

# Research trends in tourism and hospitality from 1991 to 2020: an integrated approach of corpus linguistics and bibliometrics

Research  
trends in  
tourism

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## Abstract

**Purpose** – This study aims to track the historical development in tourism and hospitality research over the past 30 years by applying a novel interdisciplinary approach, combining both corpus linguistics and bibliometric analysis.

**Design/methodology/approach** – Most frequently discussed topics and newly emerging topics were identified by investigating 18,266 abstracts from 18 leading tourism and hospitality journals with corpus linguistics toolkit AntConc and natural language processing (NLP) tool spaCy. Trend analysis and bibliometric methods were used to determine the longitudinal changes of research topics, most highly-cited publications and authors' production.

**Findings** – This study revealed the evolution patterns of the identified 576 most frequently discussed topics across the four subperiods (1991–2000, 2001–2010, 2011–2015 and 2016–2020). Specifically, results showed that information technology-related topics account for the largest proportion of the identified 38 newly emerging topics from 2011. Besides, researchers are increasingly focusing on the use of more sophisticated and advanced statistical methodologies.

**Practical implications** – This study helps researchers make sensible decisions on what research topics to explore; it also helps practitioners and stakeholders make the shift and track opportunities in the field.

**Originality/value** – No other studies have employed the novel interdisciplinary approach, combining corpus linguistic tools in linguistics, NLP techniques in computer science and bibliometric analysis in library and information science, for exploring research trends in tourism and hospitality.

**Keywords** Tourism and hospitality, Bibliometrics, Research trends, Corpus linguistics, Scopus

**Paper type** Research paper

## 1. Introduction

Recent years have seen a burgeoning increase of research in tourism and hospitality (Mulet-Forzeza *et al.*, 2019a). This phenomenon could be attributed to the rapid development of this domain that generates a considerable number of significant topics, arousing scholars' interests for discussion. Another possible explanation for this might be the proliferation of academic journals devoted to this domain (Airey *et al.*, 2015). As of 2020, there exist 58 related journals in Social Sciences Citation Index (SSCI), up almost twice from 33 in 2010. Knowing the specific research topics and types of research methodology that these academic journals cover in tourism and hospitality might be of particular interest to their contributing authors and potential readers. Such information enables them to make sensible decisions as regards whether or not to submit their manuscripts to those journals. That is also why bibliometric study in this field has been the subject of considerable discussion and investigation (Jung *et al.*, 2018; Leung *et al.*, 2013).

Over the past decade, bibliometric studies have emerged whether in the general field of tourism and hospitality or a few specific topics. Several have assessed the research status and future pathways in the whole area of tourism and hospitality by exploring collaboration networks (Ye *et al.*, 2013), core research topics and themes (Merigó *et al.*, 2020) as well as the influence of journals, authors and articles (Benckendorff and Shu, 2019). Others have examined how specific topics in tourism and hospitality, such as eWOM (Bore *et al.*, 2017),



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sharing economy (Cheng, 2016) and social media (Nusair *et al.*, 2019), have evolved and become new frontiers.

In these endeavors, research topics and themes have typically been investigated by analyzing authors' predefined keywords with techniques like co-word analysis (Leung *et al.*, 2017; Merigó *et al.*, 2020), thematic analysis (Qian *et al.*, 2019) and content analysis (Yousuf and Backer, 2015). As of yet, very few studies have identified research topics based on the corpus of abstracts in published articles in this field. The only such study that resembles our sphere of interest is that of Andreu *et al.* (2020), who examined the evolution of research topics from 2015 to 2019 in Airbnb research by analyzing the abstracts and keywords in 129 selected articles.

Besides, to the best of our knowledge, the combined use of corpus linguistic techniques and other related natural language processing (NLP) tools has rarely, if ever, been applied to topic extraction and theme identification in the whole field of tourism and hospitality. One of the advantages of corpus linguistics is that it provides an inductive method of identifying topics that may not be achieved in any other way. Furthermore, the use of NLP technology, which employs computational techniques for learning, understanding and producing large amounts of human language data (Hirschberg and Manning, 2015), can also facilitate efficient topic identification and extraction.

To fill the gaps identified above, we believe it is of interest to the scientific community to present a retrospective review of tourism and hospitality research by using a novel mixed-method approach, combining corpus linguistic tools, NLP techniques and bibliometric analysis. Specifically, the present study aims to depict research status and foci in tourism and hospitality in 18 leading academic journals over the past 30 years (1991–2020) and seeks to address the following research questions:

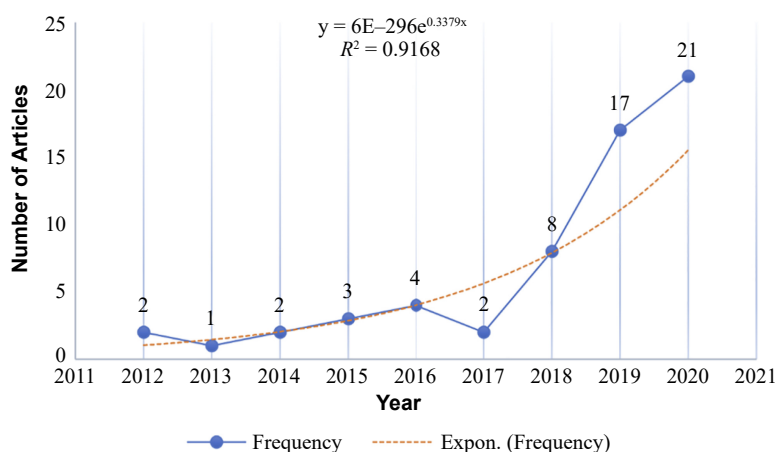
- (1) Which research topics have been of particular interest and have these changed?
- (2) What new research topics have emerged in the last decade (2011–2020)?
- (3) Which publications have been most highly cited and have these changed?
- (4) Which authors have been most prolific and have these changed?

This study is significant for the following reasons. First, it reveals valuable research topics and trends in tourism and hospitality that might provide enlightening insights to researchers. Second, this study introduces a novel interdisciplinary methodology for extracting research topics and themes, which may be more labor-saving and exhaustive compared with previous relevant studies. Finally, this study will be useful for practitioners and stakeholders to make the shift and track opportunities in this field.

## 2. Literature review

Bibliometrics refers to the mathematical and statistical analyses of books, articles or other types of published works (Pritchard, 1969). As a legitimate scientific tool, bibliometrics has been widely used to organize thematic structure, evaluate research productivity, identify authorial collaboration and reckon research frontlines (Chen *et al.*, 2018). With the ability to achieve these aims, bibliometric analysis has been frequently applied by scholars in tourism and hospitality for depicting the current status and future pathways, particularly in recent years. Figure 1 shows the number of articles pertaining to bibliometric studies per year published in tourism and hospitality since 2012; by 2020, the number of related studies has increased exponentially from 2 to 21.

We classified these bibliometric studies into two categories, namely, topic-focused studies and field-focused ones. Topic-focused studies identify the emergence of new research areas



**Figure 1.** Number of bibliometric papers per year published in tourism and hospitality

around specific topics. To date, various topics have captured scholarly attention over several decades. Some target traditional topics, whereas others emphasize newly emerging ones. Concerning traditional topics, articles addressing lodging-context (Ali *et al.*, 2021; Köseoglu *et al.*, 2017) and strategic management (Khan *et al.*, 2021; Köseoglu *et al.*, 2018) have been mainly discussed. Others such as wine research (Bonn *et al.*, 2018), food tourism (Lyu *et al.*, 2020; Naruetharadhol *et al.*, 2020) and human resources (García-Lillo *et al.*, 2018) have also garnered researchers' attention. In contrast, emerging topics are mainly concerned about environmental issues and information technology, such as sustainable tourism (Moyle *et al.*, 2021; Niñerola *et al.*, 2019; Serrano *et al.*, 2019), sharing economy (Cheng, 2016; Mody *et al.*, 2021), eWOM (Bore *et al.*, 2017; Donthu *et al.*, 2021) and social media (Leung *et al.*, 2017; Nusair, 2020; Nusair *et al.*, 2019).

Field-focused studies evaluate the status and trends in tourism and hospitality research in general. Specifically, some studies have investigated the evolution of thematic structure in the whole field. Merigó *et al.* (2020) demonstrated an overview of the main topics and their evolving patterns in the tourism, leisure and hospitality field. In parallel, Mulet-Forteza *et al.* (2021) focused on research progress in this field from 1969 to 2018, albeit limiting to European institutions. Their study also presented the cocitation relationships and geographic patterns of authors but does not go into evaluating authors' productivity. In addition, both studies examined the changes and advancements in tourism and hospitality research through the lens of the authors' keywords. However, the present study argues that using keywords alone may not be enough to uncover all the topical trends. Thus, this method could be augmented by examining abstracts, which may help identify potentially ignored topics – a significant issue that the current study aims to deal with.

In addition, some studies have examined the institutional and geographic contributions to the tourism and hospitality field. For instance, based on 11 top-tier journals in tourism and hospitality, Jogaratnam *et al.* (2005) examined the contributions and geographical locations of different institutions. They found that universities in the USA are far ahead in terms of the publication of top-tier journals. Their finding was further confirmed by Park *et al.* (2011) who analyzed the countries' contributions in six major journals from 2000 to 2009 and revealed the top 30 influential countries. Mulet-Forteza *et al.* (2019a) identified the most influential authors, institutions and countries in 23 journals in this field. The US and the Hong Kong Polytechnic University were found to take the lead according to the raw number of their publications.

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The focus in these studies seems to be on presenting the most influential countries/institutions instead of depicting the diachronic changes of their contributions.

Some studies have explored the collaboration network. [Ye et al. \(2013\)](#) used bibliometrics to analyze academic collaborations in tourism and hospitality by examining articles published in six journals from 1991 to 2010. A similar analysis has been conducted by [Wong et al. \(2021\)](#) who examine the current status of authorship in this field by expanding his focus to 12 SSCI journals. This study innovatively probes into this field by dividing the first 20 years of the new millennium into four periods. Distinct from [Ye et al. \(2013\)](#), [Wong et al. \(2021\)](#) point out that there has seen a gradual increase in research collaboration in the tourism and hospitality field from 2000 to 2019. Notably, [Köseoglu et al. \(2019\)](#) further explored the gender disparities in the evolution of research authorship and coauthorship structures in tourism and hospitality from 1965 to 2016.

In the present study, we provide an overview of the thematic structure while also focusing on citation and authors' productivity in tourism and hospitality. One important aspect to note is that as per uncovering thematic structure, we go one step further to examine abstracts by resorting to corpus linguistic tools and NLP techniques. Such a combination of linguistics methodologies with bibliometric analysis enables us to adequately identify all possible topics.

### 3. Methodology

#### 3.1 Data

On November 1, 2021, we retrieved all the entries of 18 leading SSCI journals in tourism and hospitality from the Scopus database. Relevant information about these journals such as their impact factors has been provided in [Table 1](#). We chose to retrieve our data from Scopus as it contains the full bibliometric data of these 18 journals since they were originally founded. In contrast, some journals (e.g. *Journal of Hospitality and Tourism Technology*, *Journal of Hospitality and Tourism Management*, and *Journal of Hospitality Marketing and Management*) did not have their bibliometric data included in the WoS database until 2015. Thus, with Scopus, we have access to a much more comprehensive data set regarding the selected journals.

As shown in [Table 2](#), we divided the entire 30 years into four periods (1991–2000; 2001–2010; 2011–2015; 2016–2020) and extracted the bibliometric information accordingly. For each period, we eliminated bibliometric items without abstracts, and this procedure produced 18,266 research articles for our corpus.

Our rationale for such a time segmentation was as follows. First, the number of items varied considerably during the past 30 years, with the 1991–2000 period having merely 1,157 items, while this number surged to 12,708 in the 2011–2020 period. Thus, by dividing the recent 10 years into two five-year periods, we increase the comparability of periods with different number of items. Second, as we predict, research focus and methodology have been significantly shifted from 2011 to 2015 to 2016–2020 as analytical approaches and technology progress rapidly. Third, unlike previous studies, which often contained two or three periods ([Hyland and Jiang, 2021](#); [Lei and Liu, 2019](#)), our study was divided into four periods, as we believe, a more fine-grained division of periods can better reflect diachronic changes.

#### 3.2 Data processing with corpus linguistic tools and NLP

Necessary to note that our processing steps, with some adjustments, followed the pioneering research of [Lei and Liu \(2019\)](#). To address the abovementioned research questions, we analyzed the entire 30 years' data to generate the following information.

**3.2.1 Most frequently discussed topics.** The following steps were involved to address Question 1, regarding research topics:

Journal name	Total citations	IF	5-year IF	Quartile
<i>Tourism-focused journals</i>				
<i>Journal of Travel Research</i>	14,155	10.982	11.828	Q1
<i>Tourism Management</i>	37,117	10.967	13.134	Q1
<i>Annals of Tourism Research</i>	19,981	9.011	11.951	Q1
<i>Journal of Sustainable Tourism</i>	9,404	7.968	7.857	Q1
<i>Current Issues in Tourism</i>	7,633	7.430	7.811	Q1
<i>Journal of Travel &amp; Tourism Marketing</i>	6,308	7.564	7.010	Q1
<i>Tourism Management Perspectives</i>	3,902	6.586	6.704	Q1
<i>Tourism Review</i>	2,072	5.947	5.492	Q2
<i>International Journal of Tourism Research</i>	4,600	3.791	5.069	Q2
<i>Asia Pacific Journal of Tourism Research</i>	2,843	3.677	3.726	Q3
<i>Hospitality-focused journals</i>				
<i>International Journal of Hospitality Management</i>	17,219	9.237	10.512	Q1
<i>Journal of Hospitality Marketing &amp; Management</i>	2,826	7.022	6.445	Q1
<i>International Journal of Contemporary Hospitality Management</i>	10,376	6.514	8.043	Q2
<i>Journal of Hospitality and Tourism Management</i>	2,467	5.959	6.248	Q2
<i>Journal of Hospitality &amp; Tourism Research</i>	3,452	5.161	6.038	Q2
<i>Scandinavian Journal of Hospitality and Tourism</i>	1,653	4.392	4.924	Q2
<i>Journal of Hospitality and Tourism Technology</i>	970	4.260	4.566	Q2
<i>Cornell Hospitality Quarterly</i>	2,360	3.646	5.043	Q3

**Table 1.**  
List of journals used in the present study

	1991–2000	2001–2010	2011–2015	2016–2020	Total
Number of retrieved items	2,723	4,946	5,038	8,093	20,800
Items without abstracts	1,566	545	1,588	265	2,534
Items for topic extraction	1,157	4,401	4,880	7,828	18,266

**Table 2.**  
Number of bibliometric items by period

- (1) We extracted all the abstracts of research articles from 1991 to 2020.
- (2) We lemmatized and annotated the abstracts retrieved in the previous step with part-of-speech information using TreeTagger (Schmid, 1995), a powerful and user-friendly package for annotating text with part-of-speech and lemma information.
- (3) We extracted all the noun monograms as well as all the n-grams of 2–5 words from the tagged abstracts using AntConc, a corpus analysis toolkit for concordancing, collocation searching and word frequency generating (Anthony, 2020). Extractions were performed on all 30 years of data, as well as on each of the four redefined periods. Necessary to note that only noun monograms were extracted since they are more likely than adjectives, verbs and adverbs to be research topics.
- (4) In identifying potential topics, a minimum threshold frequency was set to be at least 15 occurrences in the past 3 decades. This threshold, as we believe, is high enough to help us select truly significant topics but not too high to miss any essential topics. This criterion yielded 14,672 n-grams (3,168 noun monograms and 11,504 2–5 grams).
- (5) Using the stop words, we then removed the 2–5 grams that begin or end with a function word such as *to develop a, roles of* and *on customers* since they are

semantically incomplete; therefore, such phrases cannot be regarded as qualified research topics. As a result, the number of 2–5 grams was reduced to 1,204, leading to altogether 3,552 n-grams (2,348 noun monograms and 1,204 2–5 grams).

- (6) To determine the real research topics, we manually checked all the 3,552 n-grams identified from the previous step. After consulting with two professors in tourism and hospitality, we then removed the following three categories: (1) words and chunks widely used as common expression (e.g. *decision* and *main idea*); (2) concepts not dedicated to the domain of tourism and hospitality (e.g. *analysis* and *design methodology*); (3) topics that are frequently utilized in tourism and hospitality but not specific enough to be useful (e.g. *hotel*, *hospitality industry* and *hospitality and tourism*) (see also [Lei and Liu, 2019](#)).

To facilitate efficient topic extraction, we then submitted all abstracts to spaCy, a free, open-source library for advanced NLP in Python, to analyze syntactic dependency relations. According to [Hudson \(2010\)](#), such dependency relations reveal the binary syntactic relationship between two pairing words in the same sentence, specifically, a grammatical relationship holding between the governor (i.e. the headword that governs the other word) and its dependent.

This journal publishes contemporary research in hospitality and tourism.

For example, [Table 3](#) shows the dependency relations among associated words in the example sentence. To further illustrate, in this sentence, *research* (noun) and *publishes* (verb) form a direct object (DOBJ) relationship. In other words, the verb *publishes* serves as the governor, whereas the direct object *research* represents its dependent. Similarly, *contemporary* (adj) and *research* (noun) constitute an adjectival modifier (AMOD) relation, in which *research* functions as the governor and its premodifier *contemporary* takes the role of the dependent word. Thus, as illustrated above, noun phrases could be conveniently and accurately extracted through parsing and identifying dependency relationships. In the above example, we identified four noun phrases in total, consisting of *this journal*, *contemporary research*, *tourism* and *hospitality*.

Using such a dependency-based approach, we can identify the syntactic relations between words in a sentence, thus easily and accurately extracting candidate noun phrases. In other words, it enables the extraction of important topics efficiently and can thus be used as a supplement to the concordancing software AntConc. Setting a threshold frequency of 20 for choosing candidate topics ([Brezina and Gablasova, 2015](#); [Lei et al., 2020](#)), we got a total of 327 noun phrases from 71,844 items. Then, we integrated the results obtained both from AntConc and spaCy. This procedure, combined with our manual selection, ultimately yielded 576 most frequently explored research topics.

Dependency relations	Dependents	Dependents POS	Governors	Governors POS
DET	This	DET	Journal	NOUN
NSUBJ	journal	NOUN	Publishes	VERB
ROOT	publishes	VERB	Publishes	VERB
AMOD	contemporary	ADJ	Research	NOUN
DOBJ	research	NOUN	Publishes	VERB
PREP	in	ADP	Publishes	VERB
POBJ	hospitality	NOUN	In	ADP
CC	and	CCONJ	Hospitality	NOUN
CONJ	tourism	NOUN	Hospitality	NOUN
PUNCT		PUNCT	Publishes	VERB

**Note(s):** POS: part of speech

**Table 3.**  
Dependency  
relationships in the  
sample sentence

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Additionally, to enhance the trustworthiness of our findings on the most explored topics, two researchers conducted the topic identification and analysis independently. The interrater reliability was assessed, and the discrepancies were discussed during the process. Cohen's Kappa coefficient showed an interrater agreement of 0.95.

A point worth noting is that we incorporated some topics relevant to methodologies, including *content analysis* and *structural equation modeling (SEM)*, because we assume that they are of great interest and importance for researchers. Knowing these methods may help them determine future trends in research methods and thus assess whether and when these methodologies are effective in their research.

After identifying all the topics, we performed a normalization step in terms of their frequencies. Specifically, a given topic's normalized frequency in a period is calculated by dividing its raw frequency by the total number of articles for that period. By doing this, we attempt to get rid of bias when comparing the four time periods given the surge in publications after 2010. At last, to assess the statistical significance of the differences in topic frequencies, we conducted a one-way Chi-square test by using a self-written *R* script for each of the topics across the four periods. An online supplement comprising the full list of 576 identified topics as well as their normalized frequencies in each period and the statistical results of the Chi-square test is also provided.

**3.2.2 New topics.** For new topics, we examined all the most discussed topics and identified them as new topics if their normalized frequencies equal zero in the first two periods (1991–2000; 2001–2010).

**3.2.3 Most highly-cited publications.** To ascertain which publications have received the most citations, we queried all the references of extracted articles from Scopus in each of the four periods. It is necessary to note that the format of the cited references in Scopus may vary from journal to journal. For example, the titles and author names may be spelled differently in different capitalizations or abbreviations, even in the same cited publications. We then did the elaborate manual checking for the top 150 highly-cited references in each period and merged a number of duplicates for reasons previously mentioned, ending up with the top 15 documents per period selected for exploration.

**3.2.4 Most prolific authors.** To determine the most prolific authors, our initial step was to identify all the authors in each period and then calculate their frequency of publications.

## 4. Results

### 4.1 Most frequently discussed research topics

Based on the abovementioned criteria, we identified 576 frequently discussed research topics across the four periods in total. After examining these topics and their statistical evidence, we found that several topics did not keep increasing or decreasing throughout the four periods but rather increased and then decreased, or decreased and then increased. For the sake of analysis, we analyzed only those topics that significantly increased and significantly decreased. Table 4 shows the normalized frequencies for the two groups in each period, along with their Chi-squared and *P* values. We identified 101 research topics showing constant upward trends and 46 showing constant downward trends, as evidenced by significantly increased and significantly decreased in Table 4.

Now let us examine these two sets of topics listed above. As for the group showing constant upward trends, the topics roughly fell into four major categories:

- (1) those that are traditionally customer-focused, like customer perception in the form of *perceived risk*, *perceived benefits*, *perceived organizational support*, *place attachment*, *trust*, *purchase intention* and *behavioral intention*; and customer experiences in the form of *tourist experience*, *customer participation*, *eWOM*, *word-of-mouth* and *online*

Topics	1991–2000 NF	2001–2010 NF	2011–2015 NF	2016–2020 NF	Chi-squared value	<i>p</i> value
<i>Significantly increased</i>						
Online reviews	0.00	4.54	65.57	178.85	334.35	0.00
Corporate social responsibility	0.00	45.44	139.34	152.02	192.77	0.00
eWOM	0.00	6.82	81.97	90.70	154.62	0.00
Place attachment	0.00	11.36	55.33	97.09	144.36	0.00
Behavioral intentions	17.29	81.80	149.59	159.68	129.07	0.00
Trust	8.64	52.26	104.51	121.36	110.14	0.00
Sustainability	43.22	134.06	174.18	191.62	96.96	0.00
Theory of planned behavior	0.00	40.90	49.18	93.25	95.67	0.00
Work engagement	0.00	4.54	26.64	54.93	87.97	0.00
Tourist experience	25.93	70.44	106.56	137.97	81.80	0.00
Sustainable tourism	86.43	159.05	211.07	236.33	75.91	0.00
Technology acceptance model	0.00	20.45	43.03	56.21	61.76	0.00
Turnover intention	0.00	18.18	34.84	52.38	57.33	0.00
Perceived risk	0.00	20.45	32.79	51.10	53.01	0.00
Self-efficacy	0.00	11.36	16.39	40.88	51.94	0.00
Network analysis	0.00	9.09	24.59	34.49	41.96	0.00
Word-of-mouth	8.64	34.08	53.28	61.32	41.88	0.00
Social network analysis	0.00	11.36	22.54	34.49	38.45	0.00
Purchase intention	0.00	9.09	18.44	29.38	33.47	0.00
Agritourism	0.00	15.91	26.64	33.21	33.31	0.00
Perceived organizational support	0.00	2.27	14.34	21.72	32.89	0.00
Panel data	0.00	6.82	16.39	26.83	32.69	0.00
Machine learning	0.00	2.27	8.20	20.44	32.52	0.00
Data mining	0.00	11.36	20.49	29.38	31.02	0.00
Customer participation	0.00	2.27	8.20	16.61	24.36	0.00
Perceived benefits	0.00	2.27	12.30	16.61	24.27	0.00
Food tourism	0.00	18.18	20.49	25.55	23.18	0.00
Career satisfaction	0.00	2.27	6.15	15.33	23.06	0.00
Wellness tourism	0.00	6.82	14.34	16.61	18.15	0.00
Responsible tourism	8.64	15.91	22.54	24.27	8.51	0.04
<i>Significantly decreased</i>						
Ethnic tourism	103.72	22.72	10.25	7.66	172.58	0.00
Tourism planning	103.72	38.63	34.84	21.72	81.34	0.00
Ecotourism	172.86	165.87	106.56	56.21	72.05	0.00
Strategic planning	51.86	20.45	14.34	3.83	56.63	0.00
Gambling	43.22	29.54	14.34	5.11	36.72	0.00
Cultural tourism	103.72	74.98	53.28	39.60	34.58	0.00
Environmental impacts	25.93	15.91	6.15	3.83	23.67	0.00
Strategic management	43.22	40.90	30.74	21.72	8.61	0.03
Multidimensional scaling	17.29	11.36	10.25	3.83	8.54	0.04

**Table 4.** Changes in the most frequently discussed research topics

**Note(s):** NF: normalized frequency

*reviews*, indicating the field's increased focus on consumers' needs and satisfaction to better promote brand loyalty.

- (2) those environment-friendly issues that are receiving a lot more attention these days, for instance, *corporate social responsibility*, *sustainability*, *responsible tourism* and



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- sustainable tourism*, which indicates a trend away from the traditional concerns of hospitality operations to those that support synergistic progress in terms of financial performance and environmental protection.
- (3) those topics related to employees, particularly their psychological states, such as *career satisfaction*, *work engagement*, *self-efficacy* and *turnover intention*. The surge in these topics demonstrates that researchers are increasingly focusing their research on the psychological conditions of frontline employees, which may in turn affect customer satisfaction, organizational performance and financial results (Paek *et al.*, 2015).
  - (4) those methodology-related topics, such as *theory of planned behavior* and *technology acceptance model*, which are among the most discussed research theories in this field; and other relevant topics, such as *panel data*, *data mining* and *machine learning*, indicating researchers' continued interests in the latest data collection and manipulation methods. We also noticed an increasing interest in *network analysis* and *social network analysis* among researchers.

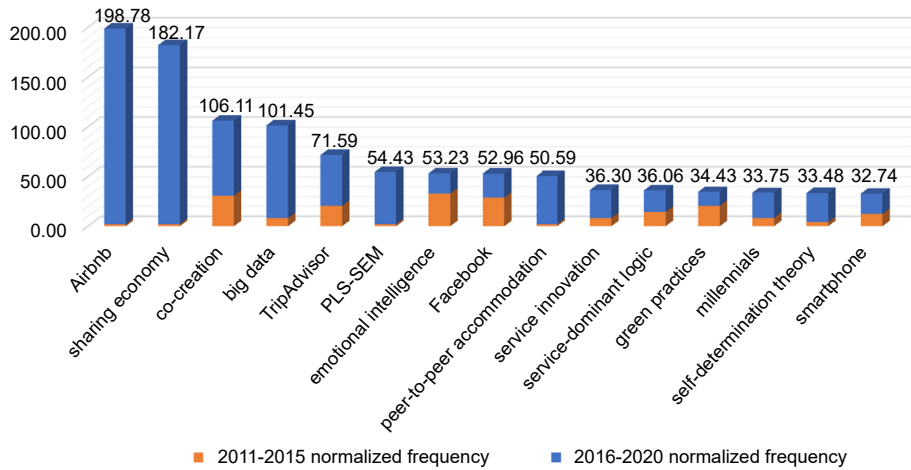
Second, forty-six topics showed constant downward trends during the four periods, and there might be some reasonable explanations. Topics such as *tourism planning*, *strategic planning*, *strategic management* and *gambling* decreased in normalized frequencies because they are probably obsolete terms that have gone out of fashion. These topics are therefore no longer of interest to researchers. The decrease in traveling type-related topics (i.e. *ethnic tourism* and *cultural tourism*) may lie in that researchers have shifted their attention to other innovative forms of tourism, as evidenced by the significant increases in *agritourism*, *food tourism* and *wellness tourism*. We also noticed a decline in environment-related topics such as *ecotourism* and *environment impacts*, which are much more difficult to explain. A possible explanation is that an upsurge of interest has been transferred to the concept of sustainability, which is also compatible with the increases found in *sustainable tourism* and *corporate social responsibility*.

As for the method-related topics, *multidimensional scaling* (MDS) received less attention across the four periods, which may be attributed to its incapability in testing hypotheses. In other words, for hypothesis validation, researchers must use other techniques than MDS (Marcussen, 2014). Unlike MDS, SEM is applicable for hypotheses testing. Thus, in recent years, SEM has become popular in this field, which is also evidenced by our results in most discussed topics and most highly-cited publications. However, MDS continues to be an important tool for studying the relative positions or images of comparable destinations.

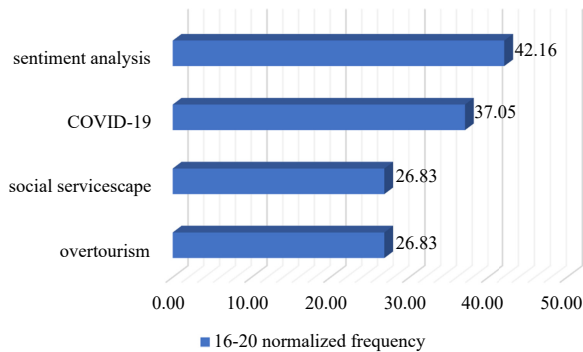
#### 4.2 New topics

Within the most frequently discussed topics, we have uncovered new topics across the final two periods, because, as we believe, topics emerging in the recent periods might predict high-growth potential in the near future. We uncovered 34 new topics in the third period (2011–2015) and four new topics in the fourth period (2016–2020). The topics along with their normalized frequencies are depicted in Figures 2 and 3 (See [online supplement](#) for the whole list of new topics in Period 3).

After taking a closer look at the new topics that emerged in the third period, we found that there are two important points worth noting. The first and most critical point is that many new topics centered on the sharing economy phenomenon, such as its relevant services *peer-to-peer accommodation*, and one of its platforms *Airbnb*. Particularly, the topic *Airbnb* made its debut in Period 3 and ranked first in Period 4 with the highest normalized frequency (196.73). This finding further supports the study of Núñez-Tabales *et al.* (2020) who claim that the *Airbnb* phenomenon began generating attention in 2015 and is rapidly growing ever since.



**Figure 2.**  
Top 15 new topics  
emerging from the  
2011–2015 period



**Figure 3.**  
New topics emerging  
from the 2016–2020  
period

Another important point is that there exists a proliferation of new topics relevant to new technologies (e.g. web and mobile apps). For example, app-related topics including *Facebook*, *Twitter* and *TripAdvisor* emerged in Period 3 and have gained even more attention from researchers in Period 4. Other topics strongly associated with new technologies, such as *big data*, *artificial intelligence* and *augmented reality*, received little attention in the third period but surged in normalized frequency at the last period. As [Mulet-Forteza et al. \(2019b\)](#) witness, topics regarding new information technologies have gathered growing research interest. A possible explanation for this might be that tourism and hospitality is an application-driven and market-driven industry, and the latest technological advances are closely entwined with its development.

Four topics emerged in the 2016–2020 period (Period 4). Among them, *sentiment analysis* ranked at the top of the list, with the highest normalized frequency (42.16). This finding corroborates the idea of [Mehraliyev et al. \(2022\)](#) who suggest that sentiment analysis research in tourism and hospitality has experienced rapid increases since 2017, and this area is in trend and keeps providing innovative findings. The popularity of this methodology may be attributed to the availability and reliability of relevant data, mostly online reviews ([Mäntylä et al., 2018](#)). Besides, this result may also suggest researchers in this field attach more attention to consumers' emotions and satisfaction ([Alaei et al., 2017](#)).

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It may also be of interest to point out that *COVID-19* (37.05) ranked 2nd on the list. The emergence and popularity of *COVID-19* in this recent period are reasonable, as the global pandemic has impacted dramatically on all facets of the tourism and hospitality industry; thus, more and more researchers investigate its effects exerting on this field from various perspectives such as the increased awareness of hygiene (Yu *et al.*, 2021), employees' professional development (Demirović Bajrami *et al.*, 2020) and crisis preparedness (Lai and Wong, 2020). These practices provide scholars and practitioners with some practical implications on how to cope with the ongoing pandemic and minimize future loss.

#### 4.3 Most highly-cited publications

This part provides the most highly-cited publications, which may indicate the most essential and popular publications in tourism and hospitality. Table 5 shows the top 15 most cited publications along with their raw number of citations in each period across the last 30 years.

As shown in Table 5, some of the most highly-cited publications remained in the top 5 for the past 2 decades, such as Fornell and Larcker's (1981) *Evaluating structural equation models*, which has ranked 2nd, 1st and 1st in Periods 2, 3 and 4 (01–10; 11–15; 16–20), and Anderson and Gerbing's (1988) *Structural equation modeling in practice*, which remained 3rd, 2nd and 2nd. Note that the number of publications regarding structural equation models had increased constantly across the four periods with zero in the 1st period, two in the 2nd period, three in the 3rd period and four in the 4th period (Anderson and Gerbing, 1988; Bagozzi and Yi, 1988; Fornell and Larcker, 1981; Hair *et al.*, 2011; Hu and Bentler, 1999), which indicates structural equation modeling is of increasing importance in tourism and hospitality research. This result may also suggest the favor of leading journals and thus researchers are required to pay more attention to quantitative over qualitative research (Law *et al.*, 2009; Merigó *et al.*, 2020).

Some publications experienced a substantial increase or decrease in their rankings. For instance, Podsakoff *et al.*'s (2003) *Common method biases in behavioral research* makes its debut at Period 4 and surprisingly ranks 3rd; and Ajzen's (1991) *The theory of planned behavior* has ranked 9th in Period 3, but 4th in Period 4. After a more careful observation, we found that many of these publications focusing on the use of methodologies or theoretical approaches originate from other disciplines such as psychology, economics and sociology. In contrast, some publications, such as Parasuraman *et al.*'s (1988) *Measuring consumer perceptions of service quality*, Buhalis's (2000) *Marketing the competitive destination of the future* and Baloglu and McCleary's (1999) *A model of destination image formation* showed a noticeable decline in ranking. However, it is unfair to say that those classic publications are not important since they still enjoy relatively high raw citations.

It is noteworthy that in the last period, four articles, namely Xiang and Gretzel's (2010) *Role of social media*, Guttentag's (2015) *Airbnb: disruptive innovation*, Litvin *et al.*'s (2008) *Electronic word-of-mouth* and Buhalis and Law's (2008) *Progress in information technology and tourism management* succeeded in appearing among the 15 most-cited publications. It echoes the aforementioned most discussed topics (i.e. *eWOM*, *Airbnb*, *social media* and *online reviews*), indicating that the rapid development of the tourism and hospitality domain keeps pace with the up-to-date technologies.

#### 4.4 Most prolific authors

To identify the most prolific authors, we carried out a frequency count of articles published by each author in each period. Figure 4 illustrates the top 10 contributing authors in each period, and different authors are represented by different colors of bars. An interesting feature of Figure 4 is that eight of the top 10 contributing authors from the first period (1991–2000) did not reappear during the last three ones. This result, possibly resulting from aging or

1991–2000	2001–2010	2011–2015	2016–2020
“The concept of a tourist area cycle . . .” (Butler, 1980) C#61	“A conceptual model of service quality . . .” (Parasuraman <i>et al.</i> , 1985) C#111	“Evaluating structural equation models . . .” (Fornell and Larcker, 1981) C#338	“Evaluating structural equation models . . .” (Fornell and Larcker, 1981) C#960
“Tourism: a Community approach . . .” (Murphy, 1985) C#54	“Evaluating structural equation models . . .” (Fornell and Larcker, 1981) C#108	“Structural equation modeling in practice . . .” (Anderson and Gerbing, 1988) C#283	“Structural equation modeling in practice . . .” (Anderson and Gerbing, 1988) C#528
“The tourist gaze” (Urry, 1990) C#52	“Structural equation modeling in practice . . .” (Anderson and Gerbing, 1988) C#98	“On the evaluation of structural . . .” (Bagozzi and Yi, 1988) C#160	“Common method biases in behavioral . . .” (Podsakoff <i>et al.</i> , 2003) C#374
“Toward a sociology of international tourism” (Cohen, 1972) C#45	Servqual: a multiple-item scale for measuring . . .” (Parasuraman <i>et al.</i> , 1988) C#97	“Psychometric theory” (Nunnally, 1978) C#147	“The theory of planned behavior” (Ajzen, 1991) C#235
“Tourism: Economic, physical and social . . .” (Mathieson and Wall, 1982) C#43	“Toward a sociology of international tourism” (Cohen, 1972) C#85	“An examination of the effects . . .” (Yoon and Uysal, 2005) C#120	“An examination of the effects . . .” (Yoon and Uysal, 2005) C#205
“A phenomenology of tourist experiences” (Cohen, 1979) C#37	“Motivations for pleasure vacation” (Crompton, 1979) C#83	“A conceptual model of service quality . . .” (Parasuraman <i>et al.</i> , 1985) C#116	“Using thematic analysis in psychology” (Braun and Clarke, 2006) C#181
“Motivations for pleasure vacation” (Crompton, 1979) C#36	“Consuming places” (Urry, 1995) C#83	“The moderator-mediator variable distinction . . .” (Baron and Kenny, 1986) C#113	“The moderator-mediator variable distinction . . .” (Baron and Kenny, 1986) C#175
“Tourism planning: an integrated and sustainable . . .” (Inskip, 1991) C#34	“The tourist gaze” (Urry, 1990) C#78	“A model of destination image . . .” (Baloglu and McCleary, 1999) C#110	“Role of social media in online travel information search” (Xiang and Gretzel, 2010) C#148
“Authenticity and commoditization . . .” (Cohen, 1988) C#31	“Marketing the competitive destination . . .” (Buhalis, 2000) C#67	“The theory of planned behavior” (Ajzen, 1991) C#108	“Rethinking authenticity in tourism experience” (Wang, 1999) C#144
“Resident attitudes towards tourism . . .” (Liu and Var, 1986) C#29	“The tourist: a New theory of the leisure . . .” (Maccannell, 1976) C#62	“Role of social media in online travel information search” (Xiang and Gretzel, 2010) C#93	“Airbnb: disruptive innovation . . .” (Guttentag, 2015) C#141
“Servqual: a multiple-item scale for measuring . . .” (Parasuraman <i>et al.</i> , 1988) C#29	“Attitude determinants in tourism destination . . .” (Um and Crompton, 1990) C#62	“Marketing the competitive destination . . .” (Buhalis, 2000) C#86	“Motivations for pleasure vacation” (Crompton, 1979) C#138
“Ecotourism: The potentials and pitfalls” (Boo, 1990) C#28	“The concept of a tourist area cycle . . .” (Butler, 1980) C#61	“Factors influencing destination image . . .” (Beerli and Martin, 2004) C#84	“Electronic word-of-mouth in hospitality . . .” (Litvin <i>et al.</i> , 2008) C#138
“The political economy of tourism in the . . .” (Britton, 1982) C#28	“Measuring service quality: a reexamination . . .” (Cronin and Taylor, 1992) C#60	“Electronic word-of-mouth in hospitality . . .” (Litvin <i>et al.</i> , 2008) C#82	“A model of destination image . . .” (Baloglu and McCleary, 1999) C#134

**Table 5.**  
Most highly-cited publications

(continued)

1991–2000	2001–2010	2011–2015	2016–2020
“The tourist: a New theory of the leisure . . .” (Maccannell, 1989) C#28	“A model of tourist information search . . .” (Fodness and Murray, 1999) C#60	“The behavioral consequences of service . . .” (Zeithaml and Berry, 1996) C#80	“Cutoff criteria for fit indexes in covariance structure . . .” (Hu and Bentler, 1999) C#122
“Staged authenticity: arrangements of social SPA . . .” (Maccannell, 1973) C#28	“Authenticity and commoditization . . .” (Cohen, 1988) C#59	“The meaning and measurement of destination image” (Echtner and Ritchie, 1991) C#79	“Progress in information technology and tourism management . . .” (Buhalis and Law, 2008) C#119
	“The measurement of destination image . . .” (Echtner and Ritchie, 1993) C#59		“PLS-SEM: indeed a silver bullet” (Hair <i>et al.</i> , 2011) C#119

**Note(s):** C: raw number of citations; due to a tie in ranking, the 2001–2010 and 2016–2020 periods each have 16 items listed

Table 5.

retirement, suggests the substantial change in core author groups upon entering the 21st century.

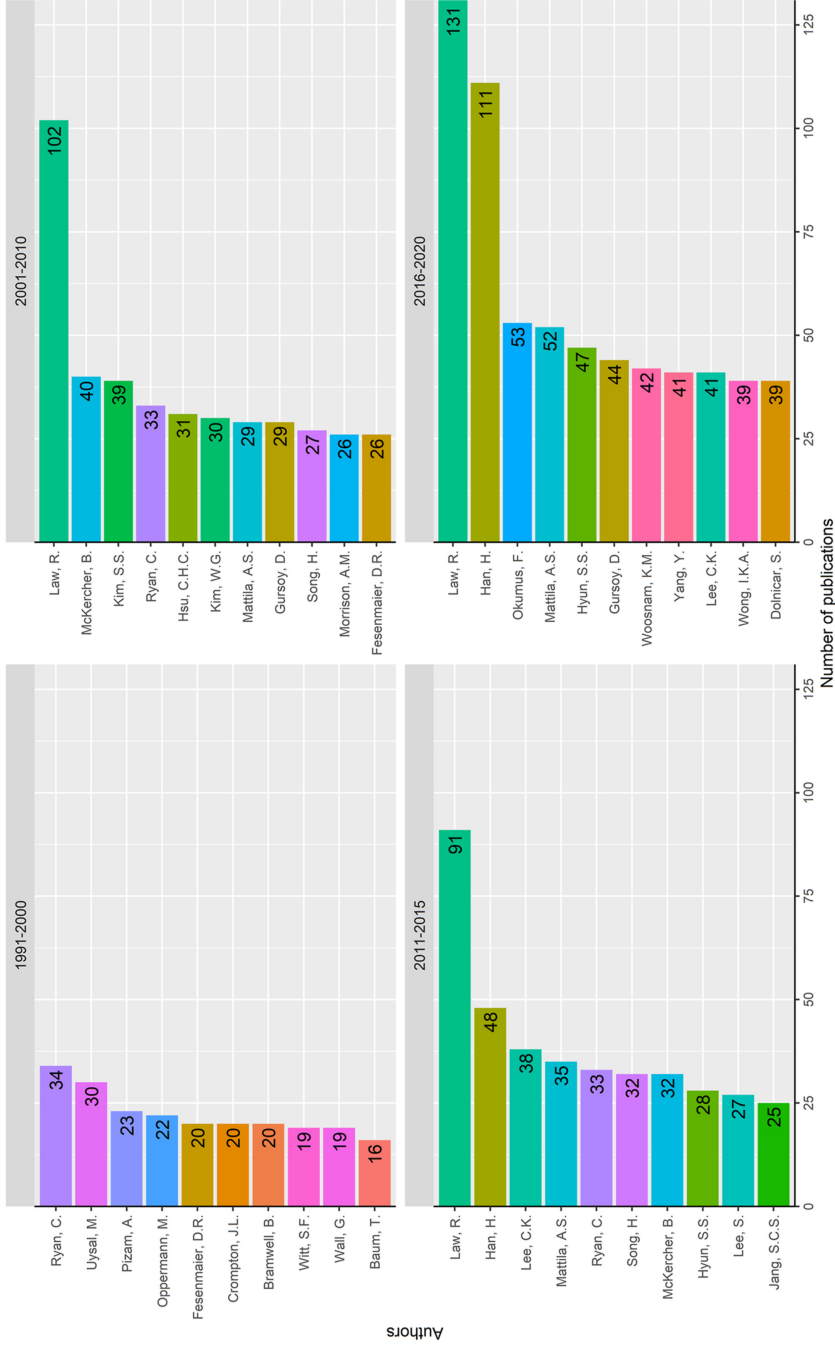
Some names spanned three periods and always ranked high on the top lists, with Law, R. and Mattila, A.S. exerting enduring influence on the tourism and hospitality domain. Law, R. ranked always first in the last three periods. Prof. Law has published hundreds of research articles in reputable academic journals. According to Scopus (November 2021), he enjoys an h-index of 69, meaning that at least 69 of his publications have been cited 69 times. Furthermore, by identifying the most-cited papers by Law, R., we notice that most of his articles centered on the topics such as *online reviews* and *social media*, which are in line with our most frequently discussed topics. Mattila, A.S. is another active researcher who ranked 7th in Period 2, while moving up to 4th in Periods 3 and 4. She specializes in hospitality and services management. Her influence can be demonstrated by the considerable works addressing service recovery, service encounters and cross-cultural issues in services marketing.

In addition, some scholars such as Ryan, C., McKercher, B. and Kim, S.S. fell out of the top 10, while six new names appeared for the first time in the last period. Among these leading eminent scholars, Okumus, F. occupied the third place in the last period. He mainly works on strategy implementation, sustainability, green practices and information technology. According to Scopus, as of November 1, 2021, professor Okumus has published 154 articles in leading journals, which have received over 5,800 citations. Others have also contributed greatly to the understanding of the tourism and hospitality field in different aspects, including sustainable tourism (e.g. Woosnam, K.M. and Dolnicar, S.) and mega-event demand forecasting (e.g. Lee, C.K.).

## 5. Discussions and conclusions

### 5.1 Conclusion

This study utilized an integrated approach of corpus linguistics and bibliometrics to map the evolution of tourism and hospitality research over time. Data were compiled from 20,800 articles published in 18 prestigious tourism and hospitality journals during the past 30 years (1991–2020). Specifically, we have identified a wide variety of changes in this field, including



**Note(s):** Because several authors tied in rankings, we reported 10 author names in period 1 and 3, 11 names in period 2 and 4

**Figure 4.** Diachronic changes of publications of top 10 authors from 1991 to 2020

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the most commonly explored topics, newly emerging topics, the highest-cited publications as well as the most prolific authors.

Results show that, first, some topics are of declining interest among researchers (e.g. *ethnic tourism*, *cultural tourism* and *gambling*), whereas others such as *corporate social responsibility*, *sustainability*, *responsible tourism* and *sustainable tourism* have gained momentum over time, reflecting the increasing attention over the environmental concerns and green practices for securing more sustainable futures in the field of tourism and hospitality. Still, many new topics introduced after 2011 centered on sharing economy phenomenon (e.g. *peer-to-peer accommodation* and *Airbnb*) and information technologies (e.g. *artificial intelligence*, *TripAdvisor* and *big data*). This result not only indicates that the frontiers of this field have been tightly interwoven with the up-to-date technological advances but also reflects that tourism and hospitality is an application-driven and market-driven industry.

Second, empirical and statistical methodologies, particularly the structural equation models, have been the most popular references in tourism and hospitality. Note that a large proportion of these methodologies are originated from other disciplines, especially psychology. Furthermore, it is also noteworthy that the NLP-based methodology, sentiment analysis, has received huge attention in the past five years, which corroborates the point that methodologies applied in tourism and hospitality have become increasingly complex and quantitative (Ali *et al.*, 2019).

Third, some prominent authors (e.g. Law, R. and Mattila, A.S.) consistently rank top 10 across the past 20 years, whereas some previous eminent prolific authors have slowly faded away, possibly as a result of aging or retirement. On the other hand, six emerging scholars (i.e. Okumus, F., Woosnam, K.M., Dolnicar, S., Lee, C.K., Wong, I.K.A. and Gursory, D.) appeared for the first time in the last period (2016–2020). As these prominent scholars take a mainstream scholarship space, their academic achievements warrant close attention.

### 5.2 Theoretical implications

Several theoretical implications can be derived from this work. As noted, previous relevant studies have identified and examined research topics or themes mainly in light of the author-provided keywords (Merigó *et al.*, 2020; Qian *et al.*, 2019). Based on 20,800 articles published in 18 leading journals in tourism and hospitality, this study extends and complements prior literature by extracting topics from abstracts, so as to provide a more comprehensive review of the most commonly discussed topics as well as the emerging buzzwords of this field in the past 30 years. The integrated approach of corpus linguistics and bibliometrics has identified 576 most discussed topics from 1991 to 2020 in this field. Topics that received increasing or decreasing attention have been elaborated and discussed, which provides a specific and reliable direction for future research in this field.

Second, the current study contributes to the investigation of the research frontiers of this field by exploring the newly emerging research topics in the past 10 years. As we found that, information technology-related topics account for the largest proportion of all the new topics. As crucial parts of everyday lives in today's globalized society, those topics concerning social media platforms (e.g. *Facebook* and *Twitter*) and big data are expected to draw much more scholarly attention. Furthermore, the tourism and hospitality industry has been experiencing the immense influence of the sharing economy phenomenon. Within this context, extensive academic attention has been paid to the topics like *Airbnb* and *peer-to-peer accommodation*, as researchers attempt to provide a deeper understanding of sharing economy impacts. Besides, we anticipate that the methodology sentiment analysis, emerging in the last period (2016–2020) is becoming increasingly popular in tourism and hospitality, especially under the background of the global pandemic COVID-19, which requires researchers to attach more importance to customers' preferences, opinions and satisfaction. However, there exist a few

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COVID-19-related studies investigated through sentiment analysis (Hu *et al.*, 2021; Luo and Xu, 2021).

Finally, our findings suggest that a combined bibliometric and corpus linguistic approach could be an effective tool for examining research directions in tourism and hospitality, as it allows for a more in-depth quantitative examination of developmental trends. More research using this combined method is needed to ascertain its applicability.

### 5.3 Practical implications

This study uncovers a historical development of the tourism and hospitality field in relation to hot topics, highly-cited publications and prolific authors. It reveals the status quo of the tourism and hospitality industry and establishes a blueprint for both the academic community and the industry. First of all, this study identifies the most frequently discussed topics (e.g. *eWOM* and *sustainability*) and newly emerging topics (e.g. *sharing economy* and *artificial intelligence*) in the tourism and hospitality field. These results may provide insightful guidance for researchers, educators and practitioners in this field and reveal unique opportunities for future researchers to prepare their manuscripts and update the existing literature.

What's more, the most highly-cited publications will serve to guide students and novel researchers in this field to probe into classic literature. For example, advanced statistical research techniques like SEM are unveiled in this paper. These references may function as a helpful resource for researchers interested in empirical and quantitative methods but less familiar with their application in practical settings.

At last, this study identifies core authors in terms of their publications. These findings could help government and nongovernment institutions make informed decisions on project grants by finding partners and reviewers, or directions for proposals addressing the latest tourism and hospitality topics. This study could also be beneficial to junior researchers and researchers in other fields for establishing extensive academic collaborations.

### 5.4 Limitations and future research

Here are several limitations in this study. First, our analyses were based on a corpus of 18 most prestigious SSCI journals, and therefore, future researchers could broaden their scope by covering more SSCI journals and high-quality Emerging Sources Citations Index (ESCI) journals dedicated to this field. Second, identifying real topics can never be totally objective. To overcome this problem, we had extensive discussions and reached an agreement of 95% among the raters to ensure the reliability of our results. Third, when identifying the most prolific authors, this study carried out a frequency count of articles published by each author regardless of his/her role, such as corresponding author, number of authors and order of authors. Thus, future studies may analyze the most prolific authors by taking into account different weights based on their features.

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## Appendix

Supplementary material is available in online.

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