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GOING SMART: A BIBLIOMETRIC REVIEW OF SMART TOURISM, SMART DESTINATION, AND SMART HOSPITALITY RESEARCH

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Abstract. Over the past decade, there has been a proliferation of scholarly investigations into tourist behaviour within smart tourism, destinations and hospitality. However, a notable research gap remains, as no prior studies have analysed all three terms – "smart tourism", "smart destination" and "smart hospitality" – concurrently. This study aims to address this gap by conducting a comprehensive bibliometric analysis. In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol and employing the VOSviewer software, a comprehensive examination of relevant documents from the Scopus database spanning 2008-2024 was conducted. The analysis encompassed a total of 1,367 documents, which revealed a discernible increase in publications over the years. China emerged as the leading country in terms of publication output, contributing 352 publications that received 4,235 citations. Influential authors were identified, including Chung, N., Koo, C., Gretzel, U. and Buhalis, D. Highly cited articles and keywords associated with smart tourism, destinations and hospitality were also identified, including "smart tourism", "smart tourism destination", "smart city", "tourism industry" and "smart hospitality". Sustainability emerged as the most prolific journal, with a total of 88 documents and 2,316 citations. This bibliometric analysis illuminates the contemporary landscape of smart tourism, smart destinations, and smart hospitality research, offering valuable insights and directions for future studies.

Keywords: bibliometric analysis, IoT, Scopus database, smart tourism, smart destination, smart hospitality.

JEL Classification: O32, O33, C88

1. Introduction

In recent decades, there has been a marked transition in emphasis towards the domain of information and communication technologies (ICT) among both practitioners and academics. The term "smart" has emerged as a descriptor, leading to the integration of technology across physical and digital infrastructures (Ahmed et al., 2024a; Gretzel et al., 2015a). This concept encompasses technological, economic and social advancements that are driven by technologies which employ sensors, big data, open data, innovative connectivity methods, information exchange and reasoning processes (Goo et al., 2022). It is widely acknowledged that ICTs, the Internet of Things (IoT) and cloud computing play pivotal roles in this landscape (Del Chiappa & Baggio, 2015). Recognised as a revolutionary technology, the IoT is progressively gaining prominence in contemporary wireless telecommunication environments (Novera et al., 2022). In the last ten years, many industries have started using smart and IoT-based systems, which has created many new areas of research (Huda et al., 2024). This means that using IoT in tourism is now a really important topic (Novera et al., 2022). ICTs have caused big changes in the tourism and hospitality industry (Ahmed et al., 2025; Folgado-Fernández et al., 2023). Scientific advancements and the rise in popularity of high-tech trends are changing the way tourism service providers, tourists and stakeholders work, pushing the tourism sector to adopt new and technological solutions (Garanti et al., 2023). The use of smart tourism technologies, such as travel-related websites, social media, and smartphones in travel planning, is increasing and having a big impact on the travel industry (Huang et al., 2017).

The influence of information and communication technologies (ICTs) on tourism, and their anticipated future evolution, appears to be creating a new landscape for destination management (Ivars-Baidal et al., 2019). Destinations across the globe are competing to meet the diverse needs of tourists by providing high-quality services and distinctive features (Căruntu

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& Dițoiu, 2014). In an increasingly globalised and highly dynamic environment, innovation is crucial for cities and tourist destinations to remain competitive (Del Chiappa & Baggio, 2015). An emerging trend is the adoption of smart technology by destinations to improve travel experiences (Sustacha et al., 2023). A smart tourism destination is described as a complex and dynamic ecosystem that integrates physical and digital components closely, evolving as a unified entity (Jankova et al., 2023). Scholars Collado-Agudo et al. (2023) emphasised that the smartness of a destination goes beyond merely implementing ICTs; it requires comprehensive managerial innovation that uses technology to improve the destination's competitiveness. This is achieved by promoting the efficient and sustainable use of resources, and by providing visitors with an enhanced experience. A meta-analysis of scientific literature suggests that technology has a positive impact on tourists' travel experiences when visiting smart destinations (Sustacha et al., 2023).

Hospitality can be defined as human conduct centred on interaction and relationship-building within the host-guest encounter, with non-human factors also playing a significant role (Chau & Yan, 2021). In the context of tourism, hospitality and hospitableness are defined as the relationship between service providers and receivers within a commercial hospitality setting, forming a dyadic connection (Munasinghe et al., 2022). In the hospitality sector, the concept of "smartness" empowers hotels to engage in continuous information exchange throughout their operations, enabling them to adapt accordingly. This is particularly important as guests play a central role in this process, with dynamic interactions supporting personalisation, contextualisation of services and collaborative experience creation (Buhalis & Leung, 2018). Furthermore, consumers have a discernible expectation for smart technology to facilitate regular hotel operations and services, with potentially elevated expectations in this regard (Stylos et al., 2021).

The ongoing evolution of post-pandemic tourism, characterised by innovative transitions towards a technologically driven, safe, and health-conscious approach, instills systemic structural changes within the hospitality and related tourism sectors (Fusté-Forné & Jamal, 2021). Despite extensive research into smart tourism, smart destinations and smart hospitality, a comprehensive literature review exploring research streams and outlining potential future research directions is lacking (Novera et al., 2022). This underscores a research gap in the field that could be addressed by generalising and categorising the diverse perspectives and outputs of researchers. A considerable number of bibliometric analyses pertaining to smart tourism have been published in academic literature (Chen et al., 2022; Johnson & Samakovlis, 2019; Madeira et al., 2023). These analyses encompass a range of areas, including smart tourism destinations (Iskender et al., 2022), the Internet of Things (IoT) in smart tourism (Novera et al., 2022), and smart hospitality (Krabokoukis, 2023). However, a systematic review of the literature reveals a paucity of studies that examine these concepts together.

A systematic analysis was conducted on documents from the Scopus (SC) database with "smart tourism" OR "smart destination" OR "smart hospitality" in their title, abstract and/or keywords. The objective of this analysis was to outline the existing trends of using "smart" in the tourism industry and to provide general directions for future smart tourism research. The identification of the most prominent countries and authors, the most prominent journals, and the most frequent author keywords will enable this study to be among the first to undertake a bibliometric review of smart tourism, smart destinations, and smart hospitality. This research will contribute to the existing body of scientific literature on tourism by identifying current trends and outlining research guidelines for scholars exploring the smart side of tourism, destinations or hospitality.

2. Methods

A plethora of review articles have been published, each with its own unique characteristics. These encompass bibliometric analysis, as demonstrated in studies by Ahmed et al. (2021); do Rosário Mira & de Jesus Breda (2021); Pilelienė et al. (2022); Pimonenko et al. (2021). An alternative approach involves conducting a systematic review and meta-analysis (Ahmed et al., 2022b; Anup Singh et al., 2023; Folgado-Fernández et al., 2023). A theoretical and conceptual review was conducted (Devkota et al., 2022; Gretzel et al., 2015b), and a literature review (content) analysis was performed (Ahmed et al., 2023b). Bibliometric reviews are categorised as either domain-based (Alsharif et al., 2024) or journal-based, as discussed by Paul & Bhukya (2021).

The present study adhered rigorously to the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol, as Moher et al. (2015) have detailed. The PRISMA Protocol is a widely recognised approach utilised in various fields to systematically extract data from databases such as Scopus or Web of Science (Alsharif & Isa, 2025; Alsharif et al., 2023b). Using a bibliometric analysis methodology, this study aimed to provide a concise yet comprehensive overview of global academic trends in the fields of "smart tourism", "smart destinations" and "smart hospitality". The investigation scrutinised various aspects, including prominent countries, authors, institutions, journals/sources, highly cited papers and key keywords. These

indicators are vital for evaluating advancement in scholarly publications within this domain.

The primary objective of this study is to identify current trends related to the use of the term "smart" in the tourism industry, and to provide comprehensive guidance for future research in smart tourism. To this end, four research questions have been formulated to inform the analytical approach and provide a comprehensive overview of the existing scientific literature in this field. These questions were meticulously crafted to illuminate crucial areas of interest and contribute to the enhancement of knowledge in relevant fields, as follows:

RQ1: What is the annual growth of scientific publications in the realms of smart tourism, destination, and hospitality?

RQ2: Who are the notable entities in terms of a) countries, b) academic institutions, c) journals/sources, and d) authors engaged in smart tourism, destination, and hospitality research?

RQ3: What are the most significant keywords found in selected articles related to smart tourism, destination, and hospitality?

RQ4: Which articles and review articles have garnered the highest number of citations in the fields of smart tourism, destination, and hospitality?

To address these research questions, this study begins by extracting documents from the SC database in June 2024. Following the methodology set out by Alsharif and Isa (2025), the study will conduct a thorough bibliometric analysis to identify and list the most influential countries, academic institutions, journals and authors. Subsequently, a concise description of each analyzed parameter is provided. Visualisation maps are generated using the VOSviewer software, a tool known for simplifying bibliometric research across diverse fields (Ali et al., 2021; Alsharif et al., 2022; Khraiwish & Alsharif, 2024; Wang et al., 2024), including tourism (Koseoglu et al., 2016; Pilelienė et al., 2024; Pilelienė & Jucevičius, 2023), and hospitality (Davahli et al., 2020). It is noteworthy that VOSviewer has been employed in numerous studies to facilitate a comprehensive understanding of the developmental trajectory of the fields of smart tourism, hospitality, and destinations.

The following query was applied to the title, abstract, and keywords: "TITLE-ABS-KEY ("smart tourism" OR "smart destination" OR "smart hospitality") AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp") OR LIMIT-TO (DOCTYPE, "ch") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (PUBSTAGE, "final"))".

Through this process, a total of 1536 documents were identified, all of which were published between 2008 and June 2024. Figure 1 demonstrates the selection process of relevant documents, as outlined below:

– **Year of publication:** 2008–June 2024
– **Language:** English
– **Document type:** 675 articles, 514 conference papers, 135 book chapters, and 43 review articles.

After providing a screening procedure, a total of 1367 documents were selected as suitable for the review.

3. Results

In accordance with the PRISMA procedure, a total of 1367 documents were identified as being suitable for analysis. The corpus of articles under scrutiny was published between 2008 and June 2024 in the SC database, and was found to encompass either the term "smart tourism", "smart destination" or "smart

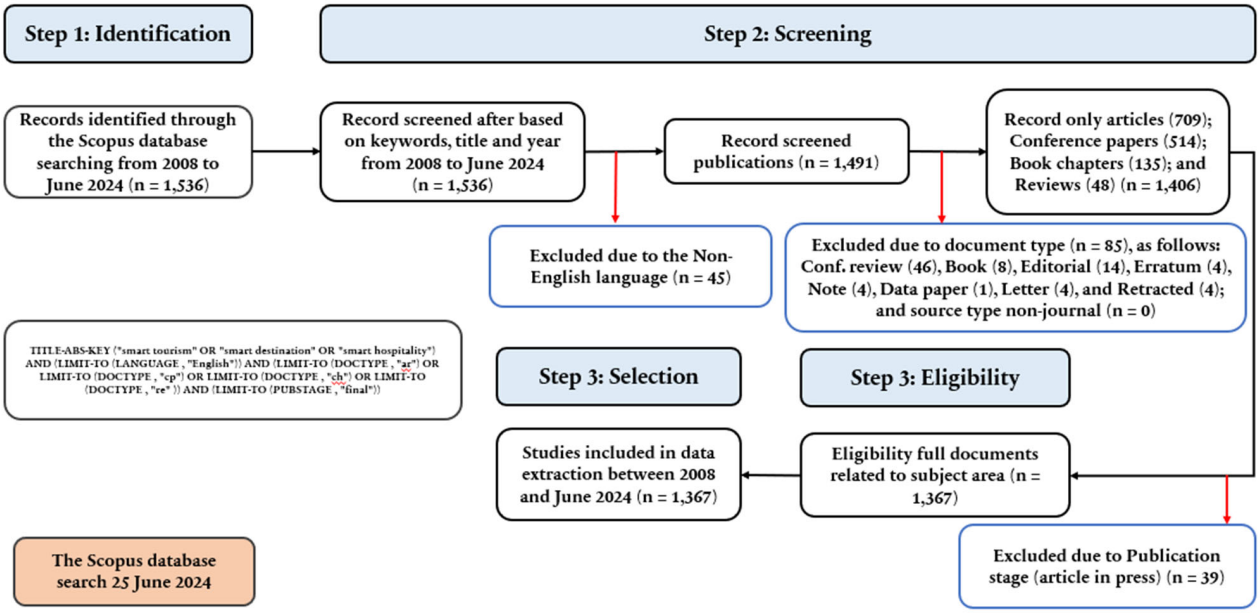

Figure 1. PRISMA process for extracting documents

hospitality" in their respective titles, abstracts and/or keywords. The annual number of articles and their cumulative growth are provided in Figure 2.

The search results obtained from the SC database indicated the review paper "Consequences of climate policy for international tourist arrivals in developing countries" (Gössling et al., 2008) as the primary source of relevant literature. This paper, published in 2008, analysed emerging climate policies in major tourism outbound markets, which have direct implications for the aviation sector and the potential consequences for travel costs and tourism demand. It was the first paper published in the SC database that met the search requirements. As of the date of data extraction, the paper has been cited 114 times. A thorough examination of the obtained results reveals that at the inception of the designated period, the researchers' engagement with the domain was found to be minimal. This initial absence of interest can be documented subsequently. It is therefore important to mention the conference paper entitled "Condition and Key Issues Analysis on the Smarter Tourism Construction in China", published in 2012 by Huang et al. (2012), as one of the first works to introduce the concept of "smart" in this field. The number of publications increased steadily from nine papers in 2013 (two articles and seven conference papers) to 267 in 2022.

From 2013 onwards, the researchers' interest began to intensify. A total of 10 documents were published in 2014, followed by 28 documents in 2015, 42 in 2016, and 267 in 2022. The first half of 2024 accounts for 105 documents. Given that the year has not yet reached its conclusion, it is possible to posit the hypothesis that there is a constant (if not growing) level of interest among researchers in this field. The first decline occurred in 2023, when only 250 documents were published; however, this can still be regarded as growth when the whole analysed period is taken into consideration.

At the inception of the research period, only one all-open-access article analysing smart cities and mentioning smart tourism (Li et al., 2013) was published in 2013; while no all-open-access articles were published in 2014. Since 2015, there has been an upward trend in the number of publications in this field that are available via open access. In 2015, four articles were published (three of which concerned smart tourism and one mentioned smart destinations), and this figure rose to four in 2016 (one of which concerned smart tourism, one concerned smart tourism destinations, and two mentioned smart destinations). During the research period, the all-open-access category accounted for 451 documents, constituting approximately 33 percent of the sample.

3.1 Prominent countries and academic institutes

The research results indicated that 88 contributors had published at least one article in the domain. Three countries – China, Spain and South Korea – have published more than 100 documents each (see Table 1). Six countries (Italy, India, the United States, Indonesia, Portugal and the United Kingdom) were found to have between 50 and 100 documents. Twenty-six countries (Malaysia, Hong Kong, Taiwan, Greece, Turkey, Japan, the Russian Federation, Australia, Macao, Brazil, Morocco, Canada, Germany, Austria, the United Arab Emirates, Thailand, Iran, France, Poland, Switzerland, Slovakia, Romania, Latvia, Vietnam, Serbia and Croatia) had more than 10 documents each. The remaining 40 countries published between two and 10 documents each, while 13 countries published just one.

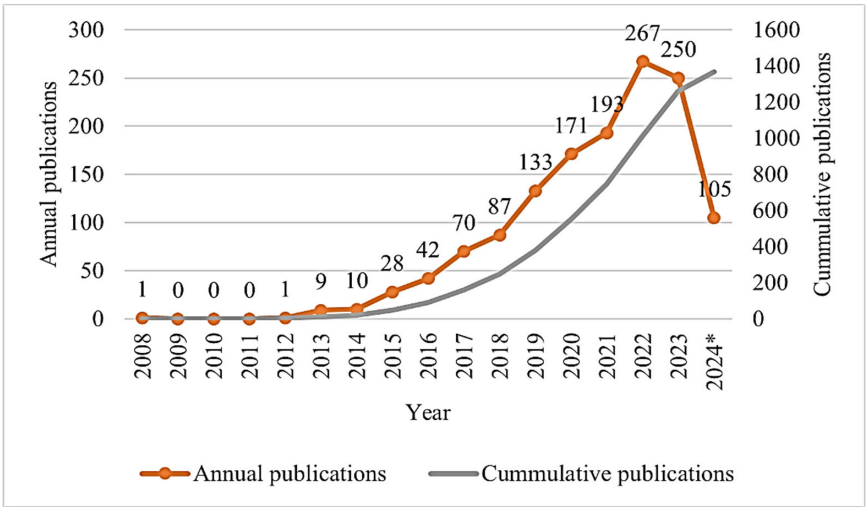

Figure 2. The annual and accumulative publications

Note: published in Q1 and Q2 of 2024

Table 1
The most prominent countries with a minimum of 20 documents

#	Country	TPs	TCs	ACpD	Productive institution	TPs	TCs	ACpD
1	China	352	4235	12.03	Wuhan Business University	16	16	1
2	Spain	130	3253	25.02	Universitat d'Alacant	24	1002	41.75
3	South Korea	103	5274	51.20	Kyung Hee University	58	4130	71.21
4	Italy	96	2192	22.83	Università del Salento	9	380	42.22
5	India	76	657	8.64	Amity University	4	3	0.75
					University of Kota	4	7	1.75
6	United States	73	5127	70.23	University of Southern California	11	506	46
7	Indonesia	66	367	5.56	Bina Nusantara University	16	27	1.69
8	Portugal	65	585	9	Universidade de Lisboa	12	170	14.17
9	United Kingdom	59	2756	47.22	Bournemouth University	7	1201	171.57
10	Malaysia	45	1007	22.38	Universiti Sains Malaysia	7	674	96.29
11	Hong Kong	40	1081	27.03	The Hong Kong Polytechnic University	35	948	27.09
12	Taiwan	37	1249	33.76	I-Shou University	5	442	49.11
13	Greece	37	187	5.05	University of Piraeus	9	56	6.22
14	Turkey	33	726	22	Dokuz Eylül Üniversitesi	3	525	175
15	Japan	31	201	6.48	Nara Institute of Science and Technology	9	67	7.44
16	Russian Federation	24	232	9.67	Saint Petersburg National Research University of Information Technologies, Mechanics and Optics University ITMO	4	43	10.75
					St. Petersburg Federal Research Center of the Russian Academy of Sciences	4	42	10.5
17	Australia	24	2807	116.96	University of South Australia	4	1385	346.25
18	Macau	23	710	30.87	University of Macau	11	367	33.36
19	Brazil	22	369	16.77	Universidade Federal do Rio Grande do Norte	7	161	23

Note: data extracted from the Scopus database on the 25th of June 2024. Abbreviations: TPs – total publications; TCs – total citations; ACpD – average citations per document

A consideration of the citations reveals that the most prolific countries, those publishing in excess of 100 articles, have been cited in excess of a thousand times each. However, China has the highest number of publications (352), with 4235 citations, while the United States, with 73 publications (sixth in the group), has received 5127 citations. A total of 352 documents were published by researchers representing China. Of these, 243 were cited at least once, which indicates that almost 31 percent of the documents were not cited. The country with the highest number of publications was South Korea, which published 103 articles (third in the group) that accumulated 5274 citations. For instance, Italy published a similar number of articles (96 articles, fourth in the group) and was cited 2192 times.

Researchers representing Greece and Taiwan have published 37 documents each. However, a review of the literature reveals that papers published by Greek researchers have been cited 187 times (5.05 citations per document), while papers published by Taiwanese authors have been cited 1249 times (33.76 citations per document) until the date of the review. A consideration of the average citations per article reveals that Australia (ACpD = 116.96) was the only country to exceed 100, with the United States ranking second (ACpD = 70.23). Conversely, documents published by the Russian Federation (ACpD = 9.67), Portugal (ACpD = 9), India (ACpD = 8.64), Japan (ACpD = 6.48), Indonesia (ACpD = 5.56), and Greece (ACpD = 5.05) were cited less than 10 times on average.

The most prominent universities were identified in each analysed country. The most productive were found to be Kyung Hee University in South Korea (58 publications, 4,130 citations) and the Hong Kong Polytechnic University (35 publications, 948 citations). Moreover, Kyung Hee University was found to be the most cited university in the fields of smart tourism, smart destinations and smart hospitality, according to the number of citations. The University of South Australia was found to be second in terms of citations: Four articles from this university have accumulated 1,385 citations. At the other extreme, Amity University (India) was cited only three times, despite having four articles.

3.2 Productive Journals

The subsequent stage in the bibliometric analyses is the identification of the most prominent journals. A total of 620 sources were identified, of which

21 journals were found to have published a minimum of 10 documents related to smart tourism, smart destination, and smart hospitality. The leading journal in the field of smart tourism, smart destination and smart hospitality was identified as Sustainability Switzerland, with a total of 88 papers and 2,316 citations (see Table 2). The most frequently cited paper (151 citations) of this journal was "Smart city and smart tourism: A case of Dubai" (Khan et al., 2017), a text authored by four scholars representing two institutions from two countries: three authors from the United Arab Emirates and one from the Republic of Korea.

The second most productive journal was found to be the ACM International Conference Proceedings Series, with 42 conference papers and 93 citations at the time of the review.

Table 2

The ten most prominent journals in smart tourism, destination, and hospitality with a minimum of four documents

#	Journal/ Source	TPs	TCs	Title of the most cited document by the end of 2022	Times cited	Year
1	Sustainability (Switzerland)	88	2316	"Smart city and smart tourism: A case of Dubai"	151	2017
2	ACM International Conference Proceeding Series	42	93	"Smart tourism in cities: Exploring urban destinations with audio augmented reality"	29	2018
3	Lecture Notes in Networks and Systems	25	26	"Toward a Smart Tourism Recommender System: Applied to Tangier City"	6	2018
4	Springer Proceedings in Business and Economics	24	93	"Big Data Analytics in Smart Tourism Destinations. A New Tool for Destination Management Organizations? "	25	2019
5	Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)	23	143	"A blockchain based system to ensure transparency and reliability in food supply chain"	47	2019
6	Advances in Intelligent Systems and Computing	23	131	"Social smart destination: A platform to analyze user generated content in smart tourism destinations"	28	2016
7	Journal of Destination Marketing and Management	18	1577	"SoCoMo marketing for travel and tourism: Empowering co-creation of value"	372	2015
8	International Journal of Tourism Cities	18	779	"Smart tourism destinations: ecosystems for tourism destination competitiveness"	396	2016
9	Journal of Hospitality and Tourism Technology	18	532	"How smart tourism technologies affect tourist destination loyalty"	91	2020
10	Journal of Physics: Conference Series	18	71	"Convergence of IOT in tourism industry: A pragmatic analysis"	28	2021
11	Asia Pacific Journal of Tourism Research	17	643	"Blockchain technology for smart city and smart tourism: latest trends and challenges"	145	2021
12	Tourism Review	15	1556	"COVID-19: potential effects on Chinese citizens' lifestyle and travel"	524	2021
13	Smart Innovation, Systems and Technologies	15	17	"Analysis of scientific production- smart tourism destination, technology and sustainability"	6	2020
14	Communications in Computer and Information Science	14	37	"Condition and Key Issues Analysis on the Smarter Tourism Construction in China"	20	2012
15	Current Issues in Tourism	13	450	"Smart destinations and the evolution of ICTs: a new scenario for destination management? "	218	2019
16	International Journal of Contemporary Hospitality Management	11	514	"Artificial intelligence: a systematic review of methods and applications in hospitality and tourism"	78	2022
17	Mobile Information Systems	11	44	"Marketing Strategy of Rural Tourism Based on Big Data and Artificial Intelligence"	12	2022
18	Worldwide Hospitality and Tourism Themes	11	40	"Smartness and social networks as shapers of the tourism industry: What is being done in Academia in this intersection?"	9	2019
19	Proceedings of SPIE – The International Society for Optical Engineering	11	2	"Real-time value of tourist big data: A case study of Red-river Canyon Rafting scenic spot"	1	2022
				"Design of the smart scenic spot service platform"	1	2015
20	Information Technology and Tourism	10	679	"The digital revolution in the travel and tourism industry"	277	2020
21	Tourism Management Perspectives	10	527	"New technologies in tourism: From multi-disciplinary to anti-disciplinary advances and trajectories"	198	2018

Note: data extracted from Scopus database on 25th of June 2024. Abbreviations: TPs – total publications; TCs – total citations

The Journal of Destination Marketing and Management and the Tourism Review must be mentioned based on the number of citations. The Journal of Destination Marketing and Management has published 18 articles that have been cited 1,577 times. The most cited article on the analysed topic, "SoCoMo marketing for travel and tourism: Empowering the co-creation of value" (Buhalis & Foerste, 2015), which has been cited 372 times. The present article was authored by Dimitrios Buhalis and Marie Foerste, representing the School of Tourism at Bournemouth University, United Kingdom. The journal Tourism Review, which contains 15 documents in the analysed domain, has been cited 1,556 times. The mostly cited article, "COVID-19: potential effects on Chinese citizens' lifestyle and travel" (Wen et al., 2021), with 524 citations, was written by four authors representing four different institutions from three countries: Edith Cowan University, Joondalup, and the University of Western Australia, Perth from Australia, School of Tourism and Hospitality Management, Dokuz Eylul University, İzmir, Turkey, and Universiti Sains Malaysia, Penang, Malaysia.

Among the highly cited journals, the International Journal of Tourism Cities was identified, with 18 articles and 779 citations. The article 'Smart tourism destinations: ecosystems for tourism destination competitiveness' has been cited 396 times. This article was written by three authors representing one institution: the School of Tourism at Bournemouth University in the United Kingdom.

The journals Information Technology and Tourism, with 10 published articles, and the Asia Pacific Journal of Tourism Research, with 17 articles, are also highly influential. Articles published in these journals have been cited 679 and 643 times, respectively. The article, entitled "The digital revolution in the travel and tourism industry" (Pencarelli, 2020), was authored by Tonino Pencarelli, representing the University of Urbino Carlo Bo, Italy. As of yet, the article has accumulated a total of 277 citations. While "Blockchain technology for smart city and smart tourism: latest trends and challenges" (Nam et al., 2021), published in Information Asia Pacific Journal of Tourism Research and written by four authors: three from the American University of Sharjah, UAE, and one representing Emirates Academy of Hospitality Management, UAE was cited 145 times until 25th of June 2024.

As the other extreme, out of 11 conference papers published in the Proceedings of SPIE – The International Society for Optical Engineering, only two have been cited and accumulated per 1 citation up to date.

3.3 Productive Authors

Within a specific scientific domain, numerous authors typically disseminate a solitary study, while a select group of prolific authors contribute a substantial number of publications. Lotka's Law stipulates that this phenomenon occurs (Andrés, 2009). The data found in the SC database indicated that 3414 authors contributed at least one article to the field of smart tourism, smart destination and smart hospitality. Therefore, according to Lotka's Law, there should be around 58 authors in the prolific author group (square root of 3414). The research results indicate that 57 authors have published a total of more than three articles, 89 authors have published three articles, 305 authors have published two articles, and the remaining 2,966 authors have published only one article. Following a thorough review of the relevant literature, 20 authors were identified who had co-authored a minimum of five publications, and five authors who had published a minimum of 10.

The most prominent authors (with a minimum of five publications co-authored) in the domain of smart tourism, smart destination and smart hospitality are provided in Table 3. A total of 20 prominent authors are represented, with five hailing from South Korea, four from Japan, three from Spain, two from Greece, and one each from the UK, Macao, the United States, China, Slovakia, and the United Arab Emirates.

Chung, N., from the Kyung Hee University in South Korea, has co-authored 31 articles in the domain of smart tourism, smart destination and smart hospitality, and as of the day of the analysis, his articles had been cited 1,780 times. Nevertheless, the author to whom the greatest number of citations were directed was Koo C., representing Kyung Hee University in South Korea. His 26 articles were cited 2,735 times. Among the most cited authors, Gretzel, U. from the University of Southern California, United States, with 12 publications and 2063 citations, and Buhalis, D., with 9 publications and 1567 citations, are to be mentioned. As 20 authors were found to have a minimum of six publications each, the range of their citations is from 2735 (Koo, C.) to 40 (Lim, C.). Consequently, it can be deduced that the substantial number of publications enhances the likelihood of an author being cited; nevertheless, it is not the sole determining factor in this regard.

3.4 Keywords

In the present study, a comprehensive analysis of co-occurring author keywords was performed using VOSviewer software (Ahmed & Salmi, 2024; Ahmed et al., 2024b). A total of 3148 keywords were identified by authors publishing their research related to smart tourism, smart destination, and smart hospitality. In accordance with Zipf's law (Ito et al., 2023), it was determined that the most frequently utilised keywords in the research should amount to a minimum of 56, which is the square root of 3,148. A total of 53 keywords were identified that satisfied the criteria, with each

Table 3
The most prominent authors

#	Author's name	H-index	TPs	TCs	Author's SC ID	Affiliation	Country
1	Chung, N.	42	31	1780	56719190700	Kyung Hee University	South Korea
2	Koo, C.	39	26	2735	16401903700	Kyung Hee University	South Korea
3	Law, R.	88	14	682	7201502135	University of Macau	Macau
4	Gretzel, U.	51	12	2094	6506950250	University of Southern California	United States
5	Ivars-Baidal, J.A.	21	11	752	6507624878	Universitat d'Alacant	Spain
6	Buhalis, D.	71	9	1614	6603014980	The Business School at BU	UK
7	Femenia-Serra, F.	9	9	556	57202498537	Universidad Complutense de Madrid	Spain
8	Yasumoto, K.	23	9	67	7203026208	Nara Institute of Science and Technology	Japan
9	Matsuda, Y.	10	9	67	57056904200	Nara Institute of Science and Technology	Japan
10	Han, H.	10	8	772	56571869700	Kyung Hee University	South Korea
11	Alepis, E.	21	8	50	57211584454	University of Piraeus	Greece
12	Kontogianni, A.	5	8	50	57202323554	University of Piraeus	Greece
13	Jwa, J.W.	5	8	42	6506052251	Jeju National University	South Korea
14	Gajdošík, T.	9	7	95	57194875975	Matej Bel University	Slovakia
15	Nam, K.	23	6	951	7203002244	Info School of Business Administration	United Arab Emirates
16	Celdrán-Bernabeu, M.A.	6	6	391	57196085052	Universitat d'Alacant	Spain
17	Lee, H.	13	6	216	56564389800	Kyung Hee University	South Korea
18	Hlee, S.	11	6	166	57110348500	Beijing Institute of Technology	China
19	Arakawa, Y.	19	6	66	36095797300	Kyushu University	Japan
20	Lim, C.	4	6	40	57193140141	Tokyo Institute of Technology	Japan

Note: data extracted from Scopus database on 25nd of June, 2024. Abbreviations: TPs, total publication; TCs, total citations

appearing a minimum of 10 times. However, the lowest occurrence limit was set to 6 in order to more accurately reflect the terminology employed in the field. The present analysis concentrated on 103 keywords that appeared a minimum of six times within the sample, thus ensuring a robust dataset for examination. The author's keyword co-occurrences were analysed to evaluate the thematic trends within the specific domain of "smart" in relation to tourism, hospitality, and destination. The results of this analysis are illustrated visually in Figure 3, providing a clear illustration of these findings.

A thorough examination of the results from a temporal standpoint has enabled the identification of several trends. A retrospective analysis of earlier research (i.e., 2019, 2020) reveals that authors primarily concentrated on mobile applications, data mining, tourism experience, tourist behaviour, and rural tourism. However, starting from 2021, there has been a notable shift in the focus of researchers towards smart destinations, smart tourism destinations, smart cities, recommender systems, social media, information and communication, and digital tourism. The focus also shifted to the COVID-19 pandemic. In 2022, the spotlight turned to machine learning, deep learning, artificial intelligence, virtual reality and sustainable development.

All 103 of the identified keywords were checked for repetition bias, which could be caused by the use of the keyword in its singular or plural form (Halsharif & Pilelienė, 2023; Pilelienė & Jucevičius, 2023). After repetitive keywords were grouped, it was found that 90 keywords had occurred at least six times. The number of occurrences of author keywords and total link strengths are provided in Table 4.

Several insights can be envisaged when considering "smart" in the context of tourism. The top keywords are "smart tourism" (607 occurrences), "smart city/cities" (130 occurrences), "smart tourism destination(s)" (92 occurrences) and "smart destination(s)" (89 occurrences). "Smart tourism technology" appears 30 times, emphasising the importance of "smartness" in the analysed context. Also, variations of the keyword "smart", such as "smart tourism city" (8 occurrences) and 'smart tourist destination' (7 occurrences), can be found among the keywords most frequently used by authors. It should be noted that one of the keywords used in this study, "smart hospitality", was found only 17 times, with a total link strength of 26. Therefore,

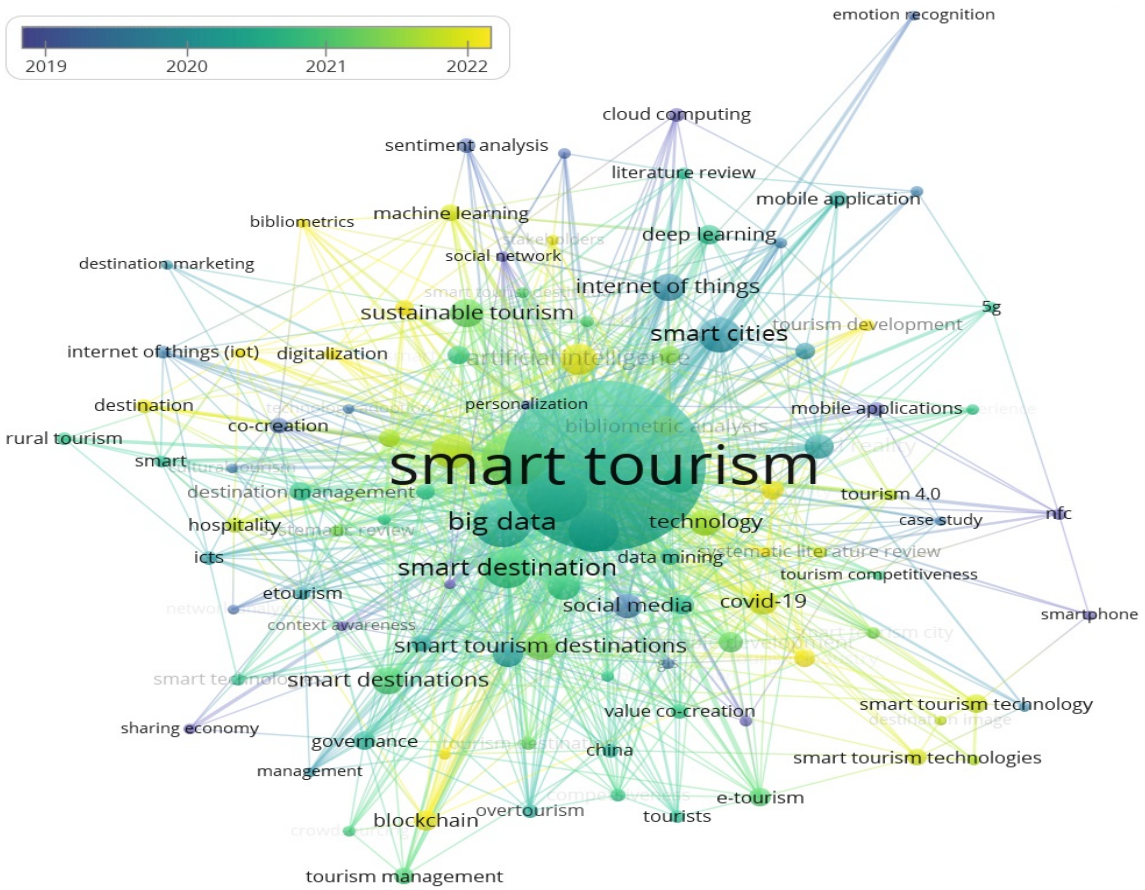

Figure 3. Snapshot of authors' keywords with six occurrences at least

research on smart hospitality can be identified as scarce and in need of more thorough research.

A further group of keywords has been identified, which pertain to the utilisation of technologies within the tourism industry. In this regard, it is notable that keywords such as "big data" (79 occurrences), "internet of things/ IOT/ internet of things (IOT)" (70 occurrences), "ICT/ information and communication technology/ ICTS/ information communication technologies" (58 occurrences), and "artificial intelligence/ AI" (43 occurrences) are present within the TOP10 of the list. Also, "augmented reality / augmented reality (AR)" (31 occurrences), "social media" (25 occurrences), "smart technology(ies)" (23 occurrences) and "mobile application(s)" (22 occurrences) can be found as emergent. The general technology-related keywords "innovation" and "technology" were each mentioned 29 times. Other important technology related keywords were: "virtual reality" (16 occurrences), "recommender system" (15 occurrences), "data mining" and "machine learning" (14 occurrences each), "digital transformations" (13 occurrences), "cloud computing" (10 occurrences), "digitalization" (9 occurrences), "NFC", "smart", "tourism 4.0" (8 occurrences each), "5G", "big data analytics", "GIS", "information technology", "location-based services", "smartness", "social network", "social network analysis" and "user experience" (7 occurrences each), "context awareness", "network analysis", "personalization", "recommender systems", "smartphone", "technology adoption" and "technology readiness" (6 occurrences each). Such keywords as "e-tourism/ etourism" (25 occurrences) and "digital tourism" (8 occurrences), relating tourism to technologies, were also attached to this group. Therefore, given the range of technology-related keywords, it is reasonable to assume that the topic is broad and attracting significant researcher interest.

The third group of keywords can be named as "general". To this keyword-group such keywords as "tourism" (96 occurrences), "tourism experience" (18 occurrences), "destination management" (17 occurrences), "governance" (16 occurrences), "tourism industry" (15 occurrences), "cultural heritage", "tourist experience", "tourism management" (14 occurrences each), "co-creation" and "hospitality" (12 occurrences each), "value co-creation" (11 occurrences), "destination" and "overtourism" (10 occurrences each), "competitiveness", "rural tourism", "tourism destination", "tourists" (9 occurrences each), "tourism development" (8 occurrences), "accessibility", "crowdsourcing", "revisit intentions", "stakeholders", and "tourism planning" (7 occurrences each), "cultural

Table 4

Top 90 authors' keywords with 6 occurrences of at least

#	Authors' keywords	Occ	TLS	#	Authors' keywords	Occ	TLS
1	smart tourism	607	887	46	overtourism	10	24
2	tourism	96	194	47	competitiveness	9	22
3	smart city/ smart cities	130	284	48	digitalization	9	21
4	smart tourism destination(s)	92	163	49	rural tourism	9	12
5	smart destination(s)	89	173	50	tourism destination	9	19
6	big data	79	153	51	tourists	9	17
7	internet of things/ IOT/ internet of things (IOT)	70	164	52	digital tourism	8	21
8	ICT/ information and communication technology/ ICTS/ information and communication technologies	58	152	53	literature review	8	19
9	sustainability	44	109	54	NFC	8	19
10	artificial intelligence/ AI	43	97	55	smart	8	22
11	sustainable tourism	33	63	56	smart tourism city	8	14
12	augmented reality / augmented reality (AR)	31	76	57	systematic literature review	8	13
13	smart tourism technology(ies)	30	34	58	systematic review	8	26
14	innovation	29	60	59	tourism 4.0	8	24
15	technology	29	73	60	tourism development	8	13
16	covid-19	26	54	61	5G	7	13
17	e-tourism/ etourism	25	50	62	accessibility	7	18
18	social media	25	43	63	big data analytics	7	21
19	smart technology(ies)	23	61	64	crowdsourcing	7	15
20	mobile application(s)	22	39	65	GIS	7	13
21	blockchain	20	44	66	information technology	7	13
22	bibliometric analysis	19	51	67	location-based services	7	10
23	sustainable development	19	36	68	revisit intention	7	11
24	deep learning	18	35	69	sharing economy	7	12
25	tourist experience	18	44	70	smart tourist destination	7	14
26	destination management	17	38	71	smartness	7	20
27	smart hospitality	17	26	72	social network	7	18
28	governance	16	43	73	social network analysis	7	11
29	virtual reality	16	32	74	stakeholders	7	12
30	recommender system	15	28	75	tourism planning	7	16
31	tourism industry	15	27	76	user experience	7	14
32	cultural heritage	14	27	77	case study	6	14
33	data mining	14	25	78	context awareness	6	11
34	machine learning	14	34	79	cultural tourism	6	12
35	tourism experience	14	27	80	destination image	6	8
36	tourism management	14	20	81	destination marketing	6	9
37	digital transformation	13	22	82	emotion recognition	6	18
38	bibliometric(s)	12	35	83	management	6	19
39	co-creation	12	23	84	network analysis	6	9
40	hospitality	12	31	85	personalization	6	17
41	sentiment analysis	11	18	86	recommender systems	6	17
42	value co-creation	11	19	87	smartphone	6	7
43	China	10	17	88	technology adoption	6	17
44	cloud computing	10	16	89	technology readiness	6	9
45	destination	10	20	90	tourism competitiveness	6	12

Note: data extracted from Scopus database on 25th of June 2024. Abbreviations: TLS – total link strength; Occ – Occurrences

tourism", "destination image", "destination marketing", "emotion recognition", "management", and "tourism competitiveness" (6 occurrences each) can be attached. Also, "Covid-19" (26 occurrences) can be attached to this group: although not being tourism-specific, it had a great impact on the industry. Therefore, despite growing researcher interest in smart tourism, smart destinations and smart hospitality, general tourism-related topics remain relevant. Merging these topics with the use of technology could broaden the scope of

analysis in this field and provide a more comprehensive overview.

Also, during the analysis several sustainability-related keywords occurred: "sustainability" (44 occurrences), "sustainable tourism" (33 occurrences), "sustainable development" (19 occurrences), and "sharing economy" (7 occurrences) indicating the scope of researcher attention. Sustainability issues are being researched by scholars for many years, and their significance is still growing.

The last group of keywords can be identified as method-related group. In this group the authors identified such keywords as "bibliometric analysis" (19 occurrences), "bibliometric(s)" (12 occurrences), "sentiment analysis" (11 occurrences), "literature review", "systematic literature review" and "systematic review" (8 occurrences each), "case study" (6 occurrences). It is evident that the latter keywords bear no direct relation to tourism; consequently, they cannot be regarded as domain-specific. Nevertheless, the indication of the methodology employed in a study can facilitate the expeditious identification of relevant studies by researchers.

Ultimately, the keyword China was not associated with any of the groups as it was deemed to be content-specific and irrelevant to the study.

3.5 Citations (Documents)

Citation analysis was used to identify the articles that have attracted the most interest from researchers in the fields of smart tourism, smart destinations and smart hospitality. It can be assumed that articles that attract the most attention from researchers can be regarded as the most relevant and informative. Additionally, citation analysis is intended to provide guidelines for scholars seeking to contribute to the development of the field.

As indicated by the information contained within the SC database, the articles selected for inclusion in the analysis have been cited a total of 8,164 times. As demonstrated in Figure 1, 329 articles (out of 1,367) have not been cited as of the date of the review. In order to ascertain the number of publications that would be suitable for the analysis, a square root of 25,081 was extracted. This indicated that publications that had been cited more than 158 times would be regarded as suitable. The analysis of the data revealed that a total of 25 articles had been cited on more than 158 occasions. The present study drew upon a corpus of 25 publications (see Table 5).

A single article was identified as having been cited in excess of one thousand times. The most frequently cited publication in this field was identified as "Smart tourism: foundations and developments" (Gretzel et al., 2015a) with 1106 citations. The second most cited publication was "Internet of Things and Big Data Analytics for Smart and Connected Communities" (Sun et al., 2016) with 694 citations, and "COVID-19: potential effects on Chinese citizens' lifestyle and travel" published in "Tourism review" was the third (Wen et al., 2021). Six publications were cited from 300 to 500 times: "Conceptual foundations for understanding smart tourism ecosystems" (Gretzel et al., 2015b) was cited 471 times, "Technology in tourism-from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism: a perspective article" (Buhalis, 2019) was cited 421 times, "Smart tourism destinations: ecosystems for tourism destination competitiveness" (Boes et al., 2016) was cited 396 times, "Tourists' intention to visit a destination: The role of augmented reality (AR) application for a heritage site" (Chung et al., 2015) – 392 times, "SoCoMo marketing for travel and tourism: Empowering co-creation of value" (Buhalis & Foerste, 2015) was cited 372 times, "The concept of smart tourism in the context of tourism information services" (Li et al., 2017) was cited 319 times, and "The use of social media in travel information search" (Chung & Koo, 2015) has reached 311 citations. The following fifteen publications, which have been cited most frequently, have accumulated up to 300 citations between them.

Out of the 25 most cited publications (cited more than 158 times), 4 were co-authored by Buhalis, D.: "Technology in tourism-from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism: a perspective article" (Buhalis, 2019) accumulated 421 citations, "Smart tourism destinations: ecosystems for tourism destination competitiveness" (Boes et al., 2016) – 396 citations, "SoCoMo marketing for travel and tourism: Empowering co-creation of value" (Buhalis & Foerste, 2015) – 372 citations, and "Smart hospitality – Interconnectivity and interoperability towards an ecosystem" (Buhalis & Leung, 2018) has accumulated 263 citations so far. As demonstrated by the results, one of the publications under discussion was authored solely by Buhalis, D., with him serving as the primary author in two of them. Consequently, the scholar can be recognised as one of the most prominent authors in the field.

Further, 3 publications were co-authored Koo, C. (Koo, C. has co-authored 26 publications in the field up to date): "Smart tourism: foundations and developments" the most cited publication with 1106 citations so far (Gretzel et al., 2015a), "Conceptual foundations for understanding smart tourism ecosystems" (Gretzel et al., 2015b) and "The use of social media in travel information search" cited 311 times (Chung & Koo, 2015); 2 by Chung, N. (totally, this author coauthored 31 documents in the field): "Tourists' intention to visit a destination: The role of augmented reality (AR) application for a heritage site" has been cited 392 times

Table 5
The top cited document (minimum 158 citations)

#	TCs	Title of manuscript	Journal	Year
1	1106	"Smart tourism: foundations and developments"	"Electronic Markets"	2015
2	694	"Internet of Things and Big Data Analytics for Smart and Connected Communities"	"IEEE Access"	2016
3	524	"COVID-19: potential effects on Chinese citizens' lifestyle and travel"	"Tourism Review"	2021
4	471	"Conceptual foundations for understanding smart tourism ecosystems"	"Computers in Human Behavior"	2015
5	421	"Technology in tourism-from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism: a perspective article"	"Tourism Review"	2020
6	396	"Smart tourism destinations: ecosystems for tourism destination competitiveness"	"International Journal of Tourism Cities"	2016
7	392	"Tourists' intention to visit a destination: The role of augmented reality (AR) application for a heritage site"	"Computers in Human Behavior"	2015
8	372	"SoCoMo marketing for travel and tourism: Empowering co-creation of value"	"Journal of Destination Marketing and Management"	2015
9	319	"The concept of smart tourism in the context of tourism information services"	"Tourism Management"	2017
10	311	"The use of social media in travel information search"	"Telematics and Informatics"	2015
11	299	"Smart tourism technologies in travel planning: The role of exploration and exploitation"	"Information and Management"	2017
12	277	"The digital revolution in the travel and tourism industry"	"Information Technology and Tourism"	2020
13	267	"Knowledge transfer in smart tourism destinations: Analyzing the effects of a network structure"	"Journal of Destination Marketing and Management"	2015
14	266	"How smart is your tourist attraction?: Measuring tourist preferences of smart tourism attractions via a FCEM-AHP and IPA approach"	"Tourism Management"	2016
15	263	"Smart hospitality – Interconnectivity and interoperability towards an ecosystem"	"International Journal of Hospitality Management"	2018
16	258	"Tourism analytics with massive user-generated content: A case study of Barcelona"	"Journal of Destination Marketing and Management"	2015
17	253	"Creating value from Social Big Data: Implications for Smart Tourism Destinations"	"Information Processing and Management"	2018
18	241	"China's smart tourism destination initiative: A taste of the service-dominant logic"	"Journal of Destination Marketing and Management"	2013
19	218	"Smart destinations and the evolution of ICTs: a new scenario for destination management? "	"Current Issues in Tourism"	2019
20	198	"New technologies in tourism: From multi-disciplinary to anti-disciplinary advances and trajectories"	"Tourism Management Perspectives"	2018
21	193	"Tourists' Experiences with Smart Tourism Technology at Smart Destinations and Their Behavior Intentions"	"Journal of Travel Research"	2020
22	181	"The experience co-creation in smart tourism destinations: a multiple case analysis of European destinations"	"Information Technology and Tourism"	2016
23	169	"Realizing the Potential of Internet of Things for Smart Tourism with 5G and AI"	"IEEE Network"	2020
24	165	"The effect of the perceived risk on the adoption of the sharing economy in the tourism industry: The case of Airbnb"	"Information Processing and Management"	2020
25	163	"Developing a model for sustainable smart tourism destinations: A systematic review"	"Tourism Management Perspectives"	2019

Note: data extracted from Scopus database on 25th of June 2024. Abbreviations: TCs – total citations

(Chung et al., 2015) and "The use of social media in travel information search" (Chung & Koo, 2015); 2 by Gretzel, U.: "Smart tourism: foundations and developments" (Gretzel et al., 2015a), "Conceptual foundations for understanding smart tourism ecosystems" (Gretzel et al., 2015b). The interconnectedness among these authors is depicted in Figure 4.

3.6 Bibliographic Coupling

Bibliographic coupling is defined as "a single item of reference shared by two documents" (Kessler, 1963). In the context of science mapping, the analysis of links between documents is undertaken, with the strength of the link between bibliographically coupled documents serving to indicate trends in research (Jarneving, 2007).

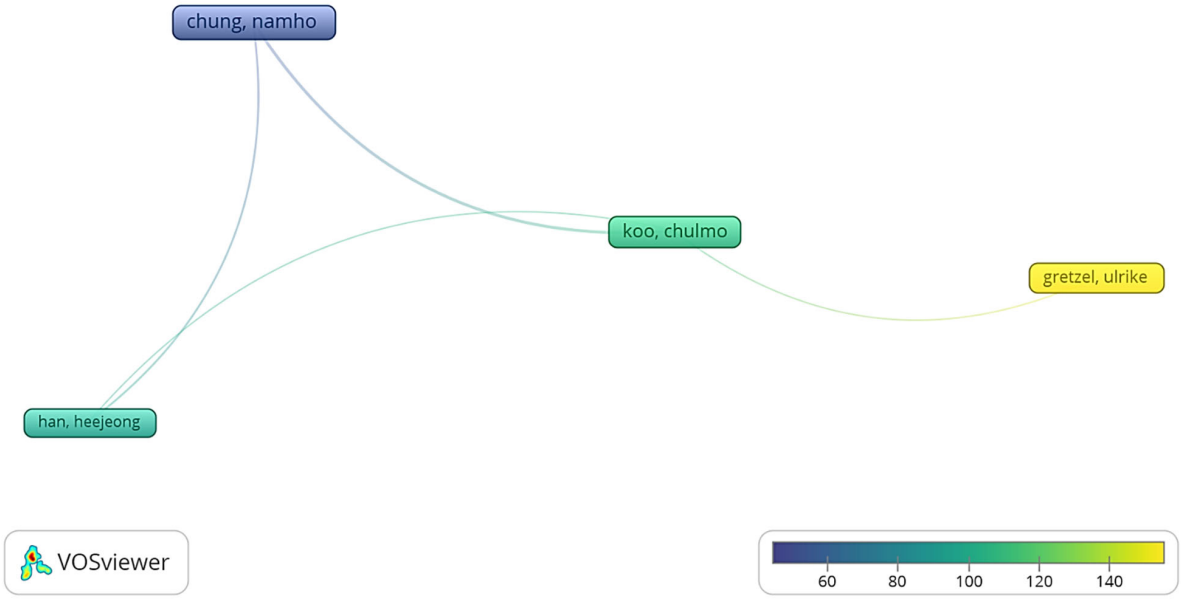

Figure 4. Snapshot of interconnectedness between the authors of the most cited documents

Note: colours indicate average citations of the documents of the author

3.6.1. Countries

Table 6 presents the link strengths indicating the degree of correlation between countries. The number of links between countries indicates the strength of the connection between them. Five country pairs were found to have more than 2,000 links: Italy and Spain (2,857 links); China and Spain (2,729 links); Spain and the UK (2,693 links); South Korea and the USA (2,394 links); and Portugal and Spain (2,176 links). The connection between these countries can be considered strong. Also, Brazil and Spain have a strong connection (1,948 links). The USA has no links with any other country and is located at the bottom of the list.

A consideration of the remaining countries on the list reveals the following statistics: Malaysia and Spain had 959 links, Australia and Spain had 826, and Japan and Spain had 781 links. In contrast, Turkey and the USA had only 660 links. The weakest link strength was observed to be between the Russian Federation and Spain, with a total of 399 links. Moreover, the United

Table 6
The top bibliographic coupling of countries with minimum twenty documents by country and 158 citations

#	Country 1	Country 2	Links between items 1, 2
1	Italy	Spain	2857
2	China	Spain	2729
3	Spain	UK	2693
4	South Korea	USA	2394
5	Portugal	Spain	2176
6	Brazil	Spain	1948
7	Hong Kong	UK	1624
8	India	Spain	1446
9	UK	USA	1263
10	Macau	Spain	1128
11	Indonesia	Spain	1106
12	Malaysia	Spain	959
13	Australia	Spain	826
14	Japan	Spain	781
15	Greece	Spain	688
16	Taiwan	UK	682
17	Turkey	USA	660
18	Russian Federation	Spain	399
19	USA	-	-

Note: data extracted from Scopus database on 25th of June 2024

States, as the first country, had no affiliations with other countries.

The link strength depicting the time span is presented in Figure 5. It is evident that if Italy, China, Spain, South Korea and Portugal dominated several years ago, the latest trends reveal the emergence of China as a dominant economic force.

3.6.2. Sources (Journals)

In consideration of the predominance of journals, the number of links between two with a minimum of ten documents and 158 citations is provided in Table 7. Notably, "Asian Pacific Journal of Tourism Research" dominates the list: the journal was found to appear even in ten couples (either as the first or the second journal). The strongest link (453 connections) was found between "Asian Pacific Journal of Tourism Research" and "Journal of Hospitality and Torusim Technology", followed by "International Journal of Tourism Cities" and "Journal of Destination Marketing and Management" with 361 connections. "Current Issues in Tourism" and "International Journal of Tourism Cities" shared 321 connections. On the other extreme, the pair of "Journal of Destination Marketing and Management" and "Journal of Hospitality and Torusim Technology" has shared 288 connections, while the pair of "International Journal of Contemporary Hospitlaity Management" and "Journal of Hospitality and Torusim Technology" has 207 connections. In addition, a further two pairs of journals have been found to have fewer than 80 connections, as can be seen in Table 7.

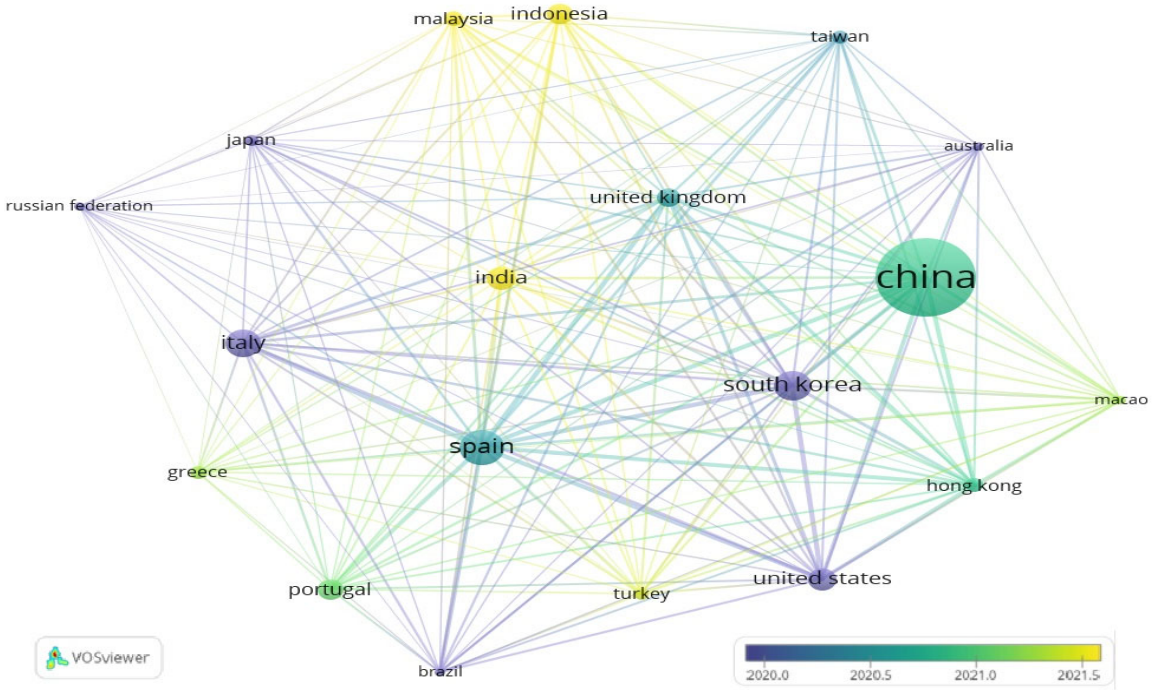

Figure 5. The snapshot of the bibliographic coupling of countries with minimum of 20 documents and 158 citations

Table 7

The top bibliographic coupling of journals with minimum of ten documents and 158 citations

#	Source 1	Source 2	Links between items 1, 2
1	Asian Pacific Journal of Tourism Research	Journal of Hospitality and Torusim Technology	453
2	International Journal of Tourism Cities	Journal of Destination Marketing and Management	361
3	Current Issues in Tourism	International Journal of Tourism Cities	321
4	Journal of Hospitality and Torusim Technology	Tourism Review	318
5	Journal of Destination Marketing and Management	Journal of Hospitality and Torusim Technology	288
6	International Journal of Contemporary Hospitlaity Management	Journal of Hospitality and Torusim Technology	207
7	Tourism Management Perspectives	Tourism Review	184
8	Sustainability (Switzerland)	Tourism Review	78
9	Information Technology and Tourism	Sustainability (Switzerland)	24
10	Tourism Review	-	-

Note: data extracted from Scopus database on 25th of June 2024

It is evident that no links were indicated for the journal, "Tourism Review". The connections between these journals have been delineated, as illustrated in Figure 6.

4. Discussion

In their 2015 study, scholars Gretzel et al. identify the term "Smart" as a new buzzword that describes the technology-induced development. The concept of smart tourism has emerged in recent years, with the aim of providing solutions to address specific travel-related needs for tourists (Khan et al., 2017). The term "smart tourist destination" is derived from the concept of "smart city," signifying the implementation of the principles of smart city within the tourism sector. The concepts of smart cities, smart tourism, smart destinations, and smart hospitality emphasise "technology-based management practices that enhance the tourism experience as well as increase the efficiency of tourism organisations and/or destinations" (Buhalis et al., 2023). The aim of this review was to outline existing trends in the use of the term "smart" in the tourism industry, and to provide general directions for future smart tourism research. To achieve this, a bibliometric analysis was conducted by quantitatively analysing articles and review papers listed in the SC database over the past decade. Four research questions were formulated to contribute to establishing a clear research landscape of the domain.

In answer to the first question, 1,367 documents were extracted from the SC database. Of these, 675 were articles, 514 were conference papers, 135 were book chapters and 43 were reviews. Retrospective analysis revealed a constantly growing interest among researchers in the field. Starting with a single review paper in which smart tourism was mentioned in 2008 (Gössling et al., 2008), the field evolved over the following decade, reaching a peak of 267 published documents in 2022. Given the increase in the number of publications, the field of smart tourism, smart destinations and smart hospitality can be considered attractive and worthy of further research.

In order to map the extent of research in the field, prominent countries, academic institutions, journals, and authors were identified. A total of 88 countries were identified as contributing to research in the field of "smart" in relation to tourism, hospitality and destinations; furthermore, 26 countries have published more than 10 articles each. With 352 published papers (more than a quarter of all the articles included in the review), China was identified as the most prominent country in smart tourism, smart destinations and smart hospitality research. However, bibliographic coupling revealed that China only paired with Spain (2,729 links). A different situation was found with Spain. Spain, with 130 published articles (9.5 per cent of all articles assessed), was found to be the second most productive country. Moreover, bibliographic coupling revealed that it was the first country in a pair with the United Kingdom (2,693 links) and the second country in pairs with Italy (2,857 links), China (2,729 links), Portugal (2,176 links), Brazil (1,948 links), India (1,446 links), Macao (1,128 links), Indonesia (1,106 links), Malaysia (959 links), Australia (826 links), Japan (781 links), Greece (688 links) and

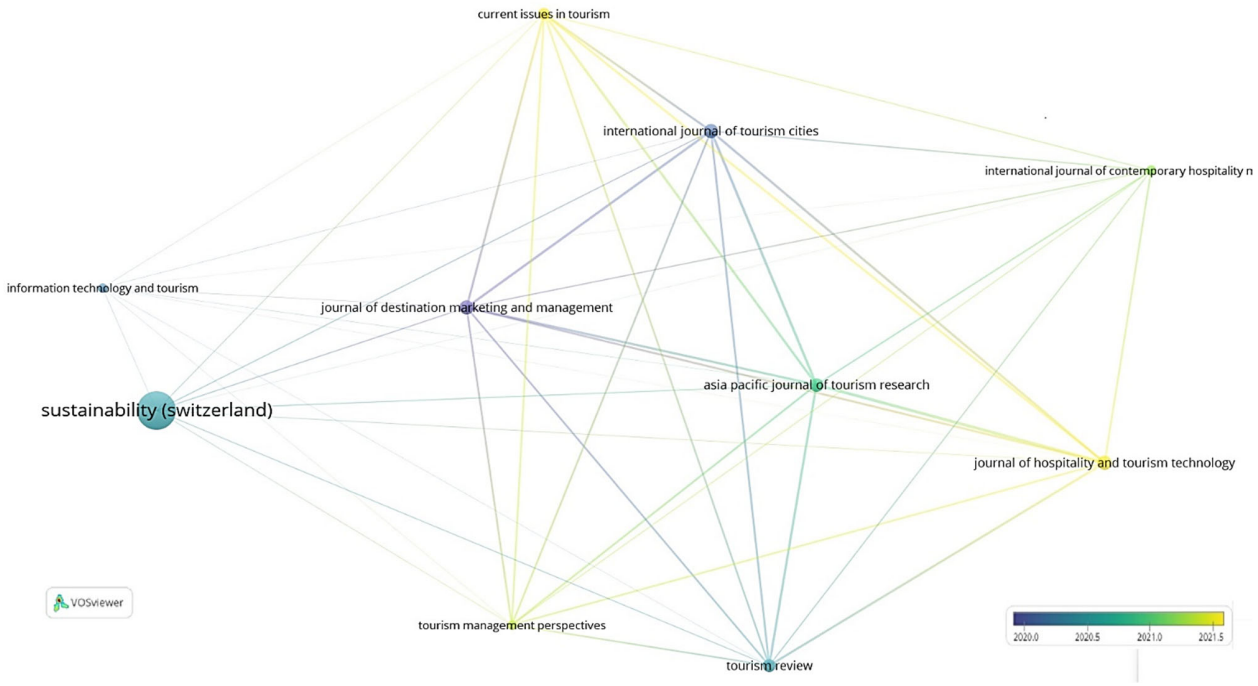

Figure 6. The snapshot of the bibliographic coupling of journals with minimum of ten documents and 158 citations

the Russian Federation (399 links). Therefore, greater similarity in research trends can be expected between Spain and the other countries. Moreover, despite publishing the highest number of articles, China did not reach a leading position based on the average number of citations per document (ACpD – 12.03). The time span analysis revealed the emerging positions of India, Malaysia and Indonesia. However, the contribution of other European countries is weak.

Among the most prominent institutions, the University of South Australia is in a leading position based on average citations per publication. Having published four articles, the university has accumulated 1,385 citations, an average of 346.25 per article. Kyung Hee University (South Korea), meanwhile, has been cited 4,130 times for its 58 documents (ACpD – 71.21). Although the number of citations indicates the usefulness, impact and influence of a publication (Aksnes et al., 2019), the name of the university can also increase interest in a publication (Ahmed et al., 2022a; Alsharif et al., 2023a; Pilelienė & Jucevičius, 2023). The two most productive universities were Kyung Hee University in South Korea (58 documents, 4,130 citations and an average of 71.21 citations per document) and the Hong Kong Polytechnic University (35 documents, 948 citations and an average of 27.09 citations per document). Also worthy of mention is Bournemouth University, a prominent institution in the United Kingdom. The seven documents published by this university have accumulated 1,201 citations, with an average of 171.57 citations per document. The results of this review prove that the number of citations does not depend on the number of articles published (Bornmann & Daniel, 2008).

The documents under scrutiny were located within 620 journals. A mere 21 of the journals under scrutiny have published in excess of 10 documents to date, while 453 journals have published a single document each. The broad range of journals suggests a dissemination of publishers and an absence of prominent journals in the domains of smart tourism, smart destination, and smart hospitality. Moreover, the most prominent journal Sustainability Switzerland (with 88 documents and 2,316 citations) does not even specify in the field of tourism research. Only ten (less than a half) journals of the TOP21 productive journals appeared to be tourism oriented: #7 Journal of Destination Marketing and Management (18 publications and 1,080 citations), #8 International Journal of Tourism Cities (18 publications and 779 citations), #9 Journal of Hospitality and Tourism Technology (18 publications and 532 citations), #11 Asia Pacific Journal of Tourism Research (17 publications and 643 citations), #12 Tourism Review (15 publications and 1,556 citations), #15 Current Issues in Tourism (13 publications and 450 citations), #16 International Journal of Contemporary Hospitality Management (11 publications and 514 citations), #18 Worldwide Hospitality and Tourism Themes (11 publications and 40 citations), #20 Information Technology and Tourism (10 publications and 679 citations), and #21 Tourism Management Perspectives (10 publications and 527 citations). It is evident that the intricacies and idiosyncrasies of smart tourism, smart destinations and smart hospitality are disseminated in the field of mobile and computational information technology, which scarcely reflects tourism trends, as opposed to tourism-related journals. Considering that many articles never get noticed and therefore cited (Caon et al., 2020), careful choice of the journal for publishing must become one of the principal choices of the authors (Alsharif et al., 2021; Pilelienė & Jucevičius, 2023). Furthermore, field-related journals are encouraged to consider the emerging scope of smart tourism, smart destinations and smart hospitality, and to promote research and publications on these topics by announcing calls for papers on specific themes or special issues.

The review identified 57 scholars who had published more than three documents on the topic, and who were therefore considered to be the most productive authors. The most productive authors (with more than 5 documents) represent South Korea (Chung, N. with 31 documents and 1,780 citations, Koo, C. with 26 documents and 2,735 citations, Han, H. with 8 documents and 772 citations, Jwa, J.W. with 8 documents and 42 citations, and Lee, H. with 6 documents and 216 citations), Japan (Yasumoto, K. and Matsuda, Y. with 9 documents and 67 citations, Arakawa, Y. with 6 documents and 66 citations, and Lim, C. with 6 documents and 40 citations), and Spain (Ivars-Baidal, J.A. with 11 documents and 752 citations, Femenia-Serra, F. with 9 documents and 556 citations, and Celdrán-Bernabeu, M.A. with 6 documents and 391 citations), Greece (Alepis, E. and Kontogianni, A. with 8 documents and 50 citations), the United Kingdom (Buhalis, D. with 9 documents and 1,614 citations), Macao (Lae, R. with 14 documents and 682 citations), United States (Gretzel, U. with 12 documents and 2,094 citations), China (Hlee, S. with 6 documents and 166 citations), Slovakia (Gajdošík, T. with 7 documents and 95 citations), and United Arab Emirates (Nam, K. with 6 documents and 951 citations). Based on the number of publications and citations, Chung, N., Koo, C., Gretzel, U. and Buhalis, D. can be recognised as the leading authors in this field.

The keyword analysis provided enabled the answering of the third question of this research. The review identified 103 author keywords that occurred six or more times; of these, 53 occurred at least ten times. During the analysed period, the keyword "smart tourism" occurred 607 times, "smart city/smart cities" 130 times, "smart tourism destination(s)" 92 times and "smart destination(s)" 89 times, while "smart hospitality" occurred only 17 times. Five groups of keywords were

identified to better define the scope: 1) smart focus; 2) technology focus; 3) tourism management focus; 4) sustainability focus; 5) method focus. As the academic discourse on an interdisciplinary approach to tourism has attracted the interest of the scholarly community (Cardoso et al., 2023), an analysis and grouping of author keywords revealed several research trends. Firstly, the authors can concentrate on smart tourism, smart destinations and/or smart hospitality in general, revealing the peculiarities of the scope, searching for new trends and providing their insights. It is submitted that this kind of research would serve to deepen and disseminate the domain-related knowledge. The second trend pertains to the technological dimension of tourism. Subsequent research has focused more on technological progress, the application of information and communication technologies, and data-based systems used in (smart) tourism, rather than tourism itself. The investigation of the role of technology in the creation of immersive and interactive customer experiences can offer valuable insights into the development of innovative tourism products and services (Maskuroh et al., 2022). Technological development and the digital revolution have become prominent drivers of society, and it is therefore important to consider the impact of technology on tourism. The third research trend pertains to the analysis of the aspects of general tourism or general management and their performance within the framework of smart tourism. The contemporary predicament confronting the tourism industry pertains to the evolving conduct of tourists (Abou-Shouk et al., 2023), a phenomenon that is concomitant with technological advancements. Furthermore, the development of this domain may be further encouraged by the creation of new definitions, such as "smart rural tourism", "smart tourism satisfaction" or "smart tourist experience". The final trend identified by the author's analysis of keywords is that of sustainability issues in the context of smart tourism. Sustainable tourism is frequently regarded as the prevailing paradigm that endeavours to modify conduct in order to accomplish sustainable development objectives (Nowacki & Niezgoda, 2023). This finding lends further credence to the notion that the increasing prevalence of smart technology in the tourism sector prompts the investigation of its potential ramifications on sustainable development (El Archi & Benbba, 2023). The keywords related to the methodology did not identify any novel trends in the domains of smart tourism, smart destination, or smart hospitality research. However, further research could be developed by elaborating on the strong methodological background.

A significant proportion of the TOP25 most cited articles were published in tourism-related journals, suggesting that the judicious selection of publication outlets can enhance visibility and generate interest among scholars in the field.

The review reveals that smart tourism, smart destinations and smart hospitality are evolving areas of tourism with significant potential for further investigation. However, to better define the field and establish its core principles, researchers are advised to clearly define the focus of their research. Concentrating on one area rather than scattering ideas across various fields would enable the development of a clear point of view and enhance the possibility of recognition. Moreover, it is recommended that the focus is placed on publishing in tourism-related journals. This would reinforce the chances of attracting the attention of researchers interested in the field. Also, an intriguing and inviting article title and the right keywords must be chosen (Ahmed et al., 2023a; Alsharif et al., 2024; Pilelienė & Jucevičius, 2023). Given the timeliness and emergence of the subject area, it is recommended that tourism researchers constantly follow and monitor technological developments that could contribute to changes in the tourism industry.

5. Conclusion, Limitations, and Future Directions

The study suggests several general conclusions. Firstly, the field of smart tourism, smart destinations and smart hospitality is emerging and attracting increasing attention from researchers. Initially, smart tourism was mentioned in a single review paper in 2008. Over the past 15 years, however, the scope has accumulated to 1,367 documents. The steady growth of the publications has attracted significant interest from researchers, as evidenced by the increasing use of keywords, the emergence of new authors, and the rising number of citations.

The study revealed several countries, including China, Spain, South Korea and Italy, to be at the vanguard of publishing their research in the analysed field. However, the citation analysis indicated the United States, South Korea, China, Spain and Australia as the most influential. Consequently, the publication of a considerable number of articles does not necessarily guarantee a corresponding increase in citations. It is evident that the contribution and impact of European countries are inadequate.

A thorough analysis of author keywords revealed the distribution of research across five primary scopes: 1) smart-focused; 2) technology-focused; 3) tourism management-focused; 4) sustainability-focused; 5) method-focused. A subsequent citation analysis indicated that scholars predominantly focus on articles that emphasise smart aspects of tourism, destinations, and hospitality, technological aspects, and the broader context of tourism. In consideration of the

domain's novelty and interdisciplinarity, there is a high probability of the emergence of new technology-related trends in the future. Additionally, the formation of novel connections with other scientific domains, such as management, marketing and sustainability, is anticipated.

The study is constrained by several limitations. The research was built on the mapping of the occurrences of at least one of three keywords, namely "smart tourism", "smart destination", or "smart hospitality". It is important to note that some scholars do not indicate "smart" in their papers (title, abstract, or keywords), and as a result, some important articles analysing tourism, destination, or hospitality in a framework of ICTs or other technological solutions might have been omitted. Also, 45 publications were excluded from the analysis due to being written in a language other than English. However, these articles could have provided a broader view of researcher interests and directions in research. Additionally, the study only encompassed articles published on the SCOPUS database, so some influential articles or trends found in other scientific information databases (e.g., Web of Science) may have been overlooked.

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