



Review Article

Tourism 2.0: Exploring the evolution of smart destinations**Biju Soman Krishnamma^{1*}, Krishna Babu², Aleena Maria Zacharia¹**¹ Government College for Women, Thiruvananthapuram, Kerala, India² Institute of Management in Government (IMG), Thiruvananthapuram, Kerala, India**Abstract**

Smart tourism is revolutionizing the tourism industry by integrating advanced technologies, including artificial intelligence (AI), big data analytics, and the Internet of Things (IoT), to enhance visitor experiences and boost destination competitiveness. This study presents a bibliometric analysis of smart tourism literature published between 2013 and 2024, examining publication trends, influential works, and key research themes. The findings reveal significant advancements in digital tools and strategies, such as Social, Context-aware, and Mobile (SoCoMo) marketing, and immersive technologies like virtual and augmented reality (VR/AR). These innovations have driven personalized, real-time services and data-driven decision-making in destination management. The analysis also highlights contributions from leading countries and scholars, fostering interdisciplinary collaboration and exploring challenges like data privacy and governance. Despite the transformative potential of smart tourism, adoption rates among tourists remain constrained by technological complexities and privacy concerns. As the industry adapts to post-pandemic realities, virtual tourism and sustainable practices are pivotal for future research and implementation. This study offers valuable insights into the evolution of smart tourism, guiding stakeholders in navigating the digital transformation of the sector.

Keywords: Smart tourism, Digital transformation, Artificial intelligence, Virtual reality, Destination management, Bibliometric analysis**Received:** 16-01-2025; **Accepted:** 14-02-2025; **Available Online:** 05-03-2024

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For reprints contact: reprint@ipinnovative.com**1. Introduction**

The emergence of smart tourism destinations is transforming the tourism industry by integrating advanced technologies to enhance tourist experiences and improve destination competitiveness (Zach & Hill, 2017; Skinner et al., 2018).^{14,17,18} Smart tourism leverages innovations such as artificial intelligence (AI), big data analytics, and the Internet of Things (IoT) to create responsive, interconnected ecosystems that cater to the evolving needs of modern travelers (Buhalis, O'Connor, & Leung, 2022;³ Rodríguez et al., 2014).¹³ Gretzel et al.⁹ (2015) highlight that smart tourism is built on the pillars of information and communication technologies (ICT), innovation, and social capital, fostering collaborative environments that drive tourism development. This interconnected model enables destinations to deliver personalized, real-time services while strengthening tourism management. However, challenges in governance, data privacy, and policy implementation highlight the need for

effective frameworks to maximize the potential of smart tourism (Gretzel et al.⁹, 2015; Pai, et al., 2020).¹²

The transition from traditional to digital tourism has accelerated in recent years, driven by the adoption of smart destination strategies. Scholars such as Buhalis and Leung (2017)⁴ emphasize the transformative role of technologies like AI and IoT in enabling tailored, context-aware experiences that align with shifting traveller expectations. Despite these advancements, Ivars-Baidal et al.^{8,9,10} (2017) note that actual adoption among tourists remains limited, often hindered by concerns about data privacy and the complexities of technological integration. A notable innovation within smart tourism is "SoCoMo" (Social, Context-aware, and Mobile) marketing, as described by Buhalis and Foerste (2015).⁵ This approach uses social media and mobile technologies to co-create personalized tourist experiences, enhancing engagement and satisfaction. As

*Corresponding author: Biju Soman Krishnamma
Email: bijubodheswar@gcwvm.ac.in

destinations continue to adopt digital strategies, the COVID-19 pandemic has further underscored the value of virtual and augmented reality (VR/AR) technologies in offering immersive, remote tourism experiences (Akhtar et al., 2021;¹ Egger et al.,⁷ 2020).

Smart tourism represents a paradigm shift in destination marketing and management, reshaping the industry through data-driven strategies and immersive technologies. As interest in smart destinations continues to grow, understanding the scope and trajectory of research in this area becomes increasingly important. While numerous studies have explored aspects of smart tourism, a comprehensive overview of the field’s development, key contributors, and emerging themes remains limited. This study seeks to address this need by conducting a bibliometric analysis of smart tourism literature by examining publication trends, identifying influential works, and mapping core research areas, this paper aims to provide a clearer picture of the current state of smart tourism research. The insights gained will help guide future studies, highlight underexplored areas, and support the ongoing evolution of smart tourism as a critical component of destination management and innovation.

2. Materials and Methods

The methodology for this study involved a systematic bibliometric approach to analyze scholarly trends in the domains of smart tourism, smart destinations, tourism innovation, and digital tourism. This approach was designed to ensure a comprehensive and replicable selection of relevant literature by using Scopus, a prominent database known for its extensive collection of peer-reviewed literature across multiple disciplines. To develop a targeted search strategy, we used a carefully structured query with the keywords “Smart tourism,” “smart destination,” “tourism innovation,” and “digital tourism,” restricted to appear in either the title, abstract, or keywords of the articles. This strategic selection aimed to capture literature that directly addresses the intersection of technology, innovation, and tourism, thus yielding focused insights into smart tourism development. The time period of the publications were from 2013 to 2024, to understand the growth of these fields over the past decade.

This filtering approach yielded a high-quality, relevant dataset of 341 peer-reviewed articles. The selected articles provide a balanced perspective on the research landscape, reflecting the academic community’s focus on technological integration, data management, and innovative practices in the tourism sector. The resulting dataset is sufficiently large and diverse to allow for meaningful analysis of trends, research productivity, and thematic evolution within smart tourism. Through a bibliometric framework, this study systematically identifies and examines the key patterns, prominent themes, and emerging research avenues within smart tourism. This

approach not only ensures comprehensive coverage of significant contributions from the past decade but also highlights the interdisciplinary nature and future potential of smart tourism research.

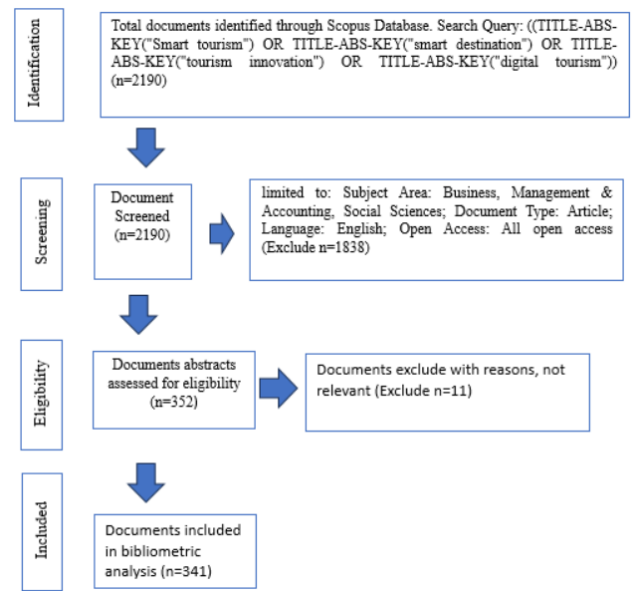


Figure 1: Research flowchart

3. Results and Discussions

3.1 Trend of publication year

Over the last two decades, especially post-2010, research on smart tourism and digital destination marketing has experienced significant growth. This expansion aligns with rapid technological advancements and the proliferation of digital platforms, which have transformed destination marketing and management. In the early 2000s, research primarily focused on foundational concepts like "destination marketing" and "tourism trends," with limited exploration of digital tools' roles in tourism (Gretzel et al., 2015).¹⁵ This initial phase was largely exploratory, emphasizing traditional marketing principles without extensive integration of technology. A marked increase in publication volume post-2015 corresponds with the emergence of immersive technologies such as virtual reality (VR) and augmented reality (AR), which began reshaping consumer experiences and influencing destination choices (Boes et al., 2016;² Kim & Kim, 2017).¹¹ During this period, research shifted towards exploring digital tools that facilitate more interactive and personalized experiences, drawing attention to "smart tourism" and the application of big data, AI, and IoT to enhance tourist engagement and improve destination management.

In recent years, especially after 2020, the COVID-19 pandemic has further accelerated interest in digital tourism solutions. Virtual tours, remote destination branding, and digital marketing strategies have emerged as essential

themes, fostering an interdisciplinary approach that includes insights from tourism studies, information systems, and psychology (Wen et al., 2020).¹⁶ This shift represents a broader movement within the industry from traditional marketing techniques to data-driven, smart strategies, aligning with destinations' digital-first initiatives to attract post-pandemic travelers (Akhtar et al., 2021).¹ The overall publication trend illustrates the sector's ongoing adaptation to a digital-first approach, suggesting a continued trajectory toward the development of smart, data-focused strategies in tourism and destination marketing. As destinations invest in digital tools to capture evolving traveler preferences, literature on smart tourism and digital destination marketing is expected to expand further, incorporating emerging technologies and innovative digital practices.

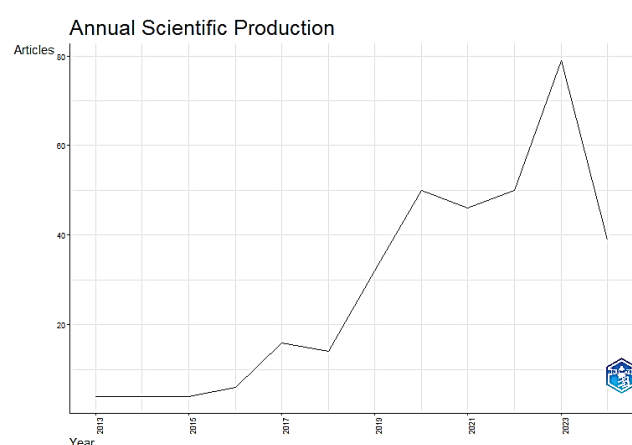


Figure 2: Publication trends in smart tourism (2013–2024)

3.2 Analysis of contributing countries and their collaboration

Countries across various continents have contributed to this field, reflecting widespread academic and industry interest in how technological developments are transforming tourism. Notably, research outputs show concentration in regions with advanced tourism sectors, technological infrastructures, and digital innovation ecosystems, as well as active government initiatives to promote smart tourism. Leading contributors to this research domain include the United States, China, the United Kingdom, Spain, and Australia. These countries are at the forefront of tourism and digital technology, providing fertile ground for studies on digital marketing strategies, smart tourism applications, and data-driven management of tourist destinations. The United States stands out due to its strong tradition in research across tourism management, marketing, and technological innovation, while China's rapidly growing tourism sector and advancements in digital ecosystems have positioned it as a significant contributor as well. Both countries are not only prolific in publication volume but also in international collaborations, often partnering with researchers from Europe and Asia.

European countries also make substantial contributions, particularly the United Kingdom, Spain, and Germany. Their research reflects a focus on sustainable and smart tourism practices, with frequent collaborations across the European Union that facilitate knowledge sharing and policy development in tourism management and digital transformation. For instance, Spain, known for its rich tourism resources, invests heavily in research on digital tools to enhance destination appeal and manage tourist flows, contributing to its high citation impact in this field. Asia-Pacific countries, especially China, South Korea, and Australia, show a growing influence in the literature, often pioneering studies in mobile technology, artificial intelligence, and virtual reality applications in tourism. These countries frequently collaborate with Western researchers, forming a robust network that bridges gaps in technological expertise and tourism management insights. China's collaborations with Western countries and other Asian nations have become increasingly influential, creating cross-continental knowledge transfer and enriching the global understanding of smart tourism's role in destination marketing. The collaborative networks among these countries emphasize an interdisciplinary approach, merging insights from information technology, marketing, cultural studies, and environmental management. These partnerships are often formalized through research consortia and international conferences, with academic and industry stakeholders jointly tackling challenges and opportunities in digital tourism. The trend of cross-national research collaboration highlights a shared commitment to advancing smart tourism and digital destination marketing globally, ensuring that findings have wide applicability and that innovations in one region can inform practices elsewhere.

Country Scientific Production

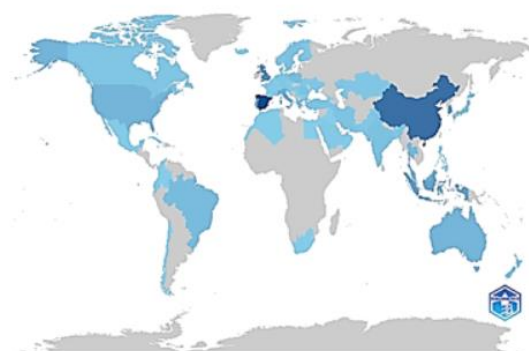


Figure 3: Contributing countries and research collaborations in smart tourism

3.3 Key Authors and their contribution

The research spans a range of topics, including digital marketing, the application of advanced technologies like artificial intelligence and big data in tourism, and the impacts of these innovations on destination branding and visitor experiences. These authors often have high citation counts and publication volumes, underscoring the substantial impact

of their work on both academia and industry. The notable authors include scholars from well-known tourism and hospitality research centers, such as Dimitrios Buhalis, Rob Law, and Sara Dolnicar. Dimitrios Buhalis, associated with Bournemouth University, is widely recognized for his pioneering work in e-tourism and smart tourism. His research has focused on the integration of digital and smart technologies in tourism, contributing foundational frameworks for understanding how destinations can leverage technology to enhance competitiveness and visitor satisfaction. His extensive work on smart tourism ecosystems and technological trends has had far-reaching implications, making him one of the most cited authors in the field.

Rob Law, affiliated with Hong Kong Polytechnic University, is another prominent author whose research emphasizes the role of information technology in tourism. His studies often explore the adoption of digital tools by tourism organizations and the impacts of these tools on consumer behavior. Law’s research has significantly contributed to the understanding of digital marketing practices in tourism and has influenced many subsequent studies on technology-driven destination branding and management. Sara Dolnicar, known for her work in sustainable tourism and consumer behavior, has also left a substantial mark on the field. Her research often intersects with smart tourism, particularly regarding how digital tools can support sustainable practices and improve visitor engagement with destinations. Dolnicar’s influence is particularly evident in studies that seek to balance technological advancement with sustainable tourism practices, making her a key figure in both environmental and technological dimensions of tourism research.

Other influential authors include scholars from the United States, such as Philip Pearce and Daniel Fesenmaier, whose work frequently delves into travel motivations, tourism experience design, and the impacts of digital media on tourism. Pearce’s research is foundational in understanding tourist behavior, while Fesenmaier’s work on online tourism communities and the role of social media in destination marketing has greatly enriched the literature on digital consumer engagement in tourism.

Collaborations among these authors and with other researchers worldwide further strengthen the field’s development, leading to a robust body of literature that addresses both theoretical and applied aspects of smart tourism and digital destination marketing. Their collective efforts have paved the way for an interdisciplinary approach that integrates insights from marketing, technology, psychology, and environmental studies. The contributions of these influential authors have shaped contemporary understandings of how digital tools and smart tourism strategies can enhance destination appeal, improve marketing effectiveness, and deliver memorable visitor experiences. Their work continues to serve as a foundation for ongoing

studies, as the tourism industry adapts to the digital era and strives to meet the evolving needs and expectations of modern travelers.

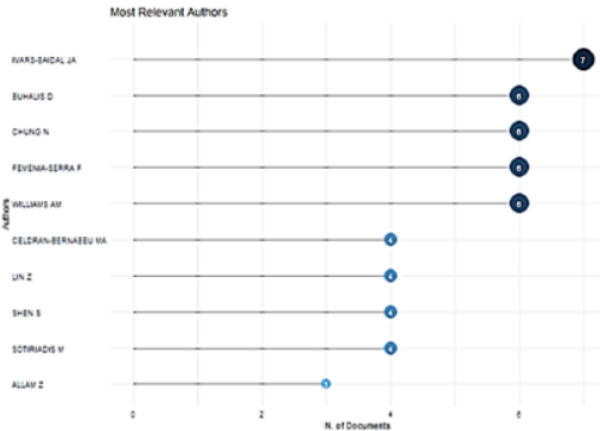


Figure 4: Assessment of influential authors in smart tourism

3.4 Most cited papers and core themes

In the field of smart tourism and destination marketing, certain key papers have garnered significant attention, as reflected in their high citation counts. These influential studies provide foundational insights, theoretical frameworks, and empirical findings that have shaped subsequent research and practical applications in the tourism industry. An analysis of the most cited papers reveals core themes and methodologies that researchers frequently draw upon, highlighting the interdisciplinary and evolving nature of smart tourism.

The most cited paper in this area, authored by Gretzel U (2015), explores the foundations of smart tourism, emphasizing how emerging technologies like IoT, big data, and AI enhance tourism experiences and create interconnected smart destinations. This paper has become a cornerstone for scholars and practitioners aiming to understand and implement data-driven tourism strategies. Another highly cited paper by Buhalis D (2020) discusses how advanced technologies such as AI, blockchain, and augmented reality (AR) contribute to the development of smart tourism destinations. It highlights the improvement of competitiveness and visitor experiences through technological integration.

Wen J (2021) provides insights into the effects of COVID-19 on tourism, analyzing the disruptions caused by the pandemic and highlighting strategies for recovery and resilience. The paper underscores the role of digital transformation in rebuilding the tourism sector. Boes K (2016) investigates the concept of smart tourism cities, focusing on sustainable urban tourism through smart infrastructure, governance, and visitor engagement. This paper has influenced many urban tourism strategies. Buhalis

D (2015) also examines destination marketing and smart destinations, emphasizing the shift from traditional marketing to data-driven, interactive approaches that personalize visitor experiences.

Smart hospitality management is the focus of Buhalis D (2018), which highlights AI-driven service personalization, automation, and guest satisfaction through digital innovation. Ivars-Baidal JA (2019) critically reviews the smart destination concept, identifying gaps and future research directions in destination management and governance. Femenia-Serra F (2019)⁸ explores how digital technologies transform tourism services, emphasizing data analytics and ICT in enhancing customer experience and operational efficiency. Khan MS (2017)¹⁰ investigates the balance between smart tourism initiatives and sustainability, focusing on eco-friendly solutions and responsible technology use. Stankov U (2020)¹⁵ analyzes the influence of emerging

digital tools like VR, AR, and AI in enhancing tourist engagement and operational efficiency. This paper reflects the growing interest in immersive technology and its applications in tourism. The most cited papers in this field underscore the importance of digital and smart technologies in transforming tourism and destination marketing. By addressing key concepts such as smart ecosystems, digital marketing, immersive experiences, and data analytics, these high-impact studies continue to shape future research directions and inform industry practices in an increasingly digital and competitive tourism landscape.

Table 1: Most cited paper and the core themes

Sl. No	Author(s)	Title of the Article	Citations	Core Theme Description
1.	Gretzel U (2015)	Smart tourism: Foundations and developments	1180	Explores the foundations of smart tourism, focusing on how emerging technologies like IoT, big data, and AI enhance tourism experiences, creating interconnected smart destinations.
2.	Buhalis D (2020)	Technology and smart destinations	623	Discusses how advanced technologies such as AI, blockchain, and augmented reality (AR) contribute to the development of smart tourism destinations, improving competitiveness and visitor experience.
3.	Wen J (2021)	Effects of COVID-19 on tourism	556	Analyzes the disruptions caused by COVID-19 on global tourism, highlighting strategies for recovery, resilience, and the role of digital transformation in rebuilding tourism sectors.
4.	Boes K (2016)	Smart tourism cities	433	Investigates how cities adopt smart tourism initiatives to drive sustainable urban tourism, with a focus on smart infrastructure, governance, and visitor engagement.
5.	Buhalis D (2015)	Destination marketing and smart destinations	405	Examines how smart technologies are reshaping destination marketing, emphasizing the shift from traditional marketing to data-driven, interactive approaches that personalize visitor experiences.
6.	Buhalis D (2018)	Smart hospitality management	309	Highlights the use of smart systems in hospitality, including AI-driven service personalization, automation, and enhanced guest satisfaction through digital innovation.
7.	Ivars-Baidal JA (2019)	Smart destinations: A critical review	232	Provides a critical assessment of the smart destination concept, identifying gaps and future research areas in applying technology for destination management and governance.
8.	Femenia-Serra F (2019)	Smart tourism services and digital transformation	165	Explores how digital technologies are transforming tourism services, emphasizing the role of data analytics and ICT in enhancing customer experience and operational efficiency.
9.	Khan MS (2017)	Sustainability and smart tourism	161	Investigates the balance between smart tourism initiatives and sustainability, emphasizing eco-friendly solutions and responsible technology use in tourism development.
10.	Stankov U (2020)	Digital technologies in tourism	155	Analyzes the influence of emerging digital tools like VR, AR, and AI in enhancing tourist engagement and operational efficiency within the tourism industry.

4. Keywords Co-occurrence Analysis

The analysis of keyword co-occurrence highlights the dominant themes shaping research on smart tourism, destination marketing, and digital transformation. Prominent keywords such as “smart tourism,” “destination marketing,” “digital marketing,” “virtual reality,” and “tourism trends” illustrate the field’s emphasis on integrating digital and smart technologies into tourism practices. Central to this discourse is “smart tourism,” closely linked to terms like “technology,” “innovation,” “big data,” and “Internet of Things (IoT),” reflecting a growing focus on data-driven strategies to enhance destination management and visitor experiences (Buhalis, 2019; Gretzel et al., 2015). Other thematic clusters include “destination branding” and “sustainability,” signifying the role of digital marketing and socially responsible branding in promoting sustainable tourism practices (Buhalis & Leung, 2017).

Immersive technologies, such as virtual and augmented reality, also stand out, highlighting their potential to create engaging pre-visit experiences and enhance decision-making (Doborjeh et al., 2021).⁶ Methodologically, the prominence of terms like “big data,” “AI,” and “data analytics” indicates a reliance on advanced techniques for understanding tourist behavior and optimizing marketing strategies (Akhtar et al., 2021).¹ Recent keywords, including “COVID-19” and “resilience,” underscore the pandemic’s influence in accelerating digital tourism and fostering adaptive responses to crises (Khan et al., 2017).

These illustrate the field’s multidisciplinary nature and underscore opportunities for future research in predictive marketing, sustainable tourism practices, and innovative digital tools. Smart tourism ecosystems, supported by frameworks such as the Smart Tourism Dynamic Responsive System (STDRS), demonstrate the potential to foster sustainability and enhance competitiveness in an evolving tourism landscape (Tribe & Mkono, 2017;¹⁷ Ivars-Baidal et al., 2017).



Figure 5: Keyword Co-occurrence analysis in smart tourism research

5. Conclusion

The rapid integration of digital and smart technologies has reshaped the landscape of tourism, giving rise to smart

destinations that leverage innovation to enhance visitor experiences and destination competitiveness. This bibliometric analysis highlights the significant growth in academic interest in smart tourism over the past decade, reflecting the sector’s evolving focus on data-driven, immersive, and sustainable solutions. Key contributors, journals, and countries have emerged as pioneers in advancing smart tourism, fostering interdisciplinary collaboration and knowledge exchange. The findings reveal that technological advancements such as artificial intelligence, the Internet of Things, virtual and augmented reality are driving new opportunities in destination marketing and management. These tools enable more personalized, engaging, and adaptive tourism experiences, catering to the needs of modern travelers while improving operational efficiency. However, challenges related to privacy, governance, and equitable access to technology remain central to ongoing discourse. As the industry continues its post-pandemic recovery, the acceleration of virtual and digital tourism practices underscores the importance of innovation in navigating future disruptions. Future research should explore the long-term implications of these trends, focusing on sustainable development, digital inclusivity, and the ethical deployment of smart technologies.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Akhtar, N., Khan, N., Khan, M. M., Ashraf, S., Hashmi, M. S., Khan, M. M., Hishan, S. S. (2021). Post-COVID 19 Tourism: Will Digital Tourism Replace Mass Tourism? *Sustainability*, 13(10), 5352.
2. Boes K., Buhalis D., Inversini, A. (2016). Smart tourism destinations: ecosystems for tourism destination competitiveness. *Int J Tourism Cities*, 2:(2) 108–24.
3. Buhalis, D. (2019). Technology in tourism-from information communication technologies to eTourism and smart tourism towards ambient intelligence tourism: A perspective article. *Tourism Rev*, 75:(1), 267–72.
4. Buhalis, D., Foerste, M. (2015). SoCoMo marketing for travel and tourism: Empowering co-creation of value. *J Dest Mark Manag*, 4(3), 151–61.
5. Buhalis, D., Leung, R. (2017). Smart hospitality—Interconnectivity and interoperability towards an ecosystem. *Int J Hosp Manag*, 71, 41–50.
6. Buhalis, D., O’Connor, P., Leung, R. (2022). Smart hospitality: from smart cities and smart tourism towards agile business ecosystems in networked destinations. *Int J Contemp Hosp Manag*, 35(1), 369–93.
7. Doborjeh, Z., Hemmington, N., Doborjeh, M., Kasabov, N. (2021). Artificial intelligence: a systematic review of methods and applications in hospitality and tourism. *Int J Contem Hosp Manag*, 34(3), 1154–76.
8. Egger, I., Lei, S. I., Wassler, P. (2020). Digital free tourism – An exploratory study of tourist motivations. *Tourism Manag*, 79, 104098.
9. Serra, F., Neuhofer, B., Ivars-Baidal, J. A. (2018). Towards a conceptualisation of smart tourists and their role within the smart destination scenario. *Serv Indus J*, 39(2), 109–33.

10. Gretzel, U., Sigala, M., Xiang, Z., Koo, C. (2015). Smart tourism: foundations and developments. *Electronic Markets*, 25(3), 179–88.
11. Ivars-Baidal, J. A., Celdrán-Bernabeu, M. A., Mazón, J., & Perles-Ivars, Á. F. (2017). Smart destinations and the evolution of ICTs: a new scenario for destination management? *Curr Issues Tour*, 22(13), 1581–600.
12. Khan, M., Woo, M., Nam, K., Chathoth, P. (2017). Smart City and Smart Tourism: A Case of Dubai. *Sustainability*, 9(12), 2279.
13. Kim D., Kim, S. (2017). The Role of Mobile Technology in Tourism: Patents, Articles, News, and Mobile Tour App Reviews. *Sustainability*, 9(11), 2082.
14. Pai, C., Liu, Y., Kang, S., Dai, A. (2020). The Role of Perceived Smart Tourism Technology Experience for Tourist Satisfaction, Happiness and Revisit Intention. *Sustainability*, 12:(16), 6592.
15. Rodríguez, I., Williams, A. M., Hall, C. M. (2014). Tourism innovation policy: Implementation and outcomes. *Annals Tourism Res*, 49, 76–93.
16. Skinner, H., Sarpong, D., & White, G. R. (2018). Meeting the needs of the Millennials and Generation Z: gamification in tourism through geocaching. *J Tourism Futures*, 4(1), 93–104.
17. Gretzel, U. (2020). Tourism 4.0 technologies and tourist experiences: a human-centered design perspective. *Inf Technol Tour*, 22(3), 477–88
18. Tribe, J., Mkono, M. (2017). Not such smart tourism? The concept of e-lienation. *Ann Tourism Res*, 66, 105–15.
19. Wen, J., Kozak, M., Yang, S., & Liu, F. (2020). COVID-19: potential effects on Chinese citizens' lifestyle and travel. *Tourism Review*, 76(1), 74–87.
20. Zach, F. J., Hill, T. (2017). Network, knowledge and relationship impacts on innovation in tourism destinations. *Tourism Manag* 62, 196–207.

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