Experience and artificial intelligence in hospitality and tourism: a review of reviews and a bibliometric analysis

Paper published in International Journal of Contemporary Hospitality Management

Citation: Polo-Peña, A.I., Frías-Jamilena, D.M., Peco-Torres, F. and Rodríguez-Molina, M.Á. (2025), "Experience and artificial intelligence in hospitality and tourism: a review of reviews and a bibliometric analysis", International Journal of Contemporary Hospitality Management, Vol. 37 No. 7, pp. 2306-2326. https://doi.org/10.1108/IJCHM-07-2024-0988

Acknowledgments

Grant TED2021-132078B-I00 funded by MICIU/AEI/10.13039/501100011033 and by the European UnionNextGenerationEU/PRTR, and Project A-SEJ-462-UGR20 funded by the Consejería de Universidad, Investigación e Innovación de la Junta de Andalucía y por FEDER, Una manera de Hacer Europa.

EXPERIENCE AND ARTIFICIAL INTELLIGENCE IN HOSPITALITY AND TOURISM: A REVIEW OF REVIEWS AND A BIBLIOMETRIC ANALYSIS

Abstract

Purpose: This study seeks to determine the current state of the literature—and propose future research directions—on the topic of tourist experiences shaped by artificial intelligence (AI). A review of reviews dealing with the tourist experience is conducted, highlighting the growing use of AI (and its most advanced forms, captured under the umbrella term *strong AI*). A bibliometric analysis of tourist experiences powered by strong AI is conducted on this review.

Design/methodology/approach: This study implements a mixed methodology that combines a review of reviews with bibliometric analysis of the scientific literature on strong-AI-enhanced tourist experiences.

Findings: The analysis provides insights into the evolution of the tourist experience based on the "experience economy" theory, through a performance-based analysis and scientific mapping of studies dealing with strong-AI-enhanced tourist experiences. Relevant future lines of research are proposed that explore new conceptual frameworks and their evolution toward considering more varied AI-based tools, services, and environments, and tourism "agents," and contributing to the scholarship on sustainability, authenticity, and possible detrimental effects of AI.

Originality: This highly original work addresses the current lack of studies that adopt a combined perspective—blending a review of reviews and bibliometric analysis—to examine the evolution of the tourist experience and, particularly, how AI is influencing that experience.

Research implications: This study theoretically connects the "experience economy" model with tourism and strong AI. Lines of research are proposed to expand theoretical boundaries toward a more comprehensive understanding of tourist experiences mediated by strong AI and their contribution to well-being, authenticity, and sustainability.

Keywords: Artificial intelligence; AI; Experience; Experience economy; Literature review, Bibliometric analysis.

1. Introduction

Experience is a pivotal element for all consumers but, arguably, particularly so for tourists, given that it constitutes the essence and the primary facet of the tourism industry. In this context, the "experience economy" concept, developed by Pine and Gilmore (1999), is considered to be the most well-established framework for studying tourism. This framework has evolved over time, leading to successive proposals that are now captured in the literature as first-, second-, and third-generation experiences. Conducting a literature review can contribute to explaining current advances in the subject area in question, the key concepts to consider, and the phases through which the literature is developing, which constitute the basis for the identification of emerging themes (Lim et al., 2022).

Currently, the literature recognizes the potential of advanced technologies such as artificial intelligence (AI) to beneficially transform how customer experiences are generated and consumed (Soliman et al., 2021). However, the more the scholarly study of AI evolves, the more necessary it becomes to delimit the specific applications to be considered, so as to select those that, at any given time, hold the greatest potential to contribute to the development of the literature and the knowledge-base. In the context of AI, the literature distinguishes between its "weak" and "strong" applications. In the former case, the machine is designed to perform one very specific task extremely well, while the latter is more powerful in terms of its sophisticated "human" performance (e.g., Bory et al., 2024). So-called *strong AI* "thinks" like a person, draws on general knowledge, imitates common sense, and even has the potential to become self-aware. Indeed, it is predicted to become the predominant technology in the world. Its less sophisticated counterpart, *weak AI*, has existed for longer and, thus, has naturally attracted more research, to date. However, strong AI has already become a large "umbrella" theme that includes sub-topics such as visual recognition, speech recognition, natural language processing, expert systems, affective computing, and robotics (Sterne, 2017, p. 10). Of the two types of AI, it is the *strong* applications that are currently generating the greatest

scholarly (and wider) interest and that, as proposed here, represent a seam of research ripe for development.

The topic of "smart" (technology-enhanced) tourist experiences is extremely relevant both to the literature and the professional sector, as well as being a novel research focus. Indeed, such is its relevance that bibliometric analyses have recently begun to be published on this theme (e.g., Au and Tsang, 2022; Soliman et al., 2021). However, these studies are limited to weak AI technology. Hence, given the relevance of strong AI, the absence of studies analyzing its evolution in relation to the tourist experience constitutes a significant gap in the literature.

In light of these considerations, the aim of the present study is to determine the current state of the literature on tourist experiences shaped by AI—including today's strong AI applications—and to propose new lines of research for the future. Fulfilling this aim demands a review of reviews on the evolution of the tourist experience to date, highlighting the emergence of AI, combined with a bibliometric analysis of the scholarship on tourist experiences powered by strong AI.

From a methodological perspective, this article presents a two-stage analysis that leverages the power of literature reviews (e.g., Lim et al., 2022). The first stage entails conducting a review of reviews, and the second stage involves a bibliometric study on the emerging area of AI-enhanced tourist experiences. Although the use of mixed methodologies is not common in review papers, scholars have recently indicated that they offer a more holistic and comprehensive overview of the underlying structure and trajectory of the domain under study (e.g., Huang et al., 2023).

2. Stage 1—A review of reviews: The tourist experience

2.1. Goal

As early as the 1980s, the idea began to emerge that *experience* could offer an alternative perspective through which to understand consumer behavior. Pine and Gilmore (1999) captured this perspective with the term "the experience economy," based on the notion that it is possible to offer products and services that consist entirely of providing the customer with a positive experience.

The body of literature that examines the tourist experience is extremely broad, such that it lends itself to articles comprising the aforementioned literature reviews, systematic literature reviews, bibliometric analyses, and meta-analyses. In the present work, a review of reviews is performed to contribute to explaining the evolution of the development of the literature dealing with the tourist experience, based on the experience economy model (Pine and Gilmore, 1999). The key concepts and successive extensions of this model not only inform the continued development of this body of literature but also constitute the basis for the identification of emerging themes (Lim et al., 2022).

2.2. Method

When undertaking a systematic review, it is essential to follow a suitable protocol to ensure scientific rigor, starting with careful planning and an appropriate research strategy that is applied consistently and transparently. One example of such a protocol that can be used for systematic reviews is SPAR-4-SLR (Paul et al., 2021).

The question of which database to select when collecting the works is a crucial one. In the present case, the research database Web of Science (WoS) was deemed the most appropriate. WoS is considered the world's leading analytical-information and scientific-citation index platform (Li et al., 2018). As of August 20, 2023, this study drew on the knowledge category "Hospitality, Leisure, Sport & Tourism" from the WoS Core Collection (with those items relating to "sport" duly eliminated). The search was based on the term "experience," together with "review," "literature review," "narrative review," "meta-analysis," "bibliometric analysis," or "qualitative review" as indexed keywords. A process of refining the identified articles was then undertaken to ensure that all those included in the review corresponded to the stated research aims. These works were then compiled and ordered in summarized form (Supplementary Table 1), at which point the literature was assessed and analyzed. Next, as described in Paul et al. (2021, 2023), a rigorous content analysis of the analyzed works was conducted.

2.3. Findings

The review carried out in the present study, centering on the works that have contributed reviews on the tourist experience, showed that there are two methods that dominate this field of study: narrative literature reviews and systematic literature reviews. Meanwhile,

the use of bibliometric analysis or combinations of the methods discussed here is also increasingly emerging in this field.

Turning to the reviews focused on the tourist experience and their contributions to the experience economy framework (Pine and Gilmore, 1999), the original model (which can be understood as capturing the "first-generation experience economy"—see Amaro et al., 2023) was criticized mainly for delivering artificially-staged experiences to customers, with little consideration of consumers' self-creation or co-creation/co-configuration of their experiences. Responding to this criticism, the concept of the "second-generation experience economy" and "third-generation experience economy" emerged." (Amaro et al., 2023). The literature analyzed here shows that even the most recent works do not focus exclusively on third- or even second-generation experiences but also continue to employ conceptualizations pertinent to first-generation experiences. This coexistence of different theoretical conceptualizations renders it interesting to analyze how the scholarly understanding of "consumer experience" has evolved, informed by contributions from the tourism sector in particular:

- *First-generation tourist experiences*. Among the works that have clearly impacted the development of this line of research are those of Jennings et al. (2009) and Ryan (2010), who provided some early contributions toward the conceptualization of the tourist experience. Elsewhere, Adhikari and Bhattacharya (2016) offered a conceptual model explaining the formation of the tourist experience by identifying antecedent variables and their effects on consumer behavior. Finally, the work of Godovykh and Tasci (2020) provides a holistic definition of the tourist experience and a model that includes the cognitive, emotional, sensory, and conative dimensions, as well as the pre-visit, visit, and post-visit stages.
- *Second-generation tourist experiences*. These constituted an important step in the conceptualization of consumer behavior, as they enabled the role of customer co-creation in the formation of experiences to be articulated and given due prominence. Following this seam of research, the study by Campos et al. (2018) stands out, in which the authors conduct a literature review on the topic of the co-creation of tourist experiences and propose a definition and a conceptual framework for this idea. Also influential is the work of Vlahovic-Mlakar and Ozretic-Dosen (2022), which focuses on the brand experience in the online

context (providing a conceptual framework that includes the dimensions of the brand experience and the antecedent and consequent variables of this construct).

Third-generation tourist experiences. The transition from second- to third-generation experiences involves moving toward memorable experiences that succeed in being authentic, meaningful, and existentially transformative for each customer. Among the different perspectives we find here is that of deMatos et al. (2021), which studies the "flow" variable, and that of Câmara et al. (2023), which examines "meaningful" experiences. Other approaches analyze more established concepts of the tourist experience that are relevant to today's literature, such as memorable experiences (see the review by Hosseini et al., 2023) and transformative experiences (see Zhao and Agyeiwaah, 2023). These works offer a conceptualization and analysis of the dimensionality of both types of experiences, and examine their effects on tourist behavior.

Given the recognized importance of the characteristics of personalization, co-creation, memorability, and transformation in tourist experiences, the emergence of advanced technologies and their increasing capacity to generate experiences that enhance these characteristics constitute a significant turning point worthy of scholarly attention (Law et al., 2024; Wang and Uysal, 2024). These are analyzed in the bibliometric analysis undertaken in the present study.

3. Stage 2—A bibliometric study: The tourist experience shaped by strong AI

3.1. Goal

AI is defined as the ability of machines to imitate human behavior (Sterne, 2017, p. 9). However, within that ability, this technology is advancing rapidly in both sophistication and scope, meaning that the literature must keep pace with today's AI applications and capacities, and their effects on consumer behavior. The most recent advances in AI technology have led authors to distinguish between two main types: weak and strong (e.g., Bory et al., 2024; Sterne, 2017, p. 9). AI is able to imitate human "thinking" based on general knowledge, which enables it to apply reasoning that resembles "common sense." The "strong AI" category includes sub-fields such as visual and speech recognition, natural language processing, expert systems, affective computing, and robotics (Sterne,

2017, p. 10). Strong AI applications, then, are showing signs of becoming *the* predominant technology in the world. It thus presents greater potential than previous smart technologies to generate an impact on the tourism sector and, therefore, on the developmental trajectory of the research.

Further research on strong-AI-enhanced tourist experiences is called for, given that, while there are currently a number of literature reviews dealing with AI in tourism (e.g., Doborjeh et al., 2022; Solakis et al., 2022), these do not focus on the tourist *experience*, with the exception of the systematic review conducted by Ghesh et al. (2024). Equally, the bibliometric analyses and meta-analyses on smart tourist experiences cited here (Au and Tsang, 2022; Soliman et al., 2021; Sustacha et al., 2023) only address certain *weak* AI technologies, overlooking strong AI altogether. It is therefore of interest to progress toward greater insights into the evolution of strong AI applications in tourist experiences.

3.2. Method

In bibliometric analyses it is essential to follow a protocol to ensure objectivity in their implementation. In the present case, the study employed the guide to performing bibliometric analyses detailed in Donthu et al. (2021) and Lim (2022).

Once again, journals from the area of knowledge categorized by WoS as "Hospitality, Leisure, Sport & Tourism" of the research database Web of Science (WoS) were selected (with those relating to "sport" duly eliminated). Hence, only those publications with a first-quartile Journal Impact Factor for 2022 were chosen. This narrow focus would enable us to analyze works specific to the area of study that were published in journals with, *a priori*, the greatest capacity to influence the development of future scholarly output. To identify the works to be included in this study, keywords incorporated in the "topic" field of WoS were used. The present keywords were sourced from a review of the specialist literature on AI and strong-AI-based technologies applied to the tourism and tourist-experience contexts. Prior to being finalized, the initial selection of keywords was reviewed by four researchers all specializing in AI, strong AI, and the tourism context. The selection process led to the following terms being chosen: ("*artificial intelligence**" *OR* "*artificial-intelligence**" *OR* "*ai*" *OR* "*intelligence**" *OR* "*big data*" *OR* "*deep learning*" *OR* "*dl*" *OR* "*machine learning*" *OR* "*ml*" *OR* "*natural language processing*" *OR* "*nlp*" *OR* "*iot*" *OR* "*robot**" *OR* "*chatbot*" *OR* "*conversational agent**") *AND*

("*experience*"). Once the works to be included in the dataset were identified, they were all reviewed to verify that they were, indeed, related to the field of study under analysis.

In terms of the timeframe to be covered by the analysis, the period 2010–2023 was selected. This spans from the year in which the keyword first appeared in a published work, to the end of the calendar year in which the present study was conducted (Supplementary Figure 1). In total, 174 articles from 12 journals, 481 authors, 665 author keywords, and 10,414 bibliographical references were included. To carry out this analysis, the 'bibliometrix' library for R (Aria and Cuccurullo, 2017).

3.3. Findings

A bibliometric analysis entails two main categories of analytical analyses (Donthu et al., 2021; Lim, 2023). These are (1) performance analysis, which is an evaluative technique for assessing the productivity and impact of the previous literature; and (2) science mapping, which is a relational technique that discerns connections between major themes and research groups, for instance, in the field of interest. The results of the present study in these two aspects are presented next.

3.3.1. Performance analysis

General analysis of scientific output. Tracing the evolution of the scientific output shows that the subject of strong AI is extremely topical, displaying an upward trend. The earliest articles published in this area appear in 2010, and it is not until 2018 that the output shifts from marginal (just one publication, or three publications, per year) to a major growth trend. Indeed, the rate of growth can be considered exponential: in 2023, no fewer than 48 articles were published (Supplementary Figure 2).

A Sankey diagram (Figure 1) was produced to visually link the most relevant authors, together with the keywords and bibliographic references most commonly used by them. This technique helps pinpoint the themes that are most related to each author and to the bibliography they typically use. Figure 1 includes the 15 most relevant authors by number of articles, as well as the 15 keywords and references they used.

<<Figure 1>>

We can observe that, with the exception of the work of Fornell and Larcker (1981), which makes a methodological contribution regarding the use of Structural Equation Modeling,

all the other references that are typically used by the most relevant authors are very recent. Furthermore, the reference author matches the authorship of the most-used bibliography (e.g., in the case of Ivanov, S., Gursoy, D., or Xiang, Z.). This provides an insight into the influence that these authors are achieving in this area of study.

In relation to the keywords, in addition to using those specific to the marketing and tourism area—such as "*hospitality*", "*guest experience*", or "*tourism*"—others appear that are linked to new technologies such as "*online reviews*", "*sentiment analysis*", and "*airbnb*", to the outbreak of the COVID-19 pandemic, and, finally, to technologies that are based on strong AI. The latter include keywords such as "*artificial intelligence*", "*service robot/s*", "*big data*", "*machine learning*", "*text mining*", "*deep learning*", and "*anthropomorphism*" (a term linked to the study of virtual assistants or chatbots).

Analysis of journal impact. The *International Journal of Contemporary Hospitality Management* and the *International Journal of Hospitality Management* are the publications that have made the greatest contribution to the field of study, in terms of the number of articles published (48 and 28, respectively), to date. This output may enable these journals to position themselves as leaders in the scholarship dealing with strong-AI-based technologies and tourist experiences (Supplementary Table 2).

Most relevant authors and their impact. The top ten authors by the number of contributions to journals in the period under analysis. These data indicate that, although there are two authors who clearly stand out based on the number of articles they have published (Dogan Gursoy and Yang Yang), relative to other scholars, it is still too early to talk of a clear "leader" in terms of author productivity (Supplementary Table 2). According to these data, although Dogan Gursoy currently appears to be the most prolific and consistent researcher in terms of output, here, too, it is premature to define this author as the leading figure in this area in terms of productivity. This is in line with the aforementioned data regarding the number of publications achieved by the most productive authors (Supplementary Table 2).

Analysis by affiliation and country. "Affiliation" refers to the institution or organization to which the author indicates he or she is affiliated in each publication. On this basis, about the number of contributions from each university, the University of Macau (with 13 publications) followed by Hong Kong Polytechnic University (with 9 publications) occupy the top positions (Supplementary Table 2, the data show that these universities present a similar level of output in this area of study).

Figure 2 shows the distribution of publications by country, and the number of articles (the darker the color, the greater the number of contributions). The leading position is achieved by China (with 158 articles), followed by the United States (91) and the United Kingdom (42).

<<*Figure 2*>>

3.3.2. Science mapping analysis

Analysis of conceptual structures. The study of conceptual structures helps to identify the main emerging themes and sub-themes of research in the discipline. Structural knowledge can be understood as the knowledge of how concepts within a given area are interrelated (Jonassen and Marra, 1994). Conceptual structures enable us to identify the most important and recent topics, according to the authors (Aria and Cuccurullo, 2017), as well as the relationships between associated concepts (Boyack and Klanvas, 2010). Among the tools used within structural analysis are co-occurrence networks, thematic maps and thematic evolution, and data-reduction techniques such as correspondence analysis or multidimensional scaling. However, before analyzing the structures themselves, it is advisable to pay attention to the keywords, as these can provide a steer as to the ideas that have been most influential in this area of study.

Document and keyword analysis. Considering the impact achieved by the articles (based on the number of citations received globally), Supplementary Table 2 shows the ten publications enjoying the top positions. These can be classified by subject. On the one hand, there is a major theme concerned with clients' use perception of service robots (this corresponds to the respective articles published in 2015 by Zheng Xiang, Zvi Schwartz, John H. Gerdes, and Muzaffer Uysal in the *International Journal of Hospitality Management*). On the other hand, there is another primary theme that also relates to the use of service robots but, this time, analyzed from the supply-side perspective (which

corresponds to the article by Lu Lu, Ruiying Cai, and Dogan Gursoy, published in 2019 in that same journal). The contribution of Ivanov, S., Seyitoğlu, F., and Markova, M., published in 2020 in *Information Technology & Tourism*, is also worthy of mention in relation to this second theme. Other discernable areas, which can be considered more minor, include, for instance, the contribution of Dimitrios Buhalis and Marie Foerste (2015), published in the *Journal of Destination Marketing & Management*, which proposes a framework for the potential of technology to consider context, social networks, and personalization to the needs of tourists. The word cloud in Figure 3 represents the top 50 keywords used in the articles.

<<Figure 3>>

Co-occurrence networks. Co-occurrence networks expose the conceptual structure that creates relationships between concepts (Aria and Cuccurullo, 2017). To carry out this analysis, in the present study, the Louvain clustering method was used, which is an algorithm designed to identify hierarchical structures in large networks. Figure 4 presents the results, with four main groups being identified (distinguished by different colors in the graph).

<<Figure 4>>

In the first group, the most important keyword is *experience*, followed by *tourism* and *behavioral intentions*. Other words in this group are: *technology*, *technology acceptance model*, *artificial intelligence*, *quality*, *anthropomorphism*, *employees*, *emotions*, *scale*, *determinants*, *social presence*, *customers*, and *risk*. This is a group that could be associated with the study of technology acceptance and its effects on consumer and employee behavior.

In the second group, the primary keyword is *satisfaction*, followed by *hospitality* and *big data*. Other words here are: *online reviews*, *word-of-mouth*, *service quality*, *social media*, *dimensions*, *hotel*, *loyalty*, *sentiment analysis*, *attributes*, *ratings*, *choice*, *personality*, and *platforms*. This group could be associated with works dealing with the use of Big Data to analyze social media content.

In the third group, the word *performance* stands out, followed by *antecedents*, *image*, *engagement*, *authenticity*, *destination*, *perceived value*, and *consequences*. This group

could be related to research in the context of tourist destinations, considering more traditional variables from the literature.

In the fourth group, the most relevant keyword is *service*, followed by *management*, *moderating role*, *trust*, *co-creation*, and *emotional intelligence*. This latter group could be associated with research related to customer service management and service co-creation.

Co-occurrence analysis also reveals links between the most important nodes in Figure 4: tourism, experience, hospitality, and satisfaction. These relationships are the natural result of wanting to know the extent to which the tourist experience translates into a greater degree of satisfaction with the visit or with the accommodation establishment—a very frequent objective among the studies analyzed.

Thematic maps. A thematic map enables topics to be assessed according to two measures: centrality and density. Centrality measures the degree of interaction of a network with other networks, while density measures the internal strength of the network (Callon et al., 1991). Thematic maps are built on the basis of co-occurrence networks and they show the typology of topics of a given knowledge area in a two-dimensional map divided into four quadrants (Aria and Cuccurullo, 2017). These quadrants (Cobo et al., 2011) correspond to: motor themes (upper right: core themes that are also developed); themes of a highly specific or isolated nature (upper left: developed themes that are nevertheless peripheral and of minor importance); emerging or declining themes (lower left: undeveloped and peripheral themes of little importance); and transversal, general, or basic themes (lower right: they are important within the discipline but are not developed).

Figure 5 shows the thematic map for the entire analyzed period, where three transversal and basic themes can be identified. The first relates to *value co-creation* and consumer *engagement*, along with issues relating to *leadership models*, and *human resource models*. There are also three themes that are well-developed but of less relative importance. The first is concerned with the use of accommodation pricing models based on SEM-PLS; the second focuses on neural networks and tourism management; and the third relates to the impact of COVID-19 and consumer commitment. Of these topics, the one dealing with the study of the effect of COVID-19 can be understood as a declining issue, now that the pandemic is over.

<<Figure 5>>

Referring to the motor themes, there are three of these: emotional intelligence and civic behaviors in a work context; the study of technologies in service provision and their antecedents; and, finally, experience in tourism and hospitality. These can be considered well-established, consolidated topics for the marketing literature, but they acquire fresh relevance in this analysis—that is, they need to be revisited in the context of strong-AI-based technologies. Finally, as an emerging or declining topic, we find the study of context and segmentation. Once again, these are well-established variables in marketing literature but, in the context of technological environments based on strong AI, they may become newly relevant.

These results help to emphasize that the study of the tourist experience supported by strong AI technologies has drawn on preexisting, reliable variables and models from the marketing area, which can lend robustness to the results achieved. However, these variables and models may undergo increased use due to their study in contexts such as strong AI, ultimately becoming a trend.

It is also interesting to observe how the study topics have evolved. To this end, their evolution across two sub-periods was compared: 2010–2015 and 2016–2023. Figure 6 indicates that the developmental trajectory of the literature dealing with the use of strong AI technologies emerged during the period 2010–2015. That said, although works were published on this subject, insufficient *specialist* keywords directly related to strong-AI-based technologies were incorporated (these articles employed commonplace terms such as *experience*, *performance*, *behavioral intention*, *dimensions*, *service*, *background*, *context*, *quality*, and *trust*). It was in the period beginning 2016 that keywords related to AI technology began to appear, when the terms *technology*, *technology acceptance model*, and *big data* acquired prominence (along with *experience*, *dimensions*, *work*, *behavioral intention*, and *performance*).

<<Figure 6>>

Factor structure. Another useful way to analyze keywords is by looking at their factor structure, for which data-reduction techniques such as multiple correspondence analysis can be used (Aria and Cuccurullo, 2018). In this technique, proximity between words on the graph means that they are used together in the literature, while words that are located far apart are *not* used together. Likewise, the origin of coordinates represents the average profile of the rows and columns. Consequently, this is where shared topics with a common meaning can be found (Cuccurullo et al., 2016).

Figure 7 shows a multiple correspondence analysis. Observe that the first two dimensions account for almost 44 percent of the inertia of the data analyzed. The abscissa axis enables us to differentiate between articles that are more centered on behaviors (based on the terminology of *adoption*, *behavior*, *user acceptance*, etc., and even *moderating effect*), versus attitudes, feelings, and the online context (including terms such as *attributes*, *ratings*, *customer satisfaction*, or *sentiment analysis*). The ordinate axis differentiates between studies more focused on the context generated by AI (including terms such as *social presence*, *anthropomorphism*, or *intelligence*) versus those that employ terminology more typical of the traditional tourist context (using terms such as *perceived value*, *authenticity*, or *destination*).

<<Figure 7>>

These results highlight that, in line with the previous analyses conducted on the most influential works, a significant proportion of the literature during the period under analysis developed around two key themes: the use of robots in service provision (centering on the adoption of this technology); and the use of Big Data to carry out analysis on social media (focusing on the study of evaluations, feelings, and opinions). These studies drew on variables and methodologies pertaining to the specialist marketing and tourism literature, along with others specifically relating to the context of new technologies based on strong AI.

Figure 7 also reveals some issues that the literature has not sufficiently connected. Note that concepts such as *social presence*, *anthropomorphism*, or *intelligence* are isolated in the upper left-hand quadrant, far-removed from terms related to the tourist experience such as *emotions*, *trust*, or *satisfaction*. This suggests that more effort should be made to connect robotics and AI with issues such as emotions and tourist perceptions. Similarly,

authenticity and *destination* appear in the lower left-hand quadrant but are located at some distance from concepts such as *technology*, *social media*, or *intelligence*, indicating that there is an absence of literature connecting advanced technologies with tourist destination perceived authenticity. Finally, there is no direct evidence of a connection between sustainability and tourism, suggesting that there is room for research into how advanced technologies can be sustainably integrated into tourist experiences.

Intellectual and social structures

This last block focuses on the study of the intellectual and social structures of scientific research on the topic of study.

Intellectual structure. The intellectual structure of the field under study was analyzed according to the bibliographical references used in each publication. This analysis was concerned with the clusters that can be made of the referenced works, based on sharing some thematic link or other. To carry out this analysis, the Louvain method was used, and the results are shown in Figure 8. The first of the four clusters (represented in red) comprises works dealing with the use of service robots, primarily in relation to consumer use acceptance. The second cluster (represented in purple) also captures literature related to service-related robots but, this time, with a broader outlook on strong AI, through the study of the interaction between robots and humans and its effect from the supply-side perspective (such as employees). The third cluster (shown in green) is small, but here the literature refers to the use of Big Data to perform analyses of large volumes of information. The last cluster (in blue) comprises literature that provides a theoretical starting point in the study of AI applied to the tourism context, as well as methodological aspects.

<<*Figure 8*>>

Social structure. The social structure aspect refers to how authors, institutions, and countries interact or collaborate through relationships based on the co-authorship of articles. These collaborations are presented in a network where nodes represent actors, while links connecting the nodes represent the relationships (Agbo et al., 2021). To analyze this in the present work, once again the Louvain clustering algorithm was used.

As shown in Figure 9, collaboration networks around this topic are highly fragmented, in the sense that there are 11 different groups and, normally, in each of these, authorship is

shared but few social links are established. This situation may be derived from the "youth" of the study area.

<<Figure 9>>

Turning to the collaborations themselves, it can be observed that Ja Young Choe (University of Macau, China) and Jinkyung Jenny Kin (Youngsan University of South Korea) share collaborations and joint-authorships and, to a lesser extent, also do so with Heather Markham Kim (Sejong University, South Korea). Dogan Gursoy (Carson College of Business, United States, and University of Johannesburg, South Africa) collaborates and shares authorship with Ruiying Cai (Colorado Mesa University, United States) and with Yu Li (Bohai University, China). In turn, Yu Li co-authors with Yang Yang (Temple University, United States). Yao Chin Wang (University of Florida, United States) and Huijun Yang (Macao Institute for Tourism Studies—now Macao University of Tourism—China) usually share authorship in their publications on this topic. The latter author provides a nexus with Erose Sthapit (Haaga-Helia University of Applied Sciences, Finland, and Manchester Metropolitan University, United Kingdom), who, in turn, has published jointly with Natalia Rubio, Sara Campo, and Jano Jiménez Barreto (all from the Autonomous University of Madrid, Spain).

Rob Law (University of Macau, China) and Gang Li (Deakin University, Australia) are co-authors but they also publish separately with Jian Ming Luo (City University of Macau, China), who, in turn, has published with Ziye Shangb (Nanjing Xiaozhuang University, China). Hailian Qiu (Hubei University, China), Minglong Li (Zhongnan University of Economics and Law, China), and Billy Bai (University of Nevada Las Vegas, United States) often collaborate through joint authorship. Finally, Fuad Mehraliyev (Roskilde University, Denmark), Sike Hu (Sichuan University, China), and Jiaqi Chen (Sichuan University, China) are also co-authors in this topic area, as are Stanislav Ivanov (Varna University of Management, Bulgaria) and Farouk Seyitoğlu (Mardin Artuklu University, Turkey).

4. Future research agenda

The bibliometric analysis presented here—and, in particular, the trajectory of the extant literature that it illuminates—points to a series of gaps or areas that call for further

knowledge or development. The following themes are proposed as promising topics to be addressed by future research:

- The first proposed theme addressing an important gap concerns the need to explore new conceptual frameworks that facilitate a more comprehensive analysis of the influence of AI on the tourist experience and tourist behavior. The most commonly adopted theoretical frameworks are the technology acceptance models themselves. One suggestion here would be to continue to analyze how AI can transform the tourist experience from the perspective of the experience economy (Pine and Gilmore, 1999), in order to understand how the experience itself (and its effects) changes when it is delivered via AI. Additionally, pursuing this line could helpfully lead to the identification of consumer behavior variables that may become key in this context and that have yet to be considered by the literature. Such variables could include, for example, the use of strong AI in the provision of tourist experiences that might motivate potential travelers to undertake a trip, echoing the customer inspiration theory developed by Böttger et al. (2017). Similarly, it would be helpful to understand in greater depth whether experiences provided via strong AI are capable of generating tourist well-being (Wang and Uysal, 2024).
- The second gap identified here centers on the study of co-creation mechanisms through the use of AI. This gap involves looking at the interaction between tourists and also between tourists and other participating agents, such as destination managers and/or service providers. In this case, the role of destination residents in the co-creation of the experience would be useful to explore, as suggested by Tosun et al. (2024).
- A third possible gap ripe for attention is the exploration of a greater variety of AI-based tools and environments, in different usage situations, and their effect on different key variables of tourist behavior. One potential line of research would be to incorporate specific applications such as intelligent chatbots and/or intelligent virtual environments or content-generating AI. Regarding tourist behavior variables, a gap is identified here vis-à-vis the need to link strong AI to issues such as tourist emotions and perceptions, as well as to destination perceived

authenticity. This proposal is consonant with previous studies suggesting that these technologies hold considerable potential in their application to tourism (Solakis et al., 2022), given the increasing variety of tools that must be tested specifically against different variables of consumer behavior.

- A fourth gap, which complements the previous one, centers on the need to evaluate and empirically test the effects of the use of AI-based tools in a wider variety of tourist services and environments. It is identified here that a large tranche of the empirical contributions are made in the relatively narrow context of firms in the sector (primarily, hotels) and during the service consumption phases (mostly relating to the use of service robots). It would be interesting to expand the scope of this area of study to consider other environments (such as tourist destinations) and other stages of the consumption process of tourist experiences (such as the pre-stay), which would widen and enrich the knowledge-base.
- The fifth gap revolves around the current scarcity of works that analyze the possible negative effects of the use of AI for tourists and other groups in the sector, given that the use of strong AI has been found to sometimes lead to *unfavorable* outcomes (Grundner and Neuhofer, 2021). Issues, among others, such as the possible lack of privacy, security concerns, or cognitive fatigue on the part of the user, could be helpfully analyzed, as Au and Tsang (2022) also propose. Efforts to address this gap could also include contributions aimed at tourism sector employees, for whom the use of AI could also lead to negative effects, such as a detrimental impact on mental health.

Finally, there is one additional gap that is identified here as gaining increasing relevance and, indeed, urgency: the question of how AI may contribute to improving sustainability in the tourism sector. This is a gap with great potential that, in turn, could lead to the development of several relevant sub-themes, such as how to improve *environmental* sustainability (for example, with contributions on how AI can support the management of natural resources or the circular economy), *economic* sustainability (for example, with contributions showing how AI can offer superior services or make production processes more economical), or *social* sustainability (for example, with studies on how AI could

potentially render tourist experiences more accessible to people with some type of physical, motor, cognitive, or social impairment).

This also represents a line of development that could be stimulated by interest in the different groups to which the contributions are directed. They might center on (i) the tourists themselves (for example, by examining how to use AI to encourage the adoption of more pro-sustainability behavior); (ii) sector employees (for example, by analyzing how AI could enrich jobs and help workers become more specialized and better qualified, delivering improvements in health and well-being); (iii) the local population at the destination (for example, by exploring how AI can encourage residents to actively participate in the development and organization of the tourist destinations where they live, thus helping to improve their coexistence with tourists and preventing situations that lead to so-called "tourismophobia"); or (iv) service providers, tourism firms, and those institutions responsible for the sector (for example, by testing the suitability of certain AI applications for providing personalized services).

5. Theoretical conclusions and practical implications

5.1. Conclusions

Reviews serve as cornerstones for advancing the existing body of knowledge in fruitful directions. In this case, the present review of reviews, which identifies the potential of strong AI for the evolution of the tourist experience, is enhanced with a bibliometric analysis. As such, this study not only centers on a topic with tremendous research potential—the application of strong AI to power tourist experiences—but also adopts a mixed-methods approach. The present results may encourage other researchers to integrate these two methods to achieve a greater breadth and depth of review.

5.2. Theoretical conclusions

The review of reviews undertaken here consolidates an evolving framework that captures how the experience economy (Pine and Gilmore, 1999) has progressed from its initial formulation to more advanced conceptualizations that integrate affective elements, personalization, co-creation, memorability, and the transformative capacity of experiences. In contrast to previous reviews, which analyze these elements individually,

the present work progresses beyond this fragmentation to offer a more holistic picture, highlighting the evolution of the literature's perspective from first- to second- and third-generation experiences, and identifying the continued coexistence of these paradigms.

As well as synthesizing the key elements and evolution of the tourist experience, the present results also enable us to reaffirm and contextualize the great potential of AI—and, specifically, *strong* AI—to transform the tourist experience. However, it is essential to track the impact of this technology on those experiences, for such is the pace of technological advancement that their evolution may take unpredictable directions.

As described in the proposed research agenda, this work highlights the need to employ conceptual frameworks that extend beyond traditional technology acceptance models, and to continue developing such frameworks. By jointly considering hedonic, affective, and behavioral variables, theoretical boundaries can be expanded toward a more comprehensive understanding of technologically mediated experiences (as suggested in the proposed research agenda, such as theoretical frameworks from the experience economy, customer inspiration, well-being, or Service-Dominant Logic). Rather than solely emphasizing the positive effects of using strong AI, this approach accounts for the possible negative and/or unwanted effects thereof.

Specifically, regarding the theoretical framework of the experience economy, this study highlights the capacity of strong AI to generate positive tourist experiences through more personalized (and therefore more meaningful) interactions. This capacity for personalization could lead to an expansion of the experience economy model by proposing its adaptation to intelligent, complex, and highly dynamic digital environments, which would represent a far-reaching conceptual innovation.

The final implication of the present findings is that previously established approaches to explaining or improving destination authenticity and sustainability can be helpfully challenged from the perspective of smart technologies. The work therefore opens up new lines of research that link the positive transformation of the tourist experience to broader objectives—such as improving sustainability on environmental, economic, and social levels—and objectives that are based on different tourism "agents" such as employees, residents, or service providers, beyond the tourists themselves.

5.3. Practical implications

The results of the present study may help tourism-sector professionals to develop a greater understanding of the current state of strong-AI-based applications vis-à-vis the creation of tourist experiences. The following implications stand out in particular:

- the importance of studying technology acceptance and its effects on consumer and employee behavior. On this point, tourism managers are recommended to take into account the psychological factors behind the success or failure of the application of strong AI technologies in tourist experiences.
- the significant role played by Big Data in analyzing tourist experiences—primarily, consumer satisfaction—via the analysis of online reviews. It is recommended that tourism firms employ Big Data to analyze their consumers' comments and opinions (ultimately, their own online reputation), which will enable them to improve their service accordingly.
- the potential effect of strong-AI-based applications on performance in the tourism field and on tourist behavior, through variables such as image, engagement, or perceived value. In light of the findings of studies that recognize the positive contribution of strong AI to the performance of tourism firms, the latter are recommended to apply such technologies. It is advisable, in this regard, for firms to use such technologies to provide services that can be tailored to the consumer's needs and preferences.
- the potential role of service robots in providing tourist experiences. Tourism firms are encouraged to consider the possibility of using such technologies, while remaining mindful of their possible negative effects as described in the literature.

5.3. Research limitations

Like any study, this research has certain limitations that must be considered but that may point to new avenues worthy of exploration. The main limitation is that only articles from journals pertaining to the area of knowledge classified in WoS as "Hospitality, Leisure, Sport & Tourism" were included in the dataset. Future analyses could capture studies from journals in other areas and with different impact factors. A further limitation to be considered is the question of the particular AI tools that were selected to be examined in the articles included in the bibliometric analysis. The field of AI is advancing rapidly,

which may lead to new and interesting applications that will motivate different analyses in the future.

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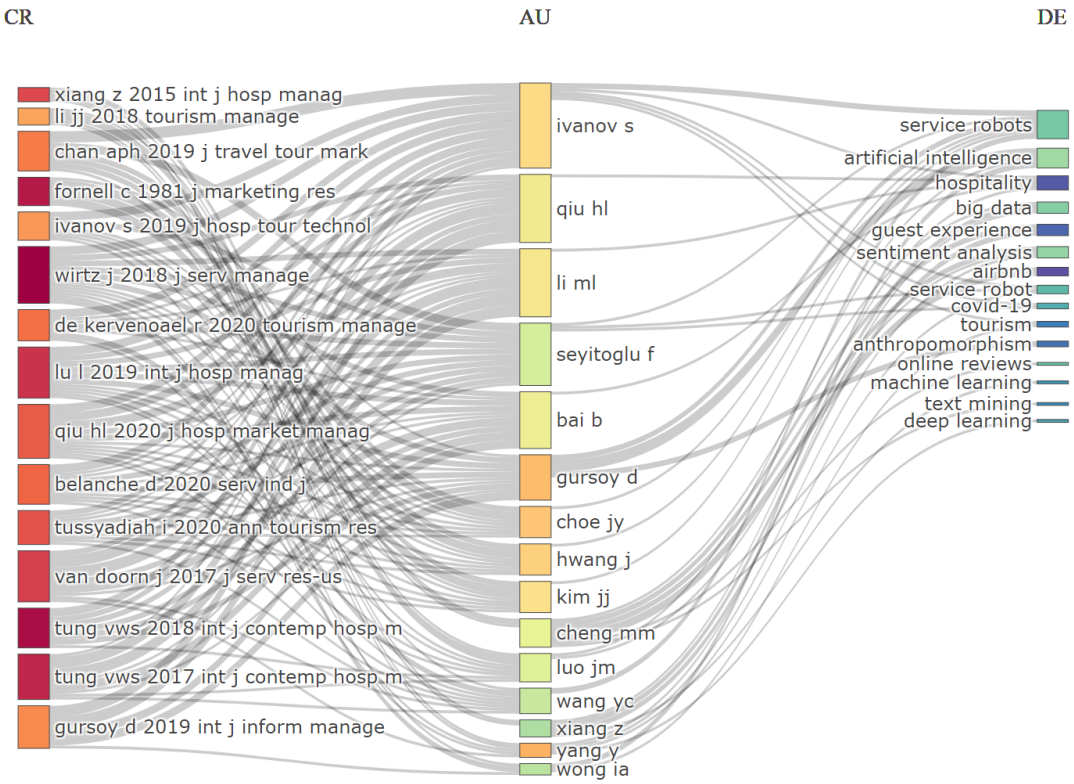
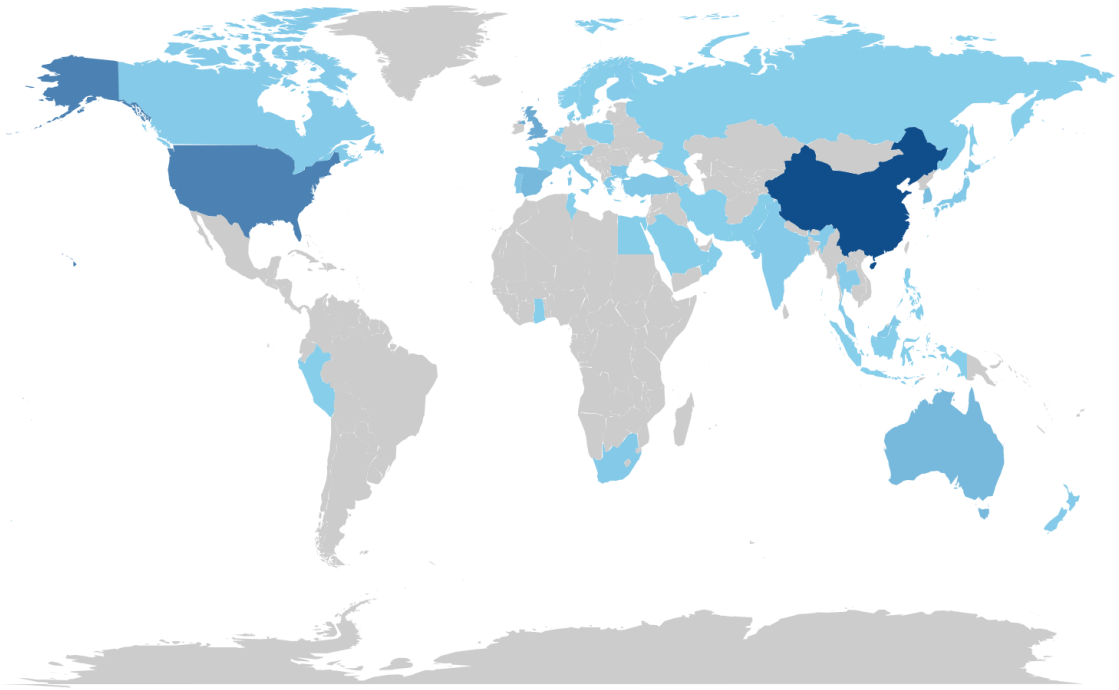
Figure 1. Sankey graph on references, authors, and keywords



Note. Wider lines indicate a greater degree of association. From left to right: CR—cited references; AU—authors; DE—keywords.

Source: Own elaboration.

Figure 2. Distribution of articles by country



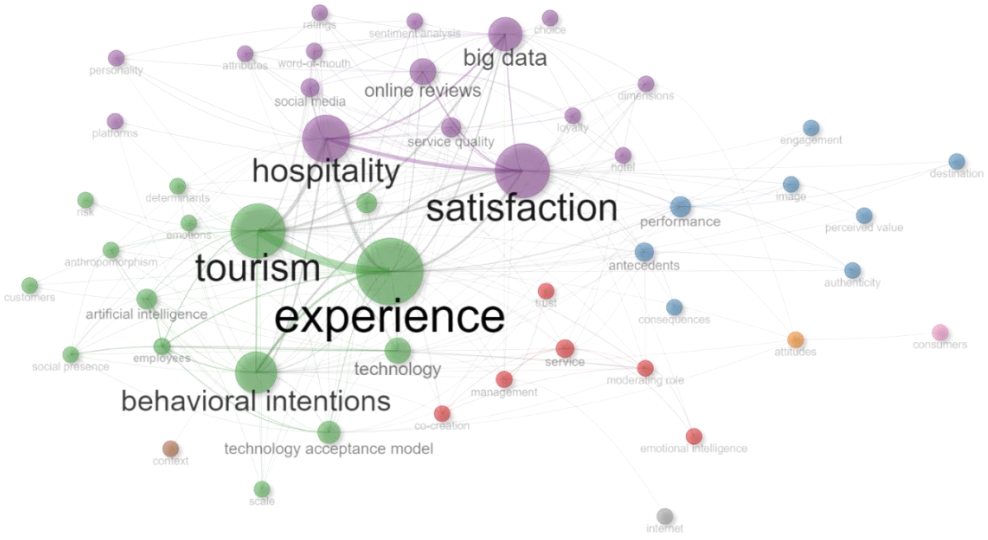
Note: The parts of the map highlighted in blue correspond to countries that have contributed to the developmental trajectory of the literature. The darker the shade of blue, the greater the number of articles published during the period under study.

Source: Own elaboration.

Figure 3. Keyword cloud

Source: Own elaboration.

Figure 4. Co-occurrence network for authors' keywords



Source: Own elaboration.

Figure 5. General thematic map based on keywords

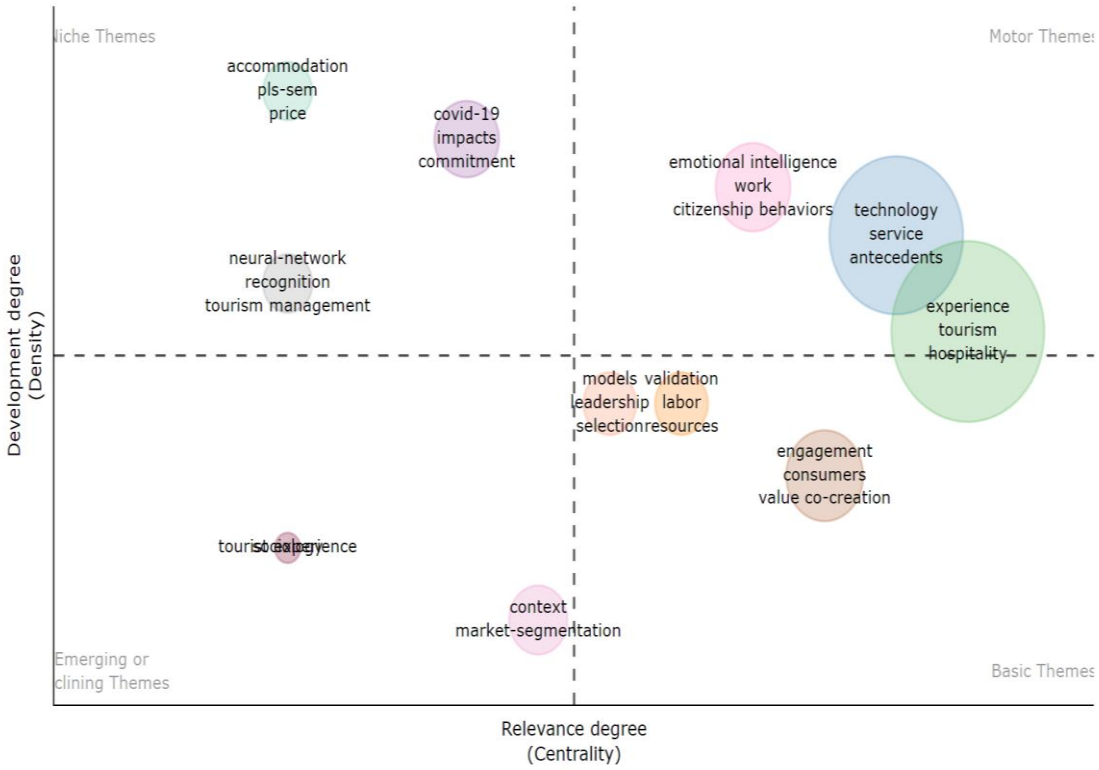


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Figure 6. Thematic evolution based on keywords

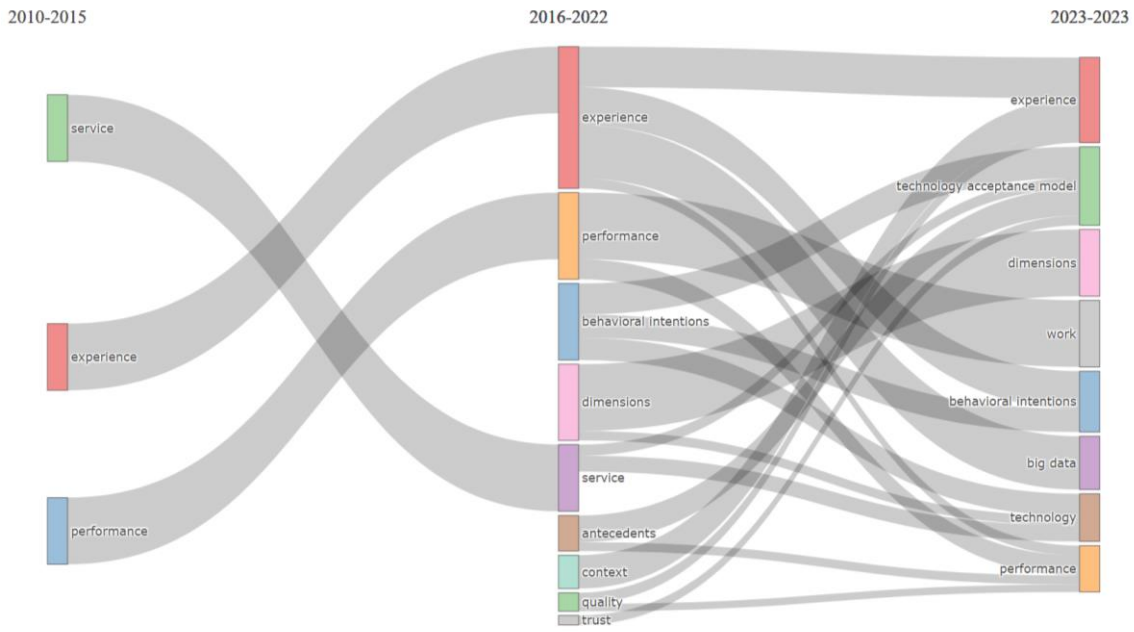

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Figure 7. Conceptual structure map: Multiple correspondence analysis method

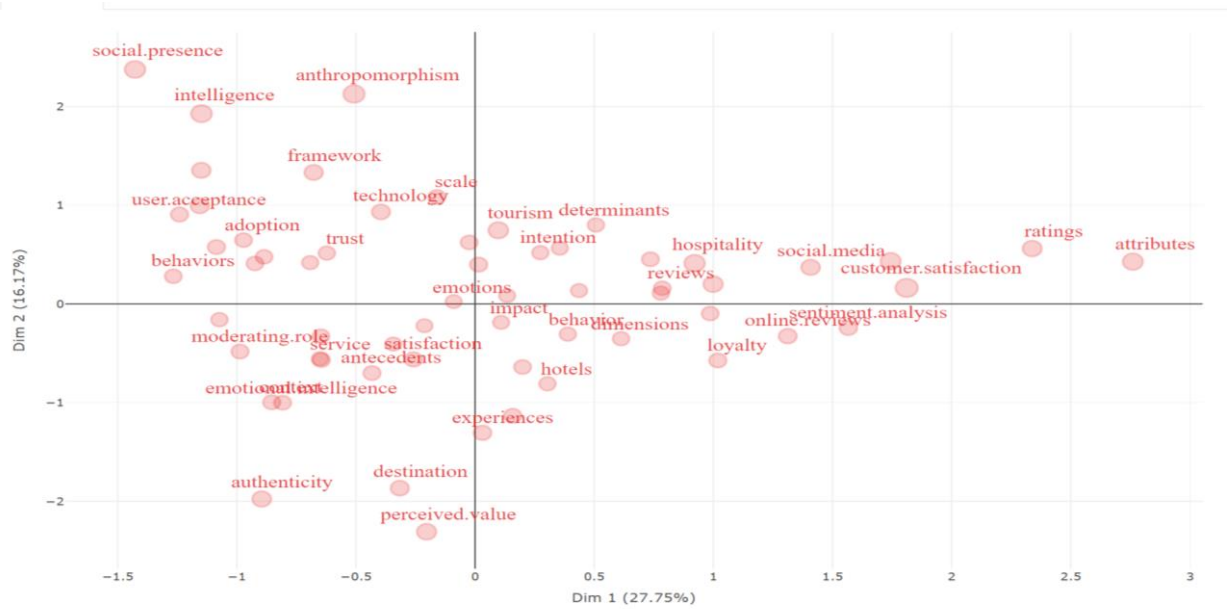

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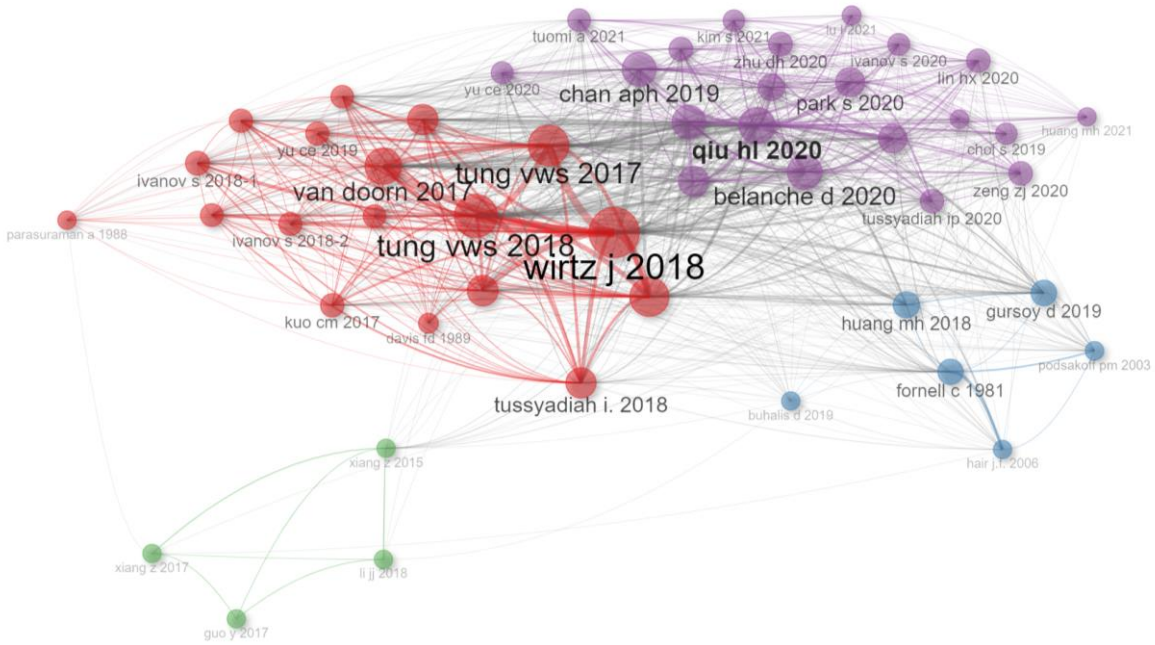
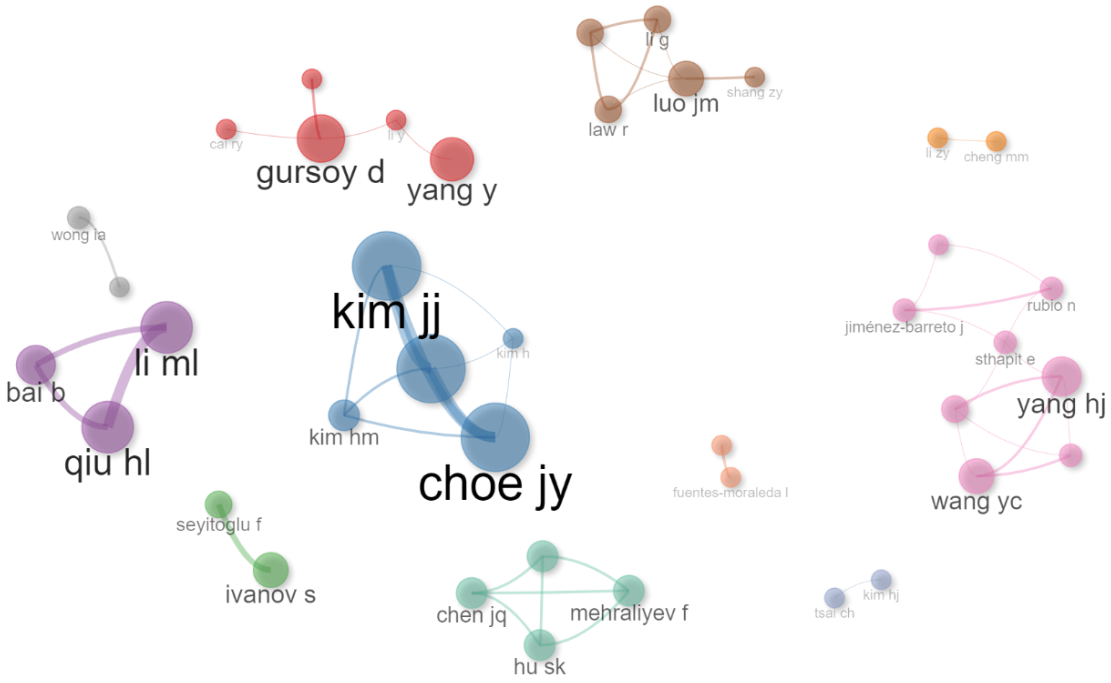
Figure 8. Intellectual structure



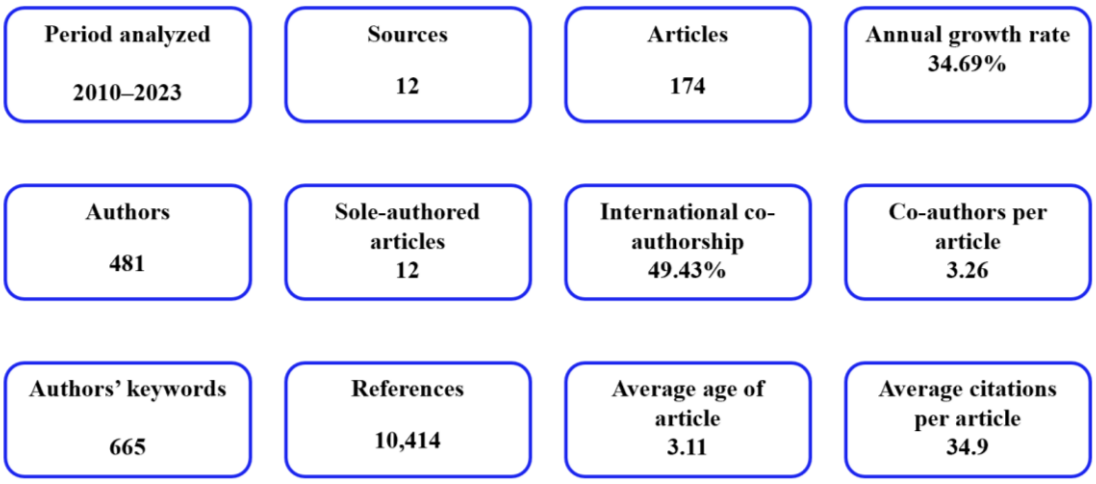
Source: Own elaboration.

Figure 9. Collaboration network between authors



Source: Own elaboration.

Supplementary Figure 1. General characteristics of the dataset under analysis



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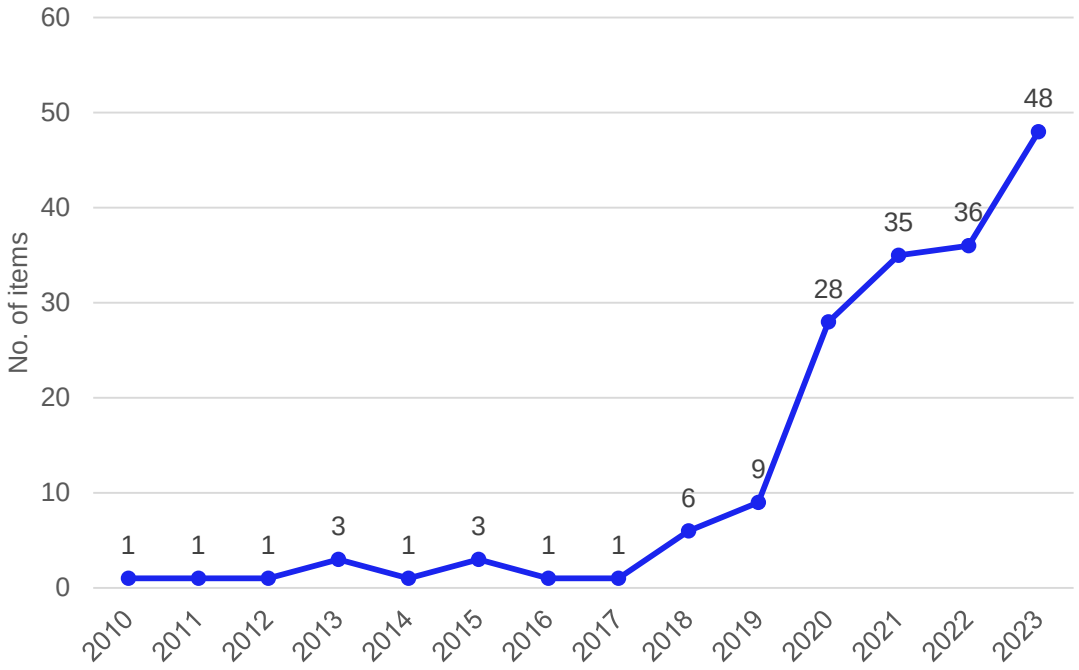
Supplementary Figure 2. Evolution of the number of articles by year



Source: Own elaboration.

Suplementary Table 1. Studies on the evolution of tourist experience

Authors and year	Journal	Study theme of analyzed	Title	Keywords	Methodoly	Time period analyzed	Number of articles included in the review	Number of cites (until 20th August 2023)
Jennings et al. (2009)	Journal of Hospitality Marketing & Management	Quality of tourist experience	Quality Tourism Experiences: Reviews, Reflections, Research Agendas	Service Quality, Consumer Perceptions, Heritage, Satisfaction, Management, Sociology, Model, Life	Literature Review	Not specified	Not specified	62
Ryan (2010)	Tourism Recreation Research	Tourist experience	Ways of Conceptualizing the Tourist Experience. A Review of Literature	Tourist experience, Tourism research, Research paradigms	Literature Review	Not specified	Not specified	91
Jensen et al. (2015)	Scandinavian Journal of Hospitality and Tourism	Tourist experience	How Can Consumer Research Contribute to Increased Understanding of Tourist Experiences? A Conceptual Review	Consumption, Culture, Sociology, Meanings, Behavior, Inquiry, Desire, Self	Literature Review	Not specified	Not specified	34
Adhikari and Bhattacharya (2016)	Current Issues in Tourism	Tourist experience	Appraisal of literature on customer experience in tourism sector: review and framework	Service Experience, Co–Creation, Emotional Responses, Social–Interaction, Brand Experience, Past Experience, Moderating Role, Price, Satisfaction, Impact	Systematic literatura review	1970 - 2014	198	50
Hwang and Seo (2016)	International Journal of Contemporary Hospitality Management	Management of the tourist experience	A critical review of research on customer experience management Theoretical, methodological and cultural perspectives	Multiple–Item Scale, Co–Creation, Hong–Kong, Service, Tourism, Hospitality, Determinants, Netnography, Information, Consumption	Literature Review	Not specified (it is included a table considering the period of time 1982 – 2013)	Not specified	93

Packer and Ballantyne (2016)	Visitor Studies	Visitant experience	Conceptualizing the Visitor Experience: A Review of Literature and Development of a Multifaceted Model	Numinous Experiences, Tourism, Museum	Literature Review	Not specified	Not specified	117
Campos et al. (2018)	Current Issues In Tourism	Tourist experience cocreation	Co–creation of tourist experiences: a literature review	Extraordinary Experiences, Dominant Logic, Satisfaction, Perspectives, Hospitality, Services, Visitors, Heritage, Economy, Leisure	Literature Review	2006 - 2014	50	261
Godovykh and Tasci (2020)	Tourism Management Perspectives	Tourist experience	Customer experience in tourism: A review of definitions, components, and measurements	Measuring Emotion, Brand Experience, Co–Creation, Management, Loyalty, Model, Authenticity, Involvement, Behavior, Seeking	Literature Review	Not specified	Not specified	74
De Matos et al. (2021)	Tourism Management Perspectives	Tourist experience flow	A review and extension of the flow experience concept. Insights and directions for Tourism research	Dispositional Flow, Motivational Determinants, Structured Experiences, Autotelic Personality, Integrated Model, Virtual Worlds, Self–Efficacy, Work, Performance, Leisure	Systematic literature review	1985 - 2019	185	22
Soliman et al. (2021)	European Journal Of Tourism Research	Smart tourist experience	Mapping smart experiences in tourism: A bibliometric approach	Co–Creation, Foundations, Management, Research.	Bibliometric analysis	2011 - 2019	84	7
Au and Tsang (2022)	Journal of Hospitality & Tourism Research	Smart travel experience	Smart Travel Experiences: A Bibliometric Analysis of Knowledge Domains and Research Areas.	Bibliometric analysis, knowledge domain, literature review, smart tourism, smart travel experience	Bibliometric Analysis	2010 - 2021	95	0

Scussel et al. (2022)	Tourism & Management Studies	Consumer experience	Consumption experience: state of the art review and agenda proposition	Customer Experience, Service Innovation, Management, Retail, Impact, Brand, Deal	Bibliometric análisis and systematic literture review	2016 - 2020	90	0
Vlahovic–Mlakar and Ozretic–Dosen (2022)	Tourism	Brand experience in hospitality and tourism	Brand Experience Research in Hospitality and Tourism–Review and Future Directions	User–Generated Content, Framework, Programs, Equity, Impact	Systematic literature review	2008 - 2020	40	1
Câmara et al. (2023)	European Journal of Tourism Research	Significant experiences in tourism	Meaningful experiences in tourism: A systematic review of psychological constructs	Positive Psychology, Mindfulness, Travel, Authenticity, Life, Self, Extraordinary, Spirituality, Happiness, Emotions	Systematic literature review	2006 - 2022	70	0
Hosseini et al. (2023)	Tourism Recreation Research	Memorable tourist experiences	Memorable tourism experience research: a systematic review of the literature	Revisit Intentions, Management, Antecedents, Destination, Progress, Science, Scopus, Model, Scale, Risk	Systematic literature review	2012- 2020	52	18
Rodrigues et al. (2023)	Information Technology & Tourism	Visitor experience (in relation to smart tourism and sustainable development)	Enhancing sustainable development through tourism digitalisation: a systematic literature review	Sustainable development · Sustainability · Tourism 4.0 · Smart tourism · Tourism digitalisation · Systematic literature review	Systematic literature review	2014 - 2022	38	0
Sustacha et al. (2023)	Journal of Destination Marketing & Management	Smart tourist experience	The role of technology in enhancing the tourism experience in smart destinations: A meta–analysis	Effect size, Meta–analysis, Random–effects model, Smart destination, Smart technology, Smart tourism, Systematic review, Tourist experience	Meta-analysis	Not specified	37	0
Veloso and Gomez–Suarez (2023)	International Journal of Contemporary Hospitality Management	Customer experience in hotel industry	Customer experience in the hotel industry: a systematic literature	Brand Experience, Consumer Experience, Dimensions, Service, Satisfaction, Engagement,	Systematic literature review	2006 - 2021	46	2

			review and research agenda	Loyalty, Quality, Guests, Antecedents				
Zhao and Agyeiwaah (2023)	Journal of Hospitality and Tourism Management	Transformative tourism experience	Understanding tourists' transformative experience: A systematic literature review	Travel, Power, Authenticity, Place	Systematic literature review	1991 - 2021	67	4

Source: Own elaboration.

Supplementary Table 2. Most prolific contributors of tourist experience sabe by strong-AI

Journals (number of articles)		Authors (number of articles)		Authors (number of cites)		Institutions (number of articles)		Articles (number of cites)	
Journals	**Number of articles**	**Authors**	**Number of articles**	**Authors**	**Number of cites**	**Institution**	**Number of articles**	**Articles**	**Number of cites**
International Journal of Contemporary Hospitality Management	*48*	*Yang, Y.*	*6*	*Gursoy, D.*	*45*	*University of Macau*	*13*	*Xiang, Z., Schwartz, Z., Gerdes, J.H., Uysal, M. (2015). What can big data and text analytics tell us about hotel guest experience and satisfaction? International Journal of Hospitality Management, 44, 120-130. https://doi.org/10.1016/j.ijhm.2014.10.013.*	*507*
International Journal of Hospitality Management	*28*	*Gursoy, D.*	*5*	*Au, N.M.*	*32*	*Hong Kong Polytechnic University*	*9*	*Lu, L. 2019, International Journal of Hospitality Management* *Lu, L., Cai, R., Gursoy, D. (2019). Developing and validating a service robot integration willingness scale. International Journal of Hospitality Management, 80, 36-51. https://doi.org/10.1016/j.ijhm.2019.01.005.*	*316*
Tourism Management	*14*	*Choe, J.Y.*	*4*	*Tung, V.W.S.*	*32*	*Pennsylvania Commonwealth University*	*8*	*Cheng, M., Jin, X. (2019). What do Airbnb users care about? An analysis of online review comments. International Journal of Hospitality Management, 76, 58-70. https://doi.org/10.1016/j.ijhm.2018.04.004.*	*274*
Current Issues in Tourism	*13*	*Hwang, J.*	*4*	*Cai, R.Y.*	*31*	*Temple University*	*8*	*Buhalis, D., Foerste, M. (2015). SoCoMo marketing for travel and tourism: Empowering co-creation of value. Journal of Destination Marketing & Management, 4 (3), 151-161. https://doi.org/10.1016/j.jdmm.2015.04.001*	*257*
Journal of Hospitality and Tourism Management	*13*	*Ivanov, S.*	*4*	*Lu, L.*	*29*	*Hong Kong Polytechnic University*	*7*	*De Kervenoael, Hasan, R., Schwob, A., Goh, E. (2020). Leveraging human-robot interaction in hospitality services: Incorporating the role of perceived value, empathy, and information sharing into visitors' intentions to use social*	*218*

							robots. Tourism Management, 78, 104042. https://doi.org/10.1016/j.tourman.2019.104042.	
Journal of Hospitality Marketing & Management	*13*	*Kim, J.J.*	*4*	*Xiang, Z.*	*28*	*State University System of Florida*	*6*	*Tung, V.W.S., Au, N. (2018). Exploring customer experiences with robotics in hospitality. International Journal of Contemporary Hospitality Management, 30 (7), 2680-2697. https://doi.org/10.1108/IJCHM-06-2017-0322.*	*207*
Journal of Destination Marketing & Management	*10*	*Li, M.L.*	*4*	*Bai, B.*	*27*	*Sun Yat Sen University*	*6*	*Qiu, H., Li, M., Shu, B., Bai, B. (2019). Enhancing hospitality experience with service robots: the mediating role of rapport building. Journal of Hospitality Marketing & Management, 29(3), 247–268. https://doi.org/10.1080/19368623.2019.1645073*	*166*
Tourism Management Perspectives	*9*	*Qiu, H.L.*	*4*	*Gerdes, J.H.*	*27*	*Universidad Rey Juan Carlos*	*5*	*Choi, Y., Choi, M., Oh, M. (Moon), Kim, S. (2019). Service robots in hotels: understanding the service quality perceptions of human-robot interaction. Journal of Hospitality Marketing & Management, 29(6), 613–635. https://doi.org/10.1080/19368623.2020.1703871*	*161*
Information Technology & Tourism	*8*	*Bai, B.*	*3*	*Li, M.L.*	*27*	*University of Johannesburg*	*5*	*Yu, C. E. (2019). Humanlike robots as employees in the hotel industry: Thematic content analysis of online reviews. Journal of Hospitality Marketing & Management, 29(1), 22–38. https://doi.org/10.1080/19368623.2019.1592733*	*123*
Annals of Tourism Research	*7*	*Cheng, M.M.*	*3*	*Qiu, H.L.*	*27*	*Washington State University*	*5*	*Padma, P., Ahn, J. (2020). Guest satisfaction & dissatisfaction in luxury hotels: An application of big data. International Journal of Hospitality Management, 84, 102318. https://doi.org/10.1016/j.ijhm.2019.102318.*	*98*
Journal of Travel Research	*7*								
Journal of Sustainable Tourism	*4*								

Source: Own elaboration