MAPPING ANALYSIS EFFECTS OF SMART TOURISM RESEARCH

RASHID, M. F. A.

School of Humanities, Universiti Sains Malaysia, Penang, Malaysia.
e-mail: muhammadfakruhayat[at]gmail.my

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Abstract. Exploring the transformative impacts of smart tourism on global destinations. This study provides a bibliometric analysis of smart tourism research from 2015 to 2023 to offer researchers and academics from across the world with an overview of the trends. A textual query on Scopus database was performed on 17 January 2023 retrieving 191 documents dataset from 2015 to 2023 for in-depth analysis using RStudio and Biblioshiny. According to the findings of the analysis, there is a significant inconsistency of global trends in annual scientific production, with the number of publications increasing and decreasing. China has the highest number of country scientific productions with 137 documents (25.8%), as the most relevant author is Chung N. with 16 documents (2.77%), while the most relevant journal is Sustainability (Switzerland) with 26 documents (15.61%), and the most frequent word is "smart tourism" with 90 frequency (35%). The bibliometric analysis reveals the growth and originality of smart tourism research in recent years. Annual scientific production fluctuates, indicating a dynamic field. Key contributors like China and author Chung N. demonstrate global interest and expertise. The term "smart tourism" underscores the research topic's significance.
Keywords: *smart tourism, RStudio, bibliometric analysis, tourism, effects, biblioshiny*

Introduction

Technology and information are very necessary components in the tourism industry. The phenomenon of digital revolutions has been brought to light by the rise of "smart tourism" which highlights the implications of information technology on the tourism industry. Information technology plays an essential role in the tourism industry (Ballina et al., 2019; Yoo et al., 2017a). Therefore, the concept of smart tourism technology has evolved into the most important aspect of the tourism industry. It combines tourist resources with sophisticated information technology, allowing it to give useful, timely data as well as interconnectivity among tourism stakeholders (Buhalis, 2019; Johnson and Samakovlis, 2019; Gretzel et al., 2015). Most people in the tourism industry are trying to get a significant advantage by using advanced information and communication technologies (ICTs) in smart tourism destinations. For example, by giving tourists smart tourism apps they can use their phones to plan their next trips and read reviews and comments from other travellers about their past trips before choosing a tourist destination (Lee et al., 2018).

Tourist experiences are essential to the tourism industry, and it is difficult to predict how smart tourism technology may affect tourist experiences. For example, Lee et al. (2018) conducted research on smart tourism technologies in various places, and it was determined that smart tourism technologies have contributed to the creation of memorable tourism experiences and the enjoyment of tourists. However, both studies are limited to a single location, and the conclusions cannot be generalised, since other nations and visitors would have different experiences and levels of familiarity with smart tourism technology, which may lead to dissatisfaction among individual tourists (Yoo et al., 2017b). Moreover, there is a possibility that the intrinsic characteristics of

visitors will impact how they perceive and utilise technology, whereas the characteristics of the location and the journey will influence the variety of experiences that they have (Femenia-Serra and Ivars-Baidal, 2021). To enhance the tourism experience, a growing number of tourist sites have adopted smart technologies such as artificial intelligence (AI), cloud computing, and the Internet of Things (IoT). For instance, virtual reality (VR) technology offers tourists with an experience that is physically, spiritually, and emotionally integrated (Hernández-Méndez and Muñoz-Leiva, 2015). Tourism destinations become 'smart' by implementing smart technology to increase competitiveness (Shen et al., 2020). Tourists use accessible smart technology for decision-making, such as coordinating trip arrangements on their mobile devices, engaging with other tourists, and sharing tourism experiences (Yang et al., 2017).

Several empirical studies in tourism research support the impact of smart tourism technologies on visitor experiences. The purpose of smart tourism, according to bibliometric research, is to describe the integration of various technological components that interact with people to enhance tourist experiences (Johnson and Samakovlis, 2019). Furthermore, Johnson and Samakovlis (2019) emphasize that a smart city tourism destination must use innovative technology to provide tourist experiences and linked tourist experiences (Chang and Caneday, 2011). Advanced technological accessibility, such as internet access, cloud services, and mobile phone or portable device connection, would considerably increase automated real-time travel demands (Jovicic, 2019; Buhalis and Amaranggana, 2015). At this point, most scholars have come to the same conclusion: using modern technology to make tourist destinations more accessible is an important part of promoting tourism destinations and getting the attention of potential tourists (Domínguez Vila et al., 2019; Lee and Gretzel, 2012). Additionally, Lee et al. (2018) explains how a tourist may improve their travel experiences and save time on decision-making by evaluating the information they get from smart tourism technology. This is a key component of enhancing a tourism experience.

This article aims to provide a literature review and bibliometric analysis review of the trends of effects smart tourism with employing software RStudio and Biblioshiny. These results will assist academics and researchers in determining the current status and trends of global effects smart tourism in Scopus database. This analysis may help to update the present status, as well as to see the progress effects of smart tourism research. This study may also help researchers or academics who are new to this research topic by indicating which publications and authors to consult while doing effects smart tourism research. In fact, as far as the researcher is concerned, no other scientific research has performed a bibliometric analysis related to the effects of smart tourism before to this research. Therefore, researchers interested to conduct a bibliometric analysis about effects of smart tourism to demonstrate the mapping patterns and trends in the academic literature.

Literature review

The literature review is split into three sections based on the kind of research knowledge that represent: (1) Smart tourism concept, (2) Effects of smart tourism and (3) Attributes technologies of smart tourism.

Smart tourism concept

The concept of "smart" is intertwined with the inevitable technological features of the modern world. Stakeholders in the tourism industry emphasise the use of different strategies and technological developments to improve the overall efficiency of resource management to transform the destination into a smart destination. Using a variety of information and communication technology (ICT)-based technologies, smart tourism destinations meet the requirements of today's mobile and global elite by providing visitors with a wide variety of hospitality and tourism-related products, experiences, venues, and services (Shafiee et al., 2019). However, this sort of tourism needs well-trained human resources, efficient marketing and promotion, high-level information and physical technology, environmental awareness, and stakeholder collaboration. Thus, focusing on a city's smart qualities creates a healthy cultural and social environment and supports travellers' tourism experiences. The creation of different augmented tourism products by collecting, analysing, and merging smart data is one of the most important things for the tourism industry to do to make sure it is efficient and sustainability (Lee et al., 2020). When thinking about how to improve competitiveness and sustainability in the tourism industry, it's important to keep in mind the positive effects that smart tourism has on providing efficient services to tourists and increasing the competitive advantage of tourist destinations. The smartness of a city and its ability to attract visitors may both benefit from investments and expansions of its technology resources (Del Vecchio et al., 2018). Therefore, considering all these aspects, it can be stated that individuals and businesses get optimum benefit from smart tourism in terms of service provision and efficient infrastructure.

Effects of smart tourism

One of the most important ways for a country's economy to grow is through tourism. In this situation, smart tourism has become one of the most important ways for a country to make more money, improve its overall technology, and encourage cultural exchange between its citizens and tourists (Mehraliyev et al., 2020). But the use of new technologies has become one of the most important ways to make destinations easier to get to and more flexible. By doing a Google search, tourists can find out everything they need to know about a tourist destination and choose the right one for them. In this way, smart tourism is a platform for using ICTs like Cloud computing, the Internet of Things, virtual or artificial intelligence, and other related technologies (Ghorbani et al., 2019). Tourists may get personalised information and improved services during their trip travel through this smart technology. The use of technology in the travel and tourism industry is crucial since it offers chances for daily business operations and enhances the consumer experience. Taking into consideration these factors, the introduction of digital technologies has assisted travellers in completing cashless payment, which is not only user-supportive but also increases travel security. Additionally, voice search has become increasingly relevant, making it one of the cutting-edge innovations that best supports travellers (Hamid et al., 2021). However, considering the consequences of the COVID 19 pandemic, smart tourism and improved use of technology have drawn the attention of all visitors, whose expectations are changing drastically. Smart technologies have been helping to reduce expenses, save time, and thus provide an improved and smooth travel experience for all travellers in addition to benefiting workers and corporate organisations. Smart technology may assist tourism organisations in streamlining their procedures, automating their entire offerings, and providing user-friendly services that need less human interaction. Tourists should expect improved services as the frequency

of errors made by individuals decreases. As a result of incorporating smart technology into tourism, both companies and visitors are receiving the best solutions to their complex challenges.

Attributes technologies of smart tourism

New technologies that benefit tourists while they're on the road have been developed in response to a change in consumer behaviour and a growing interest in smart tourism. One of the most essential methods to locate and purchase tickets and provide exceptional customer service is via voice search and voice control with AI assistants. In addition, guests may adjust the temperature in their room, turn on the lights, and get directions without bothering a hotel staff member by just speaking into their smartphones (García-Milon et al., 2020). An innovative use of robotics technology in hotels is the offering of services such as guest greeting, security screening, information provision, baggage assistance, and housekeeping. In addition to this, robots are frequently utilised to serve and prepare meals. Because of these factors, limiting human interaction in the time after COVID pandemic is becoming more feasible. In addition, with the rise of technologies like VR and AR, visitors may participate in virtual tours or enhance their actual environment (Idris et al., 2021). Hence, people who don't want to travel during this time can get the most help from these new technologies, which are available through most web browsers. Another important part is recognition technology, which helps with facial recognition, fingerprint recognition, retina scanning, and other biometric identifiers (Chen et al., 2018). In accordance with this, contactless check-ins and check-outs made possible by recognition technology have aided the smart tourism business in attracting the attention of global travellers and increasing their competitiveness.

Materials and Methods

Bibliometric analysis uses statistics to evaluate qualitative and quantitative trends in a scientific topic (Niu et al., 2016; De Bakker et al., 2005). To perform the bibliometric analysis review, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines has been used. The following procedure illustrates the PRISMA-recommended the steps for finding and extracting data for a bibliometric review.

Data source and search strategy (identification)

The data for this analysis was retrieved from Scopus database using a generic search query (*Table 1*). The Scopus database is one of the most comprehensive databases of scientific literature that has been evaluated by other experts and includes a wide range of documents and a significant amount of relevant information (Romero and Portillo-Salido, 2019). The Scopus database is one of four well-known databases that are often used in bibliometric analysis including Web of Science, Google Scholar, and PubMed (Falagas et al., 2008). A comprehensive and systematic search was carried out using the online Scopus databases Scopus on January 17, 2023. Searches of the database were limited to a single day to eliminate any potential for bias caused by the frequent updates on a regular basis. The researcher focused on publications about effects of smart tourism that were indexed by Scopus databases between the years 2015 and 2023 for the

purpose of bibliometric analysis review. This article's keywords were chosen based on an analysis of the literature on effects of smart tourism research. The researcher's search for records pertaining to effects of smart tourism has been narrowed to publications pertaining to these topics, notably those written only in English. The terms ((“impact*”) OR ((“effect*”)) AND (“smart tourism*”)) assessment have been used specifically in the search query, as well as in the titles, abstracts, and keywords of the results. According to Scopus database rules, words enclosed by double quotes are considered (one unit) throughout the search process, and the terms will display together in the same order that the formula was searched. The wildcard (*) is often used to capture all potential instances of the phrases (for example, effect* might be effect or effects). To merge the different elements of the search query, the Boolean operators OR and AND has been used to perform this duty to cover all related literature. The following is an example of the search strategy that was used using the Boolean operations (OR, AND) in both databases:

Topic: ((“impact*”) OR ((“effect*”)) AND (“smart tourism*”))
Document types: Article types only
Criteria: “titles, abstract and keywords (topic area)”
Year published: 2015-2023
Language: English

Table 1. *The search string.*

Database search string	Search string strategy boolean operators	No. Documents
Scopus	TITLE-ABS-KEY ((“impact*”) OR ((“effect*”)) AND ("smart tourism*")) AND (LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English"))	191
Scopus database	Total database	191

Researchers obtained sample of documents from Scopus in *CSV format to analyse all of the important information. This information comprises the title of the article, the author's name and affiliation, an abstract, keywords, the name of the journal, references, and so on. The researcher analysed the collected data using RStudio software version 4.2.0. The bibliometric tool Biblioshiny has been used to visualise and analyse trends in the effects of smart tourism. The goal of this article is to examine the status around the world from 2015 to 2023 (*Figure 1*).

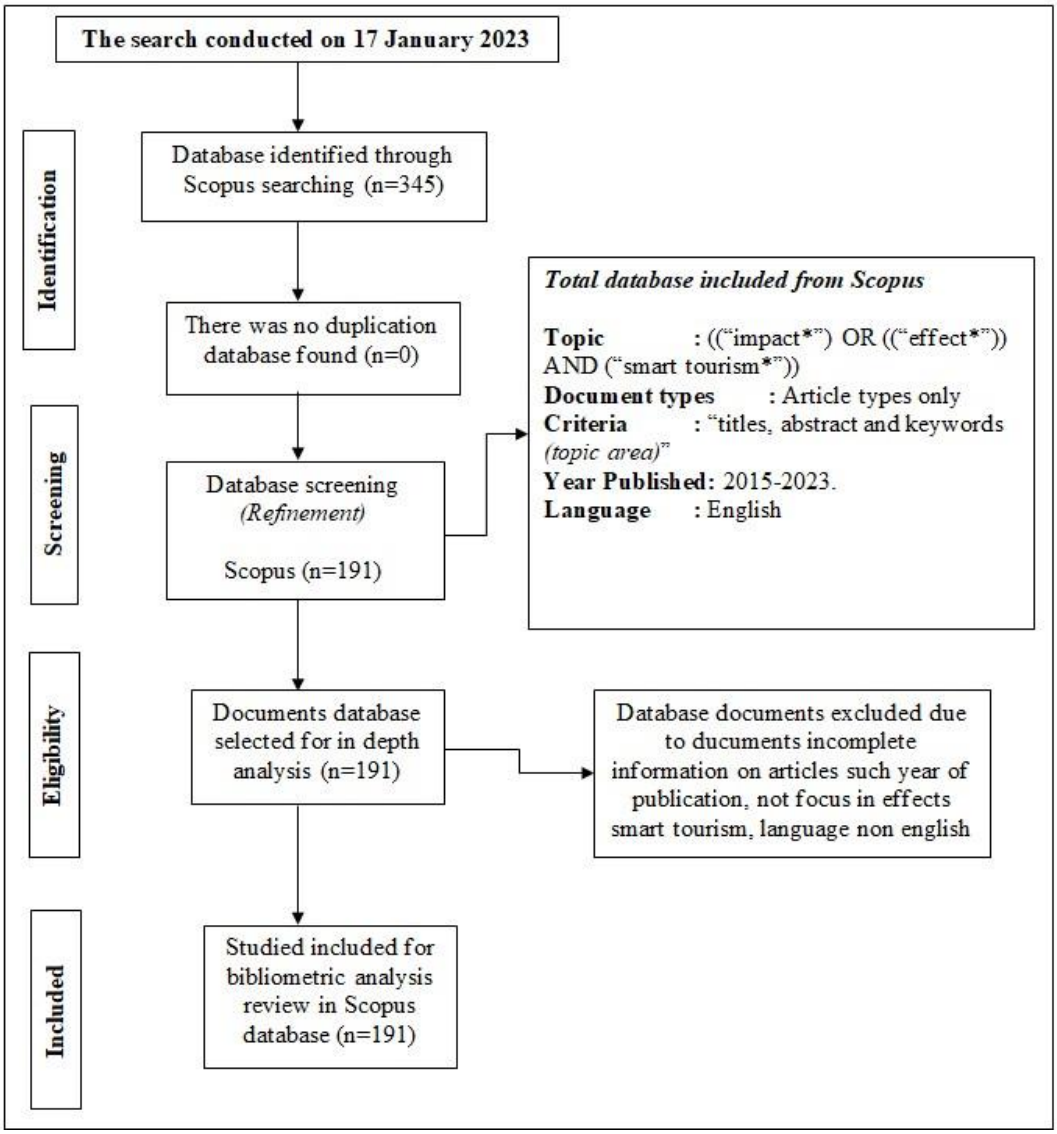

Figure 1. *Flowchart for study selection.*

Eligibility criteria (Screening process)

The researchers analysed 191 Scopus database documents. At this stage, it is essential to thoroughly examine all documents based on their title, abstract, and main content to determine if they meet the inclusion criteria, are suitable for use in the current study, and fulfil the goals. Thus, a total of 191 documents would need to be analysed based on the effects smart tourism study. Only publications released from 2015 to 2023 were considered. In addition, the sort of documents that were included was limited to just articles and the English language was restricted (*Table 2*).

Table 2*. The inclusion and exclusion criteria.*

Database criteria	Eligibility	Exclusion
Document type	Articles	Not applicable
Language	English	Non-English
Timeline	2015 - 2023	<2015
Location and Country	Worldwide (there was no restriction on the type)	Not applicable

Data analysis

The researcher used a Computer with Windows 8.1 and RStudio 4.2.0. Researchers will run RStudio and type>install.packages ("bibliometrix") in the command-line prompt to set up the bibliometrix programme. Once bibliometrix has been installed, the researcher types>library (bibliometrix) and Biblioshiny (bibliometrix) into the command terminal of RStudio to get to the Biblioshiny web-interface. Researchers put data from the Scopus database into Biblioshiny so they could look at it. A bibliometric study effects of smart tourism research field has been done to get a research output analysis. *Figure 2* shows the features of the Biblioshiny web interface that can be used to analyse data.

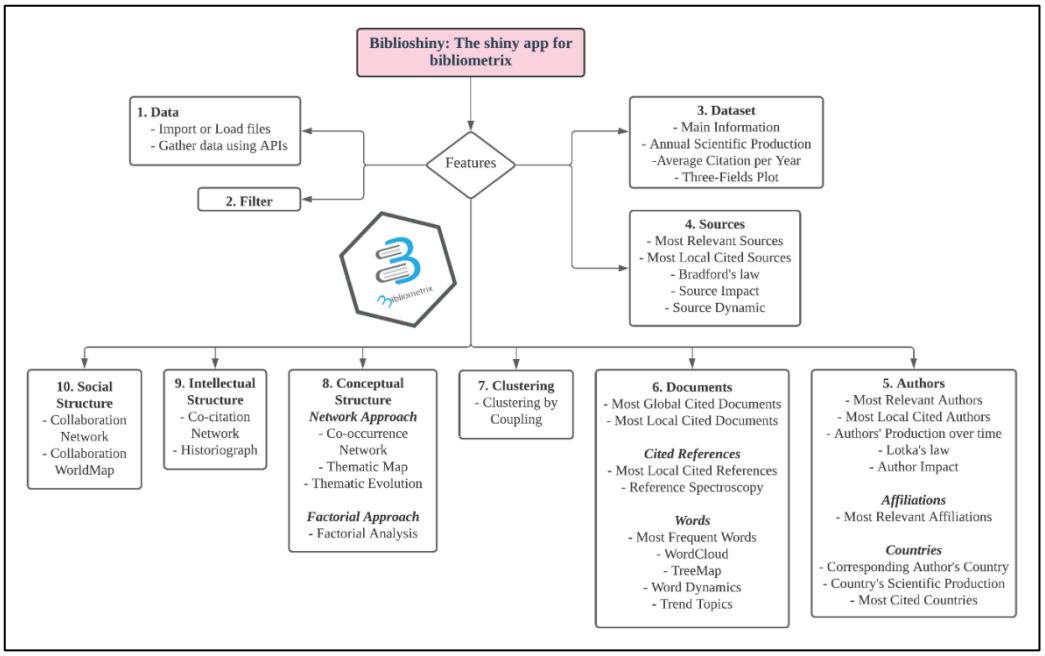

Figure 2. *Features of Biblioshiny app for bibliometrix.*

Results and Discussion

Utilizing the search approach that was outlined earlier, the researchers were able to compile a total of 191 publications that were pertinent to the issue of "effects on smart tourism" between the years 2015 and 2023. These datasets were obtained from a single distinctive indexing source, which was Scopus.

Main information documents analysis

Table 3 shows main information documents analysis. In the period spanning 2015 to 2023, a comprehensive analysis of smart tourism was conducted, utilizing 191 documents sourced from 96 different sources, including journals and books. There is an impressive growth rate of 7.25% for this body of research, indicating importance and interest in the field. The average age of the documents is 3.73 years, reflecting the development of research activity. The average citation count per document is 20.02, indicating the importance and impact of the research. Further evidence of the quality of these documents can be found in the extensive reference lists, numbering 10,259. There are 818 Keywords Plus (ID) and 605 Author's Keywords (DE) in the analysis. There are 465 authors involved in this research, with 27 documents authored by one author. Each

document has an average of 3.03 co-authors, and nearly 29% are international. Based on this comprehensive analysis, we can gain a comprehensive understanding of the different dimensions and global collaboration related in smart tourism research (*Figure 3*).

***Table 3**. Main information documents analysis.*

Description	Results
Timespan	2015:2023
Sources (Journals, Books, etc)	96
Documents	191
Annual Growth Rate %	7.25
Document Average Age	3.73
Average citations per doc	20.02
References	10259
Keywords Plus (ID)	818
Author's Keywords (DE)	605
Authors	465
Authors of single-authored docs	27
Single-authored docs	27
Co-Authors per Doc	3.03
International co-authorships %	28.8
Article	191

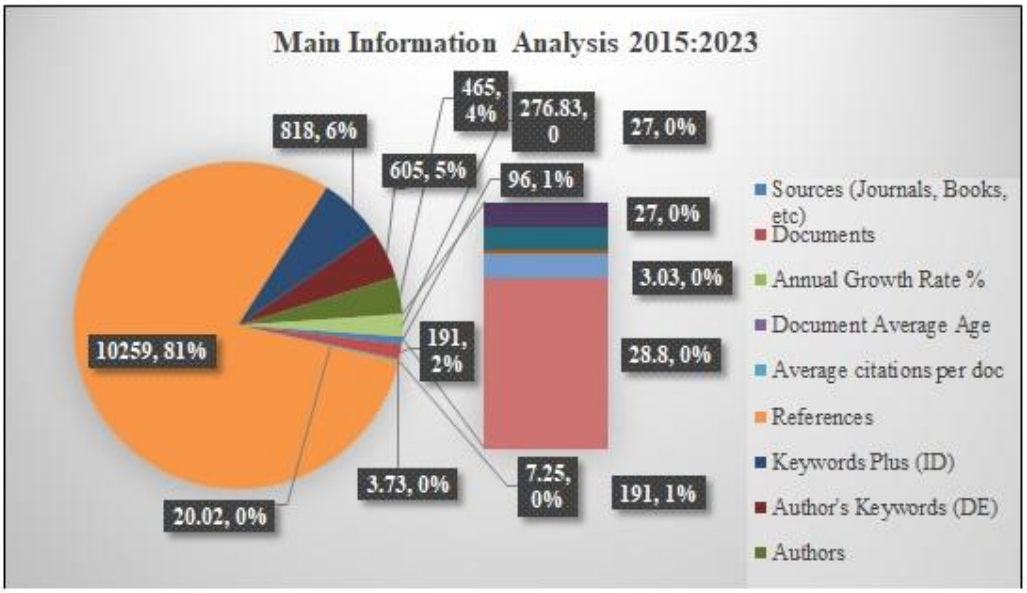

***Figure 3.** Main information analysis.*

Annual scientific production and average citation per year

From 2015 to 2023, 191 documents were published on the effects of smart tourism, revealing a remarkable trends of growth and fluctuation (*Table 4* and *Figure 4*). Each year, the number of publications released has consistently grown, demonstrating an increasing fascination in relating to the effect of smart tourism. The percentage distribution of documents has shows substantial growth between 2019 and 2020, when contributions increased to 25 articles (13.09%) and 28 documents (14.66%), showing an increase in research activities. The year 2022 stands out as a high point, with 59

documents accounting for 59 documents (30.89%) of the total. However, the data revealed a significant decline to 7 documents in 2023, contributing 3.66%. This decrease is due to the fact that the data was only collected until January 17, 2023. Overall, this data shows a dynamic landscape of academic discovery, indicating times of heightened interest and prospective future research topics in the discipline of smart tourism effects. The documented annual growth rate is 7.25%. *Table 4* below shows on the average of citations per year on the effects of smart tourism provides a broader overview of academic impacts in this topic. The mean total citations per article (MeanTCperArt) range from 99.5 to 0.14, indicating an inconsistent impact landscape in which certain documents stand out as high-impact publications with significant recognition. This variety is further explained by the mean total citations per year (MeanTCperYear) which ranges from 11.06 to 0.14, suggesting different citation rates across different articles. A high MeanTCperArt of 99.5 indicates a very important article, while the dataset as a whole highlights the variety of research effect in the smart tourism field. The variability in citation metrics and citable years provides valuable insights for researchers and stakeholders interested in understanding the dynamics of scholarly influence in the context of smart tourism effects.

***Table 4**. Annual scientific publications and average citation per year from 2015 to 2023.*

Annual scientific production			Average citations per year		
Year	Documents	Percentage (%)	MeanTCperArt	MeanTCperYear	Citable year
2015	4	2.09	99.5	11.06	9
2016	5	2.62	19	2.38	8
2017	11	5.76	67.27	9.61	7
2018	14	7.33	23	3.83	6
2019	25	13.09	19.08	3.82	5
2020	28	14.66	33.07	8.27	4
2021	38	19.9	20.53	6.84	3
2022	59	30.89	1.44	0.72	2
2023	7	3.66	0.14	0.14	1

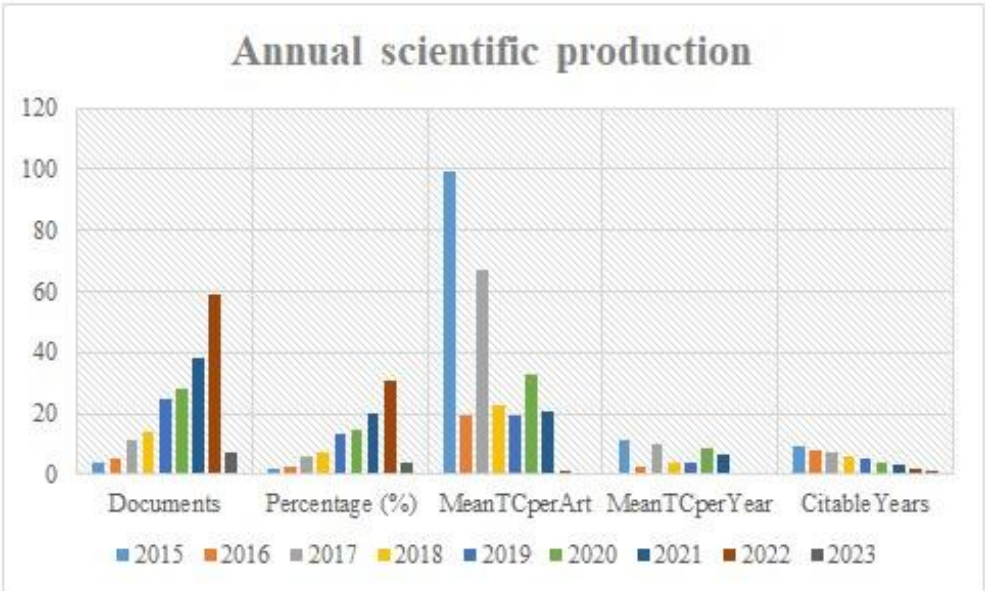

***Figure 4.** Annual scientific production in effects on smart tourism research.*

Country scientific production analysis

Table 5 shows the top ten country's scientific production in the effects on smart tourism research. The data analysed reveals 531 documents from 43 different countries worldwide that has been contribute the research topic. China appears as the main contributor, contributing 137 documents, accounting for an impressive 25.8% of overall research output. South Korea comes in second with 86 documents, accounting for 16.2% of the total, showing a significant research activity. Spain, the United States, and Italy all make significant contributions, contributing 42, 30, and 22 documents respectively, accounting for a significant amount of the total. The pattern of distribution shows the worldwide nature of smart tourism research, with major players such as China and South Korea leading the way, while a different of countries actively contributes to the growing body of knowledge in this area of research. This data is essential for understanding the geographical distribution of research activities and finding possible areas for global collaboration in smart tourism research development. Total citations (TC) and average article citations (AAC) give information about the research development. South Korea stands out, with a total of 818 citations and an amazing average of 25.60 citations per article. Spain and Italy follow closely, with 375 and 360 total citations, indicating significant impact and high average article citations respectively. This data illustrates not only the amount but also the quality of these country's research efforts, providing significant insights into the worldwide impact and ranking of countries in the area of smart tourism research.

***Table 5**. Top 10 country scientific production.*

Country scientific production			Most cited countries	
Countries	Documents	Percentage (%)	Total Citation (TC)	Average citations article
China	137	25.8	136	3.20
South Korea	86	16.2	818	25.60
Spain	42	7.91	375	28.80
USA	30	5.65	340	56.70
Italy	22	4.14	360	45.00
Iran	20	3.77	40	8.00
United Arab Emirates	19	3.58	64	64.00
Japan	18	3.39	41	13.70
United Kingdom	17	3.2	129	21.50
Malaysia	14	2.64	3	1.50

Most relevant authors analysis

Table 6 displays an overview of the authors who have made significant contributions to the field of smart tourism research. This table provides an in-depth overview of the research they have conducted. Chung N. has demonstrated prolific authorship by producing a total of 16 documents. This contribution represents 2.77% of the overall research output in the field. Chung N shows a significant impact in their field, as evidenced by their h-index of 10 and g-index of 16. This is further supported by a total citation count (TC) of 444. Koo C follows closely with 12 documents, which accounts for 2.08% of the overall dataset. Additionally, Koo C demonstrates a significant g-index value of 12. Lee H, Han H, and Nam K have made contributions of 6, 5, and 5 documents respectively. Each of these documents presents a variety of academic metrics. The list is expanded by Femenia-Serra F, González-Reverté F, Goo J, Hasanzadeh A, and Hlee S, each of them has contributed three documents. This highlights the wide variety of researchers involved in smart tourism research. The data provides information on both the quantity of contributions and the quality of impact, as measured by indices such as the h-index and g-index. This information plays a crucial role in identifying and comprehending the primary stakeholders in the industry,

encouraging collaboration, and encouraging further progress in smart tourism research (*Table 6*).

***Table 6**. Top 10 mnost relevant authors.*

Authors	Documents	%	h-index	g-inddex	m-index	TC	NP	PY-start
Chung N	16	2.77	10	16	1.111	444	16	2015
Koo C	12	2.08	7	12	0.778	300	12	2015
Lee H	6	1.04	4	6	0.444	228	6	2015
Han H	5	0.87	4	5	0.5	142	5	2016
Nam K	5	0.87	5	5	0.714	503	5	2017
Femenia-Serra F	3	0.52	3	3	0.6	133	3	2019
González-Reverté F	3	0.52	3	3	0.5	53	3	2018
Goo J	3	0.52	3	3	0.429	311	3	2017
Hasanzadeh A	3	0.52	2	3	0.667	19	3	2021
Hlee S	3	0.52	2	3	0.25	16	3	2016

Most relevant journals analysis

Table 7 presents a comprehensive overview of the popular journals in the area of smart tourism research. A total of 96 journals have been identified throughout 191 documents. The Journal of Sustainability (Switzerland) holds the top place on the list, contributing 26 documents, which accounts with 13.61% of the overall research output. This indicates the significant role of the journal in the research related to the effects of smart tourism. The "Asia Pacific Journal of Tourism Research" includes 9 documents, which represents a significant contribution of 4.71%. The journals "Mobile Information Systems" and "Tourism Review" both make significant contributions by publishing a total of 7 documents each. The journals "Information Technology and Tourism," "Journal of Hospitality and Tourism Technology", "E-Review of Tourism Research", "International Journal of Contemporary Hospitality Management", and "International Journal of Tourism Cities" each provide four documents that emphasise their significance in the academic field of smart tourism research. The distribution of documents across these journals illustrates the wide range that researchers utilise to share their findings. This provides valuable insights for academics, practitioners, and institutions who want to stay updated on progress in smart tourism. Since 2017, journal "Sustainability" has had a major influence on smart tourism research with an excellent h-index of 12, g-index of 20, and m-index of 1.714. Since 2018, the "Asia Pacific Journal of Tourism Research" has had a strong h-index of 7, g-index of 9, and m-index of 1.167. "Tourism Review", "Current Issues In Tourism" and "Information Technology and Tourism" have high impact indices, demonstrating their relevance in high-impact research dissemination. "Mobile Information Systems" founded in 2021, has a low h-index but a high m-index of 0.667, suggesting a significant influence. The data shows the different impact metrics of journals like "Journal of Hospitality and Tourism Technology", "E-Review of Tourism Research", "International Journal of Contemporary Hospitality Management", and "International Journal of Tourism Cities" providing an in-depth analysis of the journal's smart tourism research contributions. Researchers, organisations, and readers may use this information to identify popular journals and follow smart tourism research trends.

***Table 7**. Most relevant journals in smart tourism research.*

Most relevant journals			Journals impact					
Journals	Documents	%	h-index	g-inddex	m-index	TC	NP	PY-start
Sustainability (Switzerland)	26	13.61	12	20	1.714	447	26	2017
Asia Pacific Journal	9	4.71	7	9	1.167	249	9	2018

of Tourism Research								
Mobile Information Systems	7	3.66	2	3	0.667	10	7	2021
Tourism Review	7	3.66	5	7	1	604	7	2019
Current Issues In Tourism	5	2.62	3	5	0.6	175	5	2019
Information Technology and Tourism	5	2.62	3	5	0.5	170	5	2018
Journal of Hospitality and Tourism Technology	5	2.62	2	5	0.5	32	5	2020
E-Review of Tourism Research	4	2.09	1	3	0.2	10	4	2019
International Journal of Contemporary Hospitality Management	4	2.09	3	4	0.375	85	4	2016
International Journal of Tourism Cities	4	2.09	2	4	0.25	37	4	2016

Most frequent words analysis

The *Table 8* displays the most frequent words in smart tourism research, providing an overview of thematic emphasis and popular keywords. In 191 documents, 818 keywords have been discovered. Surprisingly, the word “smart tourism” is the most popular, appearing 90 times and accounting for 35%. This emphasises the key subject of study and the primary focus of academic discussion in the discipline of smart tourism. Furthermore, different keywords such as “smart tourism destination” and “smart tourism destinations” occur 11 and 9 times respectively, accounting for 4% of the total. The phrase “covid-19” appears 7 times (3%), demonstrating the rising significance and influence of the worldwide pandemic on smart tourism research. Furthermore, the phrases “smart tourism technology” and “smart tourism technologies” appear 7 and 6 times, respectively, indicating a strong focus on technical elements within the industry. Common tourism-related phrases such as “tourism”, “visit intention”, “smart city” and “social media” all contribute to the research topic, accounting for 14% of all occurrences. This data illustrates the main themes and frequent words in smart tourism research, providing useful insights into the popular words and emphasis areas within the effects of smart tourism.

***Table 8**. Top 20 most frequent utilize author keywords.*

Words	Frequency (N)	Percentage (%)
smart tourism	90	35
smart tourism destination	11	4
smart tourism destinations	9	4
covid-19	7	3
smart tourism technology	7	3
Tourism	7	3
smart tourism technologies	6	2
revisit intention	5	2
smart city	5	2
social media	5	2
destination image	4	2
destination marketing	4	2
sustainable tourism	4	2
technology readiness	4	2
tourism experience	4	2

artificial intelligence	3	1
big data	3	1
China	3	1
Ict	3	1
innovation	3	1

The effects of smart tourism are different and hold significant consequences for different stakeholders in the tourism ecosystem. The influence of various factors on smart tourism has been identified in previous research. These factors include perceived usefulness, ease of use, enjoyment, information and interaction motivations, network effects, equitable distribution of wealth, supply, and information privacy concerns (Yoo et al., 2017b). The adoption and diffusion of smart tourism technologies are significantly influenced by these factors. Furthermore, the development of information and communication services within the field of smart tourism can have significant effects on countries that heavily rely on tourism as an important economic development. This is due to the continuous demand from tourists for information pertaining to transportation, amenities, services, and indigenous assets (Romao and Neuts, 2017). Also, the economic benefits of smart tourism cities have been emphasised, focusing on how technology and tourism are coming together and how this affects economies within and between countries (Lee and Hlee, 2021). Big data in smart tourism destinations can also raise privacy issues, which can have a big impact on the long-term viability and economic benefits of these places (Afolabi et al., 2021). It's clear that smart tourism has effects on more than just new technologies. These effects include economic, social, and ethical concerns.

A bibliometric analysis was conducted to assess, from 2015 to 2023, global trends in research on smart tourism, with a focus on particular concerns within the field. This evaluation was conducted in order to provide an evaluation of these trends. This research was conducted, to the best of the researcher's knowledge, to cover the gaps left by a previous bibliometric examination of worldwide research on smart tourism using the Scopus databases. Researchers used the search terms "smart tourism" in Scopus between 2015 and 2023 in order to generate a list of relevant articles. The objective of the initiative from 2015 to 2023 is to focus on smart tourism research worldwide. There are no restrictions on the kind of articles that may be included in the research, and only English-language publications were considered for the intended conclusion. After completing the preliminary stage, researchers acquired 191 publications from the previously indicated database. The quantity of academic publications in a topic, according to Sun et al. (2018), is an interesting bibliometric indication that may signal the expansion of a field of research. Consequently, Korea and the United States have the highest number of research collaborations. Meanwhile, the predominant keyword used to describe this issue is smart tourism. Therefore, any future researchers on this topic may use this word as a reference. In addition, Sustainability (Switzerland), the most relevant journal has around 26 articles. China has the largest national scientific productivity, publishing roughly 137 documents. In conclusion, the greatest yearly scientific output for Scopus is projected to be about 59 in 2022, while the lowest publishing year for the database is 2015 with 4 articles.

Conclusion

The purpose of this article is to provide a bibliometric analysis of research on smart tourism to identify the most prolific researchers, the most often used phrases, the most respected journals, and the nations that collaborate most on this issue. Scopus was used to collect 191 journal articles published between 2015 and 2023 for this bibliometric analysis. This article employs bibliometric techniques to organise, present, and assess the help accomplish of literature in the smart tourism field. This bibliometric method, which may potentially be used in the future to establish uniqueness in the area, was used to identify key problems in smart tourism research. In order for researchers to give information in the form of an overview and recommendations, they must bridge the research gaps caused by the dearth of bibliometric studies on smart tourism.

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Conflict of interest

There is no conflict of interest involved with any parties in this research study.

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