with "tourism," "tourist," "destination," "travel," "hotel," "accommodation" "restaurant" to formulate keywords, such as ("smart tourism" OR "smart tourist" OR "smart destination" OR "smart travel" OR "smart hotel" OR "smart accommodation" OR "smart restaurant"). Articles, reviews, and early access materials in English were collected for the set time of 2000–2024 in the Science Citation Index Expanded (SCI-EXPANDED, SSCI). The Science Citation Index Expanded (SCIE) is a comprehensive database of scholarly journals, covering science, technology, and medicine, and is part of the Web of Science Core Collection. It includes over 9200 journals across 178 disciplines, dating back to 1900, and is known for its rigorous selection process.

A methodical screening procedure was conducted from an initial dataset of 1634 journal articles obtained from the Web of Science Core Collection to guarantee that only the most pertinent and highest-quality studies were incorporated into the final analysis. Articles had to be peer-reviewed journal publications in English and directly relevant to smart technologies, digital transformation, or ICT integration in the travel and hospitality industries to meet the inclusion criteria. Academic rigor was maintained by only considering papers that were indexed in the Science Citation Index Expanded (SCIE). The inclusion of studies published between 2000 and 2024 aimed to document the development of technological improvement in the industry during the last 20 years. Duplicate records and non-journal publications, such as conference papers, book chapters, editorials, and grey literature sources, were excluded based on exclusion criteria. Even if they had overlapping keywords, articles with a tangential or unconnected focus, for example, those addressing technology in adjacent disciplines like education, health, or agriculture, were also disqualified. After screening for titles and abstracts, 842 articles were deemed irrelevant. A total of 229 articles were eliminated following full-text evaluation because they lacked adequate relevance,

analytical depth, or full-text availability. A total of 563 journal articles were selected as the final dataset for bibliometric and content analysis after a thorough screening process.

Bibliometric approaches were employed to examine the gathered data. Bibliometrics is defined as a branch of library and information science that utilizes quantitative methods to study bibliometric data (Fu et al., 2023; Ganti et al., 2025; Lim & Kumar, 2023; Moral-Muñoz et al., 2020; Öztürk et al., 2024; Shasha et al., 2020/2022; Szomszor et al., 2021; Sweileh, 2020; Vlase & Lähdesmäki, 2023). This method was employed in previous studies (Ismail et al., 2025; Mohamed et al., 2024; Passas, 2024; Rojas-Sánchez et al., 2023) to find and examine the broad trends of a specific subject, such as a journal, field of study, or geographical area. The literature has employed bibliometric research to evaluate the significance of a subject (Farrukh et al., 2021) as well as the contributions of journals (Amiguet et al., 2017; Martínez-López et al., 2018) and countries (Merigó et al., 2015). The bibliographic content in this work was visually represented using the VOS viewer application.

To create a visual representation of the bibliographic content, this research employed the most current version of VOSviewer is 1.6.20. The VOS viewer takes bibliographic data as input and outputs it as graphs (Kirby, 2023; Oyewola & Dada, 2022; Tsilika, 2023). This research study includes numerous bibliometric techniques, such as co-citation, co-occurrence of author keywords, and bibliographic coupling. Numerous authors have mentioned that when two documents quote the same third document, it is known as bibliographic coupling (Jarneving, 2007; Ma et al., 2022; Martinho, 2022); for example, study one and study two frequently cite study three. When two articles are cited by the same third article, this is known as “co-citation” (Janssens et al., 2020; Kim et al., 2016; Y. Liu et al., 2018); for example, study one and study two receive a citation from study three. Co-occurrence of keywords is also used to determine which keywords appear more frequently in the same publication. This review used co-citation for documents and articles and bibliographic coupling for authors and institutions, like previous noteworthy bibliographic studies (Ercan, 2023; Rosário & Joana, 2024). Keywords were grouped into broad categories based on their co-occurrence.

3. Results

3.1. Publication Trends

Figure 1 presents the outcomes of the publication tendencies in smart tourism research. The exploration statistics show a total number of 563 papers and 9348 citations. The red line represents a low number of citations, whereas the blue line represents the number of publications per year. Table 1 supplements the outcomes of Figure 1.

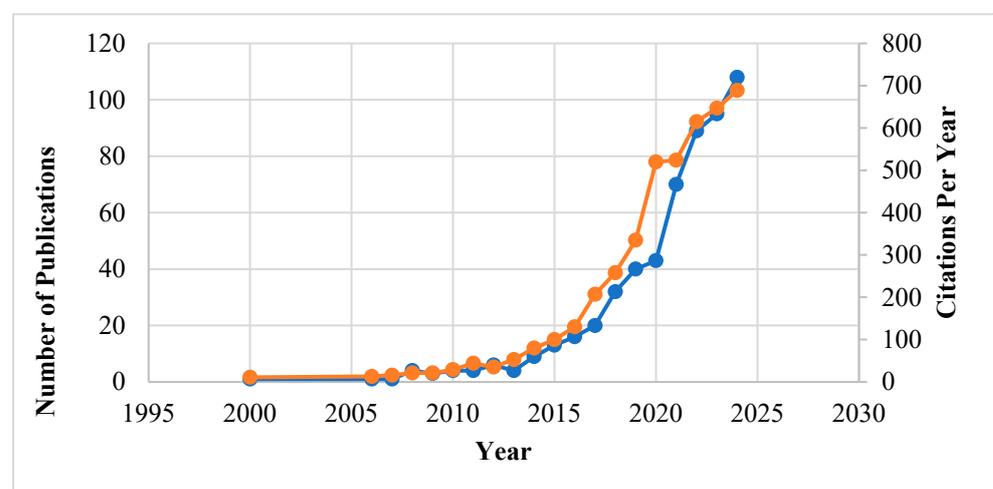


Figure 1. Trend of publications between 2000 and 2024. (Source: Web of Science.)

Table 1. Trends of publications.

No	Year	Number of Publications	Citation per Year
1	2024	108	889
2	2023	95	747
3	2022	89	615
4	2021	70	524
5	2020	43	520
6	2019	40	335
7	2018	32	258
8	2017	20	207
9	2016	16	130
10	2015	13	100
11	2014	9	80
12	2013	4	53
13	2012	6	35
14	2011	4	44
15	2010	4	29
16	2009	3	21
17	2008	4	21
18	2007	1	16
19	2006	1	13
20	2000	1	11

The outcomes in Table 1 show that 2024 was the most productive year, with 108 papers as well as 889 citations. This evidence shows that smart tourism research is gaining momentum. The significant increase in both publications and citations highlights a growing academic interest and increased recognition of the field. This trend also suggests that researchers are responding to evolving technological advancements and the increasing demand for innovative tourism solutions.

3.2. Leading Countries and Regions in Smart Tourism Research

Multiple countries are publishing important research on smart tourism. This section examines the output and effect of the leading nations from 2000 to 2024. The results of the top 15 countries/regions' publications on smart tourism are shown in Table 2. The position is based on the number of papers.

Table 2 shows that the People's Republic of China was the most productive country, with 165 publications and 3089 citations. This indicates that researchers from the People's Republic of China are paying more attention to smart tourism as an emerging tourism industry. The USA was ranked second with 82 publications and 2752 citations of these publications, followed by England with 46 publications and 981 citations of these publications. Likewise, South Korea had 24 publications and 621 citations and was ranked fourth in smart tourism, while Australia had 24 publications and 535 citations and was ranked fifth. Spain had 21 publications and 461 citations and was ranked sixth; Italy had 19 publications and 491 and was ranked seventh; India 16 publications and 249 citations and was ranked eighth; Canada 14 publications and 250 citations and was ranked ninth; Taiwan had 11 publications and 282 citations and was ranked tenth; Saudi Arabia had

9 publications and 127 citations and was ranked eleventh; Germany had 9 publications and 185 citations and was ranked twelfth; Netherlands had 8 publications and 279 citations and was ranked thirteenth; Japan had 8 publications and 134 citations and was ranked fourteenth; and Singapore had 7 publications and 2715 citations and was ranked fifteenth in the field of smart tourism research.

Table 2. The most productive countries and regions.

Rank	Source	Documents	Citations	Total Link Strength
1	People’s Republic of China	165	3048	635
2	USA	82	2752	530
3	England	46	981	282
4	South Korea	24	621	165
5	Australia	24	535	237
6	Spain	21	461	145
7	Italy	19	491	143
8	India	16	249	152
9	Canada	14	450	125
10	Taiwan	11	282	93
11	Saudi Arabia	9	127	164
12	Germany	9	185	111
13	Netherlands	8	279	121
14	Japan	8	134	68
15	Singapore	7	271	87

The number of publications in different nations or regions is directly correlated with the size of a node. In other words, as the node size increases, so does the publication count in each country/region. The degree of cooperation between nations or regions is strongly connected with the thickness of linkages connecting nodes (Figure 2). Node colors and links, on the other hand, are distinct, and the various colors denote research cooperation groupings across various countries/regions. In other words, nodes that share a color are more likely to cooperate with one another. For example, the People’s Republic of China had close cooperation with South Korea, Taiwan, Australia, Japan, Saudi Arabia, while the United States had close cooperation with Canada, England, France, Turkey, Italy, Spain, Ireland, Singapore, and Brazil.

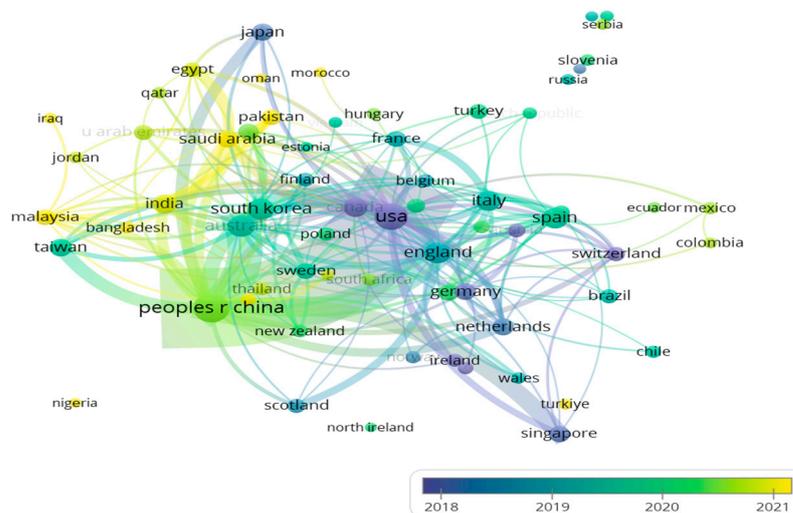


Figure 2. Bibliographic coupling of countries.

3.3. The Most Productive Universities and Institutes

The findings indicate that there were 258 research institutions publishing in the field of smart tourism research. Table 3 lists the top ten research institutions according to the volume of their publications. As shown in Table 3, in the top ten research universities/institutions, Hong Kong Polytech University was the most productive university, Beijing Jiao Tong University ranked second, Kyung Hee University ranked third, Southeastern University ranked fourth, Chinese Academy of Sciences ranked fifth, University of Queensland ranked sixth, Massachusetts Institute of Technology (MIT) ranked seventh, Wuhan University ranked eighth, Beihang University ranked ninth, and Tsinghua University ranked tenth. It is noticeable that, of the top ten productive research universities/institutions, six are in the People's Republic of China and one in South Korea (all in Asia), one in United States (North America), one in UK (Europe), and one in Australia (Oceania). There are no institutions from Africa and South America in the top ten for smart tourism, which shows that research institutions in these two continents do not have a high number of publications and international impact on smart tourism.

Table 3. Top 10 most productive universities and institutes.

Rank	Universities/Institute	Country	Documents	Citations/Total Link Strength
1	Hong Kong Polytechnic University	PR of China	81	1592/83
2	Beijing Jiaotong University	PR of China	65	1132/42
3	Kyung Hee University	South Korea	61	3166/55
4	Southeastern University	USA	55	1140/57
5	Chinese Academy of Sciences	PR of China	48	906/55
6	University of Queensland	Australia	44	2060/37
7	Massachusetts Institute of Technology (MIT)	USA	41	2107/41
8	Wuhan University	PR of China	35	1134/50
9	Beihang University	PR of China	30	1031/30
10	Tsinghua University	PR of China	30	587/40

3.4. Leading Journals

Another essential part of the bibliometric review was to look at the most active sources (i.e., sources that conducted more smart tourism research than others) between 2000 and 2024. The top ten sources that published smart tourism research are listed in Table 4. The Asia Pacific Journal of Tourism Research ranked first, contributing 38 publications, followed by Current Issues in Tourism with 28 publications. The Journal of Destination Marketing & Management was third with 21 publications, while Tourism Review ranked fourth with 19 publications. Technological Forecasting and Social Change secured the fifth position with 15 publications. Tourism Management and the Journal of Hospitality and Tourism Technology both contributed 12 publications, placing them sixth and seventh, respectively. Information Management followed with 10 publications, ranking eighth. The International Journal of Contemporary Hospitality Management was ninth with 9 publications, and Electronic Markets rounded out the list in tenth place with 7 publications.

An interesting aspect of the bibliometric analysis was the co-citation analysis of the top journals. Co-citation happens when two papers from two dissimilar journals are cited together by a third document. The papers published in the above top ten sources possessed heavy co-citation connections with each other. Table 5 supports the results presented in Figure 3. The results predict that an article published in the top ten journals would be cited

within the articles published in the journals mentioned in Table 5. The Tourism Manage had 2989 citations, the Sustainability-Basel had 2236 citations, the Annals of Tourism Research had 1354 citations, the IEEE Access had 1089 citations, the International Journal of Hospitality Management had 1008 citations, the Journal of Travel Research had 977 citations, the International Journal of Contemporary and Hospitality Management had 862 citations, the Current Issues in Tourism had 958 citations, the Journal of Clean Production had 833 citations, and the Applied Energy had 787 citations. It is pertinent to mention that the journals sharing the same colors (Figure 3) had the strongest co-citation links.

Table 4. Top ten sources that published smart tourism research.

Rank	Source	Publications
1.	Asia Pacific Journal of Tourism Research	37
2.	Current Issues in Tourism	28
3.	Journal of Destination Marketing Management	21
4.	Tourism Review	19
5.	Technological Forecasting and Social Change	15
6.	Tourism Management	12
7.	Journal of Hospitality and Tourism Technology	12
8.	Information Management	10
9.	International Journal of Contemporary Hospitality Management	9
10.	Electronic Markets	7

Table 5. Co-citation of the top ten journals.

Rank	Source	Citations	Total Link Strength
1	Tourism Manage	2987	163,610
2	Sustainability-Basel	2236	107,696
3	Annals of Tourism Research	1354	72,900
4	IEEE Access	1089	43,268
5	International Journal of Hospitality Management	1008	63,826
6	Journal of Travel Research	977	60,766
7	International Journal of Contemporary and Hospitality Management	862	53,717
8	Current Issues in Tourism	859	50,509
9	Journal of Clean Production	833	40,080
10	Applied Energy	787	27,582

Visualization of publication journals refers to the graphical representation of data showing which academic journals are publishing the most articles on a particular research topic, and often how those journals relate to each other or to specific themes. These visualizations are typically generated using bibliometric tools like VOSviewer, CiteSpace, or Bibliometrix. Figure 3 presents a visualization of journal clusters based on citation density, illustrating key research themes in smart technologies, urban systems, and tourism. Densely cited journals like IEEE Access and Applied Energy highlight a strong focus on engineering and intelligent transportation, while moderately cited sources such as Sustainability-Basel and Cities reflect interdisciplinary work on sustainable urban development. A distinct cluster including Tourism Management and International Journal of Hospitality Management

Table 6. Cont.

Rank	Author and Affiliation	Documents	Citations	Total Link Strength
6	Femenia-Serra F. Department of Geography, Faculty of Commerce and Tourism, Complutense University of Madrid, Spain	7	327	6
7	Gretzel U. USC Center for Public Relations, Annenberg School of Communication and Journalism, University of Southern California	7	317	5
8	Park S. Smart Tourism Education Platform, College of Hotel and Tourism Management, Kyung Hee University, Republic of Korea	7	550	7
9	Romão J. Centre for Advanced Studies in Management and Economics, University of Algarve, Portugal	6	266	3
10	Hall M.C. Department of Management, Marketing, and Tourism, University of Canterbury, New Zealand	5	94	1

3.6. The Most-Cited Articles

In this section, we identified the most-cited publications (Table 7). A paper written by Buhalis, D., & Law, R. in 2008 titled “Progress in information technology and management 20 years on and 10 years the internet—The state of eTourism research” was the most productive publication with 6743 citations. The second-most-cited publication was authored by Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. in 2015, and this publication received 2899 citations. The third-most-cited paper’s title was “Smart tourism destination enhances tourism experience through personalisation of services”, authored by Buhalis, D., Amaranggana, A. in 2015, and this paper received 2600 citations. The fourth-most-cited paper’s title was “Conceptual foundation for understanding smart tourism ecosystems” authored by Gretzel, U., Werthner, H., Koo, C., & Lamsfus, C. And the fifth-most-cited paper’s title was “Smart tourism destination: ecosystems for tourism destination competitiveness” authored by Boes, K., Buhalis, D., & Inversini, A.

Table 7. Top 10 most linked cited references.

Rank.	References	Author(s)	Publication Title	Year	Source Title	Citations
1	Buhalis and Law (2008)	Buhalis, D., Law, R.	Progress in information technology and management 20 years on and 10 years the internet—The state of eTourism research	2008	Tourism Management	6743
2	Gretzel et al. (2015a)	Gretzel, U., Sigala, M., Xiang, Z., Koo, C.	Smart tourism: foundation and development	2015	Electronic Markets	2899
3	Buhalis and Amaranggana (2015)	Buhalis, D., Amaranggana, A.	Smart tourism destination enhance tourism experience through personalisation of services	2015	Information and Communication Technologies in Tourism	2600

Table 7. Cont.

Rank.	References	Author(s)	Publication Title	Year	Source Title	Citations
4	Gretzel et al. (2015b)	Gretzel, U., Werthner, H., Koo, C., Lamsfus, C.	Conceptual foundation for understanding smart tourism ecosystems	2015	Computers in Human Behavior	1179
5	Boes et al. (2016)	Boes, K., Buhalis, D., Inversini, A.	Smart tourism destination: ecosystems for tourism destination competitiveness	2016	International Journal of Tourism Cities	966
6	Neuhofer et al. (2015)	Neuhofer, B., Buhalis, D., Ladkin, A	Smart technology for personalized experiences: a case study in the hospitality domain	2015	Electronic Markets	876
7	Y. Li et al. (2017)	Li, Y., Hu, C., Huang, C., Duan, L.	The conceptual concept of smart tourism in the context of tourism information services	2017	Tourism Management	844
8	D. Wang et al. (2013)	Wang, D., Li, X.R., Li, Y.	China's "smart tourism destination" initiative: A taste of the service-dominant logic	2013	Journal of Destination Marketing & Management	619
9	X. Wang et al. (2016)	Wang, X., Li, X.R., Zhen, F., Zhang, J.	How smart is tourist attraction?: Measuring tourist preferences via FCEM-AHP and IPA	2016	Tourism Management	608
10	Chiappa and Baggio (2015)	Chiappa, G.D., Baggio, D.	Knowledge transfer in smart tourism destination: Analyzing the effects of a network structure	2015	Journal of Destination Marketing & Management	568

3.7. Co-Authorship Network Visualization

The co-authorship network visualization illustrates the collaborative landscape within the field of smart tourism research (Figure 4). Each node represents a researcher, with the size of the name indicating their academic influence or productivity and the color signifying distinct research clusters.

This figure illustrates author collaboration patterns in the field of smart tourism and related domains, based on co-authorship analysis. Node size represents the number of publications, while color-coded clusters indicate thematic groupings. Prominent authors such as Dimitrios Buhalis, Namho Chung, Ulrike Gretzel, and Rob Law stand out as central contributors to smart tourism, eTourism, and digital transformation research. Distinct clusters represent contributions across smart mobility (e.g., Xiaolei Ma, Wu Jianjun), hospitality analytics (e.g., Fan Zhang, Li Jing), and technology-driven experience design (e.g., Wang Wei, Kong Xiangjie).

To identify key contributors and collaboration patterns in the smart tourism literature, a co-authorship network was constructed using VOSviewer. The dataset consisted of peer-reviewed journal articles indexed in the Web of Science Core Collection. Authors with a minimum of two co-authored publications were included to ensure meaningful clustering. The resulting network visualization (Figure 3) revealed several prominent clusters. The purple cluster highlights foundational work on smart tourism led by Namho Chung and Ulrike Gretzel, emphasizing theoretical frameworks and policy. The yellow cluster, centered on Rob Law and Fan Zhang, represents research on hospitality technologies, forecasting, and AI integration. A standalone grey node, Dimitrios Buhalis, reflects his broad, cross-

disciplinary influence in eTourism and strategic digital innovation. Other clusters focused on transportation systems (blue cluster: Xiaolei Ma, Wu Jianjun), GIS-based mobility planning (orange cluster: Wei Tu, Li Jing), and sensor and semantic technologies for tourism (red cluster: Wang Wei, Kong Xiangjie). This analysis highlights the multidimensional and interdisciplinary nature of smart tourism scholarship. Therefore, it can be concluded that the level of cooperation among authors in the field of smart tourism is generally average.

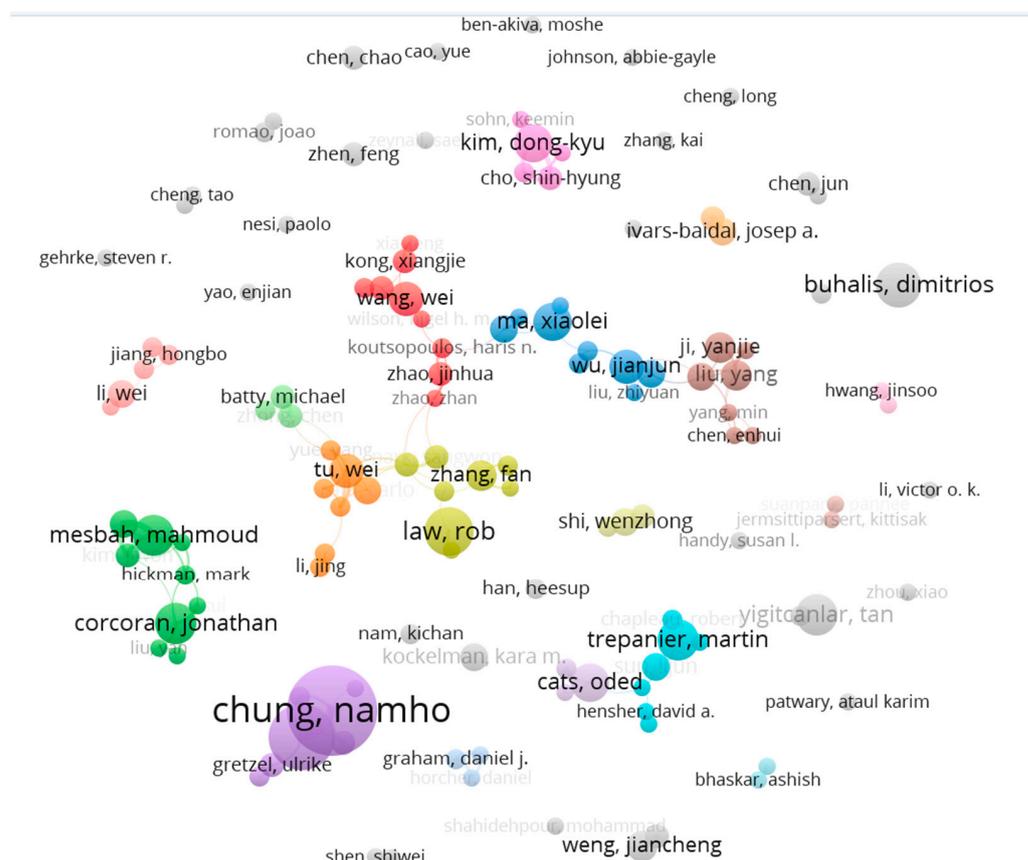


Figure 4. Network and cluster density of the author.

3.8. Keywords' Performances

The Table 8 provides a detailed overview of keyword performance within the domain of smart tourism, highlighting their frequency of use (occurrences), network connectivity (total link strength), and their contextual significance. At the center of the analysis is the keyword “smart tourism”, which stands out as the core term with the highest link strength and frequent appearance, underlining its central role in academic and practical discussions? Closely connected concepts like “smart city” and “Internet of Things (IoT)” also show strong linkages, suggesting that urban innovation and interconnected technologies are fundamental to the smart tourism framework.

“Digital technology” appears just as frequently as the core term but shows slightly lower connectivity, implying it is a broad enabling concept rather than a specialized focus. Meanwhile, keywords such as “big data” and “artificial intelligence” are recognized for their growing importance in supporting data-driven decision-making and personalized experiences, although their network strength indicates they are still emerging in tourism-specific contexts.

Application-oriented terms like “augmented reality” and “mobile applications” reflect specific tools used to enhance visitor engagement, but their lower link strengths suggest a more targeted or niche relevance. The inclusion of “digital transformation” shows that the

shift towards integrating digital tools and strategies across the tourism sector is a significant trend, even if not as densely interconnected. Lastly, less frequently appearing terms such as “intelligent systems”, “smart destination”, and “information and communication technologies (ICT)” suggest either specialized uses or legacy concepts, which may be less emphasized in contemporary smart tourism discussions. Overall, the table illustrates a layered landscape where foundational technologies, strategic shifts, and innovative tools collectively shape the smart tourism ecosystem.

Table 8. The most frequent keywords.

Rank	Keyword	Occurrences	Total Link Strength	Interpretation
1	smart tourism	13	36	Core keyword, high linkage in smart tourism field.
2	digital technology	11	27	Foundation term, moderately connected.
3	smart city	9	25	Indicates a strong association with urban innovation.
4	internet of things	8	25	Key enabler of smart services and automation.
5	big data	8	21	Emerging tech for decision-making in tourism.
6	artificial intelligence	8	18	Popular in personalization and automation.
7	augmented reality	6	18	Innovative tool for enhancing visitor experiences.
8	digital transformation	6	18	Broad process concept across tourism sectors.
9	mobile applications	6	16	Specific tech solution for service delivery.
10	intelligent systems	5	11	Specialized tech, lower network strength.
11	smart destination	5	9	Niche keyword within smart tourism.
12	information and communication technologies (ICT)	5	9	Broad category, historically foundational.

4. Future Directions

The scope of smart tourism is broad and multifaceted, extending beyond specific locations or contexts. It encompasses a wide range of applications across both urban and rural environments and integrates multiple aspects of the tourism industry. As the field continues to evolve, future research should adopt more focused and nuanced approaches to advance understanding and practice:

Research Proposition 1: Determine the effectiveness of electronic marketing strategies within the smart tourism ecosystem across diverse regional contexts.

Research Proposition 2: By collecting and real-world data, researchers can better identify the challenges, contextual relevance, and overall performance of these strategies.

Research Proposition 3: Examine the application of smart tourism technologies across key domains, such as data-driven destination management, personalized tourist experiences, sustainable tourism practices, and local socio-economic development, in order to explore the full potential of digital innovation in the tourism sector.

Research Proposition 4: Explore geographical diversity by understanding how smart tourism initiatives adapt to varying socio-cultural, infrastructural, and environmental conditions. Technologies such as artificial intelligence and the Internet of Things (IoT) should be examined for their capacity to enhance tourism in rural and emerging destinations.

Research Proposition 5: Identify and examine the moderating influence of demographic and contextual factors such as age, gender, digital literacy, socio-economic status, and political or environmental conditions. These variables play a critical role in shaping users' engagement with smart tourism technologies and in determining the effectiveness of these innovations.

Research Proposition 6: Explore how smart tourism technologies can be strategically leveraged to improve tourism communication. This includes using digital tools to promote destinations, offer personalized experiences, and manage tourism operations efficiently.

Research Proposition 7: Determine the technological attributes, such as informativeness, accessibility, interactivity, personalization, and security, which can provide insight into enhancing tourist satisfaction and encouraging repeat visitation.

Research Proposition 8: Examine the relative effectiveness of different smart tourism tools in improving visitor experiences, supporting sustainable destination management, and maximizing local economic benefits.

Research Proposition 9: Identify the role of data analytics and digital communication strategies in achieving desirable outcomes such as increased tourist satisfaction, reduced environmental impact, and improved stakeholder collaboration.

Research Proposition 10: Examine the integration of ecotourism within the smart tourism framework.

Research Proposition 11: Investigate how ecotourism creates value for various stakeholders, including tourists, local businesses, and government institutions, while promoting environmental sustainability, economic growth, and community empowerment.

Research Proposition 12: Explore non-English-language publications to ensure a comprehensive and globally inclusive understanding of smart tourism.

Research Proposition 13: Identify diverse perspectives and address under-representation, particularly from regions such as Africa and Latin America, to expand the linguistic and regional scope of analysis.

5. Discussion

Bibliometric analysis is a robust methodological approach employed to identify, classify, and evaluate scientific output within a specific academic field, such as journal publications authored by researchers. This method enables the systematic exploration of dominant themes and the detection of emerging research trends. By analyzing scholarly output over a defined period, bibliometric techniques provide valuable evidence regarding the development and dynamics of a given research area. Based on data retrieved from the Web of Science (WoS) database, this study offers a comprehensive bibliometric overview of the evolution of research in the field of smart tourism.

The primary objective of this study was to evaluate research productivity, as measured by the volume of scholarly publications, and to assess the academic impact of contributing institutions. This responds to the growing need for rigorous assessments of scientific performance in the field. The findings reveal a consistent increase in the number of annual publications, accompanied by a corresponding rise in citation counts. This pattern reflects the growing scholarly attention and recognition that smart tourism is receiving as an emergent interdisciplinary field. Specifically, 563 articles indexed in WoS between 2000 and 2024 collectively accrued 93,486 citations, with over half of these citations occurring in the final three years of the study period.

Several major trends emerged from the analysis. Geographically, China, the United States, England, and Spain were identified as the most influential countries in terms of research output. At the institutional level, Hong Kong Polytechnic University and Beijing Jiaotong University were among the most productive contributors. Asia and Europe domi-

nate the smart tourism landscape, primarily due to their advanced digital infrastructures, supportive policy environments, and strong academic leadership. Prominent scholars such as Dimitrios Buhalis (United Kingdom), Ulrike Gretzel (United States), and Rob Law (Hong Kong) have significantly shaped the intellectual development of the field. Commonly occurring keywords, including smart tourism, ICT, sustainability, and experience design, highlight key areas of scholarly focus. Furthermore, thematic trends reveal a shift from initial explorations of technological infrastructure to more recent investigations into personalization, artificial intelligence integration, and sustainable urban systems. However, notable gaps remain, particularly the limited representation from African and Latin American regions, suggesting an urgent need for broader geographical inclusion in future research.

Despite the contributions of this study, several limitations must be acknowledged. One key limitation relates to author affiliations, which may vary over time and result in the misattribution of scholarly output. Additionally, the results provide a snapshot of current research activity, which is subject to change as the field continues to evolve. As such, ongoing bibliometric monitoring is recommended to remain informed about future developments.

6. Limitations

This study exclusively utilizes the Web of Science (WoS) database, which, although reputable and widely used in academic research, may inadvertently exclude relevant literature indexed in other sources such as Scopus, Google Scholar, IEEE Xplore, and other domain-specific databases. This introduces a potential selection bias and may limit the overall comprehensiveness of the review. Furthermore, the restriction to English-language publications contributes to language bias, excluding significant contributions from non-Anglophone regions such as Latin America, Asia, and parts of Europe, thereby reducing the global representativeness of the findings. Additionally, some pertinent studies may have been omitted simply because they are not indexed within WoS. The study also focuses exclusively on the published literature, which means that developing or unpublished research (e.g., working papers, preprints, or doctoral theses) is not captured, potentially skewing the current perception of emerging trends in the field. Therefore, to ensure a more complete and balanced bibliometric analysis, future research should consider a broader range of databases and include multilingual and grey literature sources.

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