A bibliometric review on the development in e-tourism research

Shalini Singh and Abu Bashar
School of Management, IMS Unison University, Dehradun, India

Abstract

Purpose – E-tourism is instilling in the tourism industry with the advancement in the technological infrastructure all over the world and fetching tremendous tourists' attention. The dynamic changes in the technological aspects unveil varied developments in the tourism industry. This paper attempts to reveal the developments in the field of e-tourism by a systematic review of the literature using bibliometric analysis.

Design/methodology/approach – In total,146 research articles were retrieved from the Web of Science data during the period of 2004 – 2020, for further analysis using VOSviewer and Biblioshiny package of R Studio.

Findings – Useful insights resulted in the form of most cited papers, contribution in e-tourism research by different authors, countries, institutions, journals and so on, co-occurrence analysis and cluster analysis for major trends or themes of e-tourism. This study solicits an elaborated review of e-tourism research and unveils the future directions for the researchers.

Originality/value – This study adds substantial value to the research of e-tourism by analysing the bibliometric data of the last 16 years, that is, from 2004 – 2020, procured from the Scopus by analysing the significant trends developed in the e-tourism research. It also adds value by indicating the emerging areas of e-tourism.

Keywords e-tourism, Bibliometric analysis, Review, VOSviewer, Biblioshiny

Paper type Research paper

Introduction

The tourism industry has undergone a paradigm shift with the advent and use of more affordable and accessible information and communication technologies (ICTs) (Cranmer *et al.*, 2020; Fodor and Werthner, 2004; Garcia *et al.*, 2011; Maswera *et al.*, 2009; Tribe and Mkono, 2017). The advent of tourism specific sophisticated Internet applications has changed the way the consumers as well as tourism service providers were operating (Guo, 2011; Kolahkaj *et al.*, 2020; Stiakakis and Georgiadis, 2011; Szopinski and Staniewski, 2016; Tribe and Mkono, 2017). The term e-tourism refers to the use of ICT by the tourism services providers to offer travel-related services remotely to the prospective travellers (Kazandzhieva and Santana, 2019), where they can transact as and when required (Borras *et al.*, 2014; Subramaniyaswamy *et al.*, 2019; Valdivia *et al.*, 2019).

The tourism industry is a multibillion business, online are allowing travellers to get real-time information about the various services which help them to plan, pay and book their future trips in few clicks as per their convenience of time and location (Buhalis and Jun, 2011; García-Crespo *et al.*, 2009; Isfandyari-Moghaddam, 2012; Mekkamol *et al.*, 2013; Moreno *et al.*, 2013). E-tourism also allows consumers to read reviews and compare about various services and decide on the basis of real-time data analytics and intelligence. (Banerjee and Chua, 2016; Kontogianni and Alepis, 2020; Nilashi *et al.*, 2019; Subramaniyaswamy *et al.*, 2019; Valdivia *et al.*, 2019).

This tourism industry is one of the most important components for revenue pulling not only in developed countries but in developing and rural economies as well (UNWTO, 2017). Applications of internet technologies may enable the tourism to flourish tourism at both rural and urban levels. As the rural tourism sector is not having the enough resources as compared to urban counterpart, therefore electronic applications may persuade travellers to transact at the rural level as well (Chi et al., 2020; Khan et al., 2017; Lee et al., 2017). E-tourism may help service providers to have the technical collaborations for the upliftment of infrastructure and dissemination of lucid information (Batet et al., 2012; Johnson and Samakovlis, 2019; Kolahkaj et al., 2020).

The technological upgradation now seems very attractive to all the industry practitioners, and hence arises the industry 4.0 not only in manufacturing sector but it may lead a transformation in tourism industry as well (Stankov and Gretzel, 2020). The scholars have given great attention to understand the importance of the technology, its impact and various other changes which are disrupting the tourism industry (Buyukozkan and Ergun, 2011; Pilar Latorre-Martinez et al., 2014; Steinbauer and Werthner, 2007). For example, researchers have shown interest in studying the value chain and how it has reshaped the business to business (B2B) and customer to customer (C2C) relationship in tourism sectors (Fodor and Werthner, 2004). The virtualization and digitalization technologies such as the availability of smart phone adoption of Internet of things (IoT), artificial intelligence (AI), machine learning (ML) and robotics has also got attention from researchers (Biswas and Abdul-Kader, 2018; Nilashi et al., 2018, 2019).

Recently researchers have shown interest in studying the smart tourism destination which resulted with the continuous evolvement of smart technologies such as sensors, cloud computing, RFID (radio frequency identification) and so on (Borras et al., 2014; Lee et al., 2019; Straker and Wrigley, 2018). E-tourism is also emerging as a substantial need for the tourism industry in this pandemic scenario (Gretzel et al., 2020) though bearing several challenges such as lack of technical infrastructure, insufficient technical skills of employees as well as end users, cost of installation and so on (Al-Hassan et al., 2015; Kolahkaj et al., 2020). The various aspects of e-tourism that help in creating an exceptional customer experiences and combating various challenges in this sector are very important to be studied for getting a big picture of e-tourism (Kulkarni and Rodd, 2020; Trunfio and Campana, 2019; Weismayer and Pezenka, 2017). Since more than two decades ago, researchers have been trying to throw some light on the different aspects of e-tourism and try to develop some significant interventions of Internet technology in tourism. The main objective of this study is to systematically review e-tourism research to evaluate the overall past developments, collaborations, interventions and different aspects of e-tourism, to provide a conclusive remark. For attaining this objective, bibliometric analysis is proposed to systematically review the past studies.

Literature review
Information and communication technological upgradation brings a paradigm shift in the tourism industry (Baggio and Fuchs, 2018; Buhalis and Deimezi, 2004; Ying et al., 2016). Now travellers and tourism professionals both are using the Internet technology to facilitate the e-tourism (Buyukozkan and Ergun, 2011; Casillo et al., 2019; Stiakakis and Georgiadis, 2011). Travellers and consumers are often using Internet for the decision-making process in the tourism consumption (Cao and Schniederjans, 2006; David-Negre et al., 2018; Steinbauer and Werthner, 2007; Zhu et al., 2019). Internet technology transforms the way of individual conduct of tourists and unveils a more improved and convenient version of tourism industry for travel planning and sharing lucid information (Buhalis and Deimezi, 2004; Buhalis and Jun, 2011; Gretzel et al., 2020). E-tourism is the innovative way of Web 2.0

and is a web application that generates the recommendations for the travel bookings in a personalized way (Banerjee and Chua, 2016; Cristobal-Fransi *et al.*, 2017; Sebastia *et al.*, 2009). The proliferation of social media and online travel communities encourages the virtual discussion and somehow influences the travellers' decisions also (David-Negre *et al.*, 2018; Gärtner *et al.*, 2010; Pantano and Pietro, 2013; Pilar Latorre-Martinez *et al.*, 2014). Businesses across the different countries embrace the Internet technology and the logical sequence of the digital channels in the value chain of the travel and tourism industry (Batat and Prentovic, 2014; Kazandzhieva and Santana, 2019; Maswera *et al.*, 2008; Stankov and Filimonau, 2019), and hence it leads to the development of varied travel destinations (Buhalis and Deimezi, 2004). In other words, e-tourism can be defined as the web marketing that fosters the globalization through implications of ICTs or e-commerce (Choudhary *et al.*, 2020; Liu *et al.*, 2014b; Montejo-Raez *et al.*, 2011; Ying *et al.*, 2016). The impact of Internet technology on the tourism industry in undeniable (Choudhary *et al.*, 2020; Tribe and Mkono, 2017).

Along with several developments in the e-tourism industry, it inculcates some challenges too (Kolahkaj *et al.*, 2020). Travellers usually face challenges while using mobile technology, web-based tools and e-commerce services (Fermoso *et al.*, 2015; Pantano and Pietro, 2013; Valencia-Garcia *et al.*, 2011). Yet it may get minimized by optimally utilizing the basic managerial functions for e-tourism such as – e-commerce, e-marketing, e-finance and e-accounting, e-human resource management, e-procurement, e-research and development, e-production as well as e-strategy, e-planning and e-management (Baggio and Fuchs, 2018; Lu *et al.*, 2015; Mekkamol *et al.*, 2013; Pantano and Pietro, 2013; Szopinski and Staniewski, 2016). In this era of highly integrated dynamic technological innovations and developments, the tourism industry thrives for the everlasting value-added services for soliciting better travellers' experiences (García-Crespo *et al.*, 2009; Ku and Chen, 2015). As per the existing literature, it may be concluded that developments and changes in technological environment are quite uncertain (Fang *et al.*, 2016; Liu *et al.*, 2014b), and to sustain in the highly competitive era, it is essential for the tourism industry to keep an eye over the technological aspects (Szopinski and Staniewski, 2016). Therefore, it demands the elaborated illustrations of the contribution of the different studies in the e-tourism research area.

Most of the studies exist on specific framework used, their limitations and future research directions. None of the past studies done in the field of e-tourism have considered the intellectual contributions, keywords used, most productive journals, annual average production co-occurrence of keywords, network mapping and so on (Hsiao *et al.*, 2015; Johnson and Samakovlis, 2019). The current article is an attempt to fill the literature gap in a comprehensive manner through systematic literature review using bibliometric analysis technique to complement the existing review studies and provide a solid roadmap for the future research. By discovering what lies beneath the developments in e-tourism research, one can enable the academic and research developments in tourism industry. Hence, the following three research questions have been formulated for conducting this study:

RQ1. What are the unveiled associations that can be evolved by using the bibliometric analysis?

RQ2. Who are the topped cited authors and research articles contributing to the e-tourism research?

RQ3. What are the main keywords discussed in the research work done in e-tourism?

Methodology

Bibliometric analysis technique is used to analyse the bibliographic data, which is one of the most important measures for the evaluation of the scientific production, and we have considered Web of Science database, and articles from top-quality journals have been collected for analysis of research trends, main topics addressed, most influential contributors and articles in e-tourism research area. The rationale behind taking the Web of Science data is to provide a meticulous quality work in the area of e-tourism. There could be possibility to extract more research work on the e-tourism from the different directories, but it is dubious that all these papers would add a substantial quality value addition in the review study. For example, Google Scholar and Scopus both have more coverage than the Web of Science data (Harzing and Alakangas, 2016; Martín-Martín *et al.*, 2018). But the data coverage of Web of science is more precise and valuable than Google Scholar and Scopus data (Archambault *et al.*, 2009; Harzing and Alakangas, 2016; Martín-Martín *et al.*, 2018; Mongeon and Paul-Hus, 2016). Thus, bibliometric data has been collected from the Web of Science to provide more significant insights and development in e-tourism research.

We have used systematic searching and filtering of data – 1) first, we have searched the database with certain search keywords, 2) then we refine the search criteria and considered appropriate studies and 3) then we analysed the data.

The data has been first been extracted by using both search syntax and keywords in title of the research articles, and then all the data have been merged to convert into a single file. Search syntax for data collection includes ("e-tourism" OR "web tourism" OR "online tourism" OR "virtual tourism" OR "electronic tourism" OR "tourism through internet"). The keywords "e-tourism review" and "review of online tourism" are also separately used to obtain literature that consists review studies on the phenomenon of e-tourism.

The data extraction from the Web of Science has been done in comma separated value (CSV) format for further processing. The data inclusion is based on the research and review articles only to emphasize over the authentic and published findings. From initial search we got 398 articles, considered documents type as research and review articles and limited data from last 16 years (2004–2020), and data exclusion has been done further by eliminating studies which were not specific to the e-tourism and allied areas such as technology, modelling of e-commerce businesses and creating value chain in online tourism industry. Therefore, ultimately 146 articles were extracted for the current study.

We have used VOSviewer 1.6.15 for mapping and visualization of data, and Biblioshiny powered by R studio 1.3.1073 package has been launched (http://127.0.0.1:7910/) for descriptive analysis.

Bibliometric results and discussion

Main information about data

The consideration time span of 2004–2020 and total number of documents being considered for further analysis are 146. The average year from publication is 3.96 and average citations per year are 3.462 while average citations per document are 16.5. There are altogether 432 authors, out of them 419 are multi-authored documents while 13 are single authored. The collaboration matrix is 3.2, and co-authorship per document is 3.25.

Annual production per annum and most relevant research

The research in e-tourism is relatively new and expanding. Very few publications were available before 2015 (Figure 1). Till 2015 only 18% of the total research output has been recorded. Figure 1 shows the trend in the publication of the articles in the fields of e-tourism, it is evident from the figure that this field is expanding and there exists an exponential growth
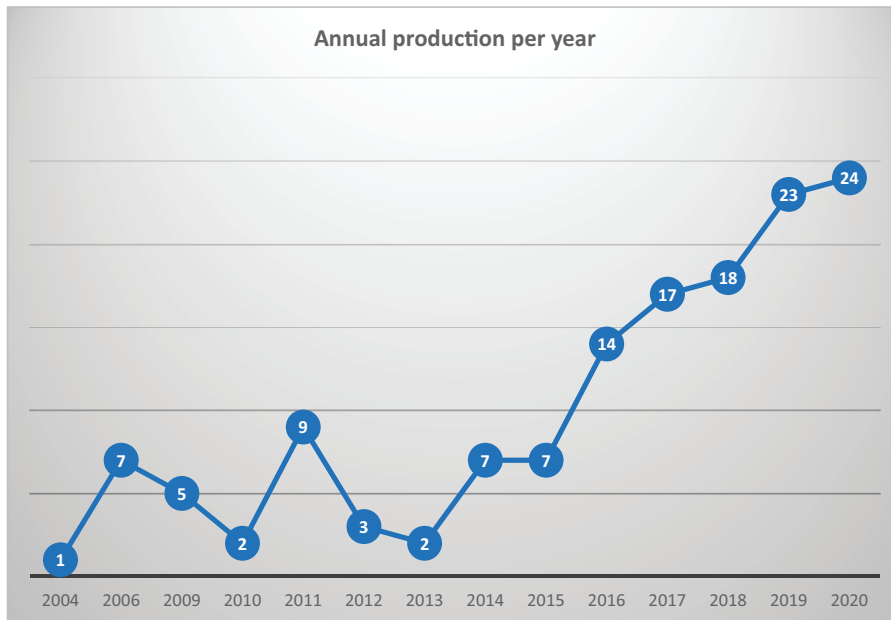
in the publications, the scholars are engaging more with this area and expanding the knowledge further, the year 2020 has got 24 studies one more from the year 2019 and still 4 months are remaining in 2020. So, there exist a great opportunity in this area of research to explore further.

The journals specifically related to tourism and hospitality as represented in Figure 2 as Asia Pacific Journal of Tourism Research, Expert Systems with Applications and Tourism Management are the most relevant sources of publication followed by Journal of travel research and Sustainability.

Most influential contributions in terms of most cited sources, total citations and source impact
The quantity as well as quality of the contributions is taken into considered and analysed on the basis of the citations and relative strengths of the papers. The total number of contributions in subject area is the general indicator of the attractiveness of the topics and sub-topics. The impact of each source is determined by the average citation per paper per year. The average citations per paper are being determined by calculating the average citation for a particular paper in a given year.

The citation of a source reflects that it has been referred by the scholars in their studies and been cited for being the most relevant paper in that area. Figure 3 shows that Tourism Management journal tops the list of citation with 543 followed by Annals of Tourism Research 156, International journal of Hospitality Management 130, Journal of Travel Research 117 and so on. Tourism Management Journal is having five times more citation than any other journal in this discipline.

In the VOS viewer output, the size of the dot specifies the number of citations for a particular source. Figure 4 shows that Expert Systems with Applications are having highest citations among the sources with h-index of 6 and Asia Pacific Journal of Tourism Research,
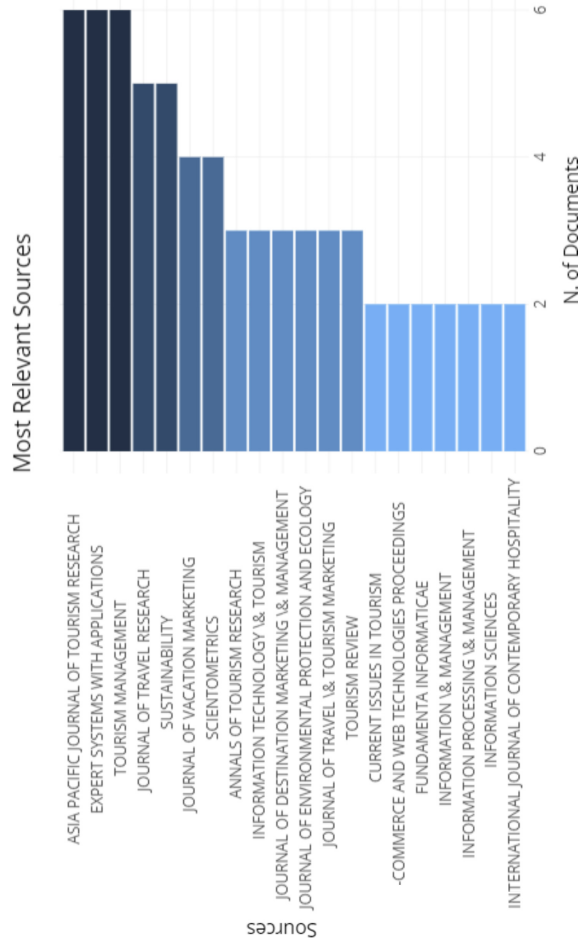
Figure 2.
Most relevant sources/
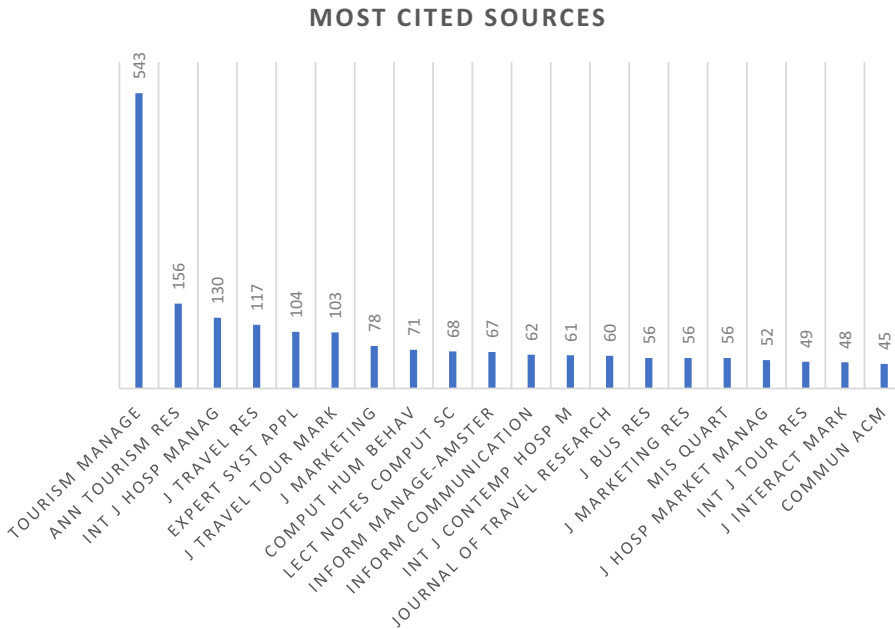journals

MOST CITED SOURCES

Figure 3.
Most cited sources

Tourism Management, Scientometrics are having h-index of 4 and Journal of environmental protection is also having good number of citations.

Source impact and source growth over the period
The source impact is the analysis of the literature from the perspective of citations, self-citations and co-citation in a given area of study. The source growth is a measure of contribution of scientific literatures in the area of the research.

Decision Support Systems and Expert Systems with Applications and Tourism Management have the maximum source impact with 378, 335 and 310 respectively as depicted in Figure 5.

As indicated in Figure 6, Sustainability is having highest source growth. Tourism Management is also producing good number of sources every year followed by Journal of Vacation Marketing. Expert Systems with Applications were producing good number of literature during 2008–2012 and then suddenly saw an exponential decay in production. Asia Pacific Journal of Tourism Research is also contributing less as compared to past duration of 2014–2017.

Key contributing authors, affiliations and country
We have considered 146 articles authored by 432 scholars. The number of citations on an author's works signifies the quality of the research and relevance with the field of study. As represented in Figure 7, the authors who have maximum impact are Lu J, Mao M, Wang W, Wu D, Zhang D and enjoying top position jointly with 378 citations. Then Moreno A and Walls A are at second position with 200 citations while Law R is at third spot. Others authors are having their positions according to citations.

The authors with more than four cited references have been organized in specific area of research who have used the similar references represented by the VOSviewer output
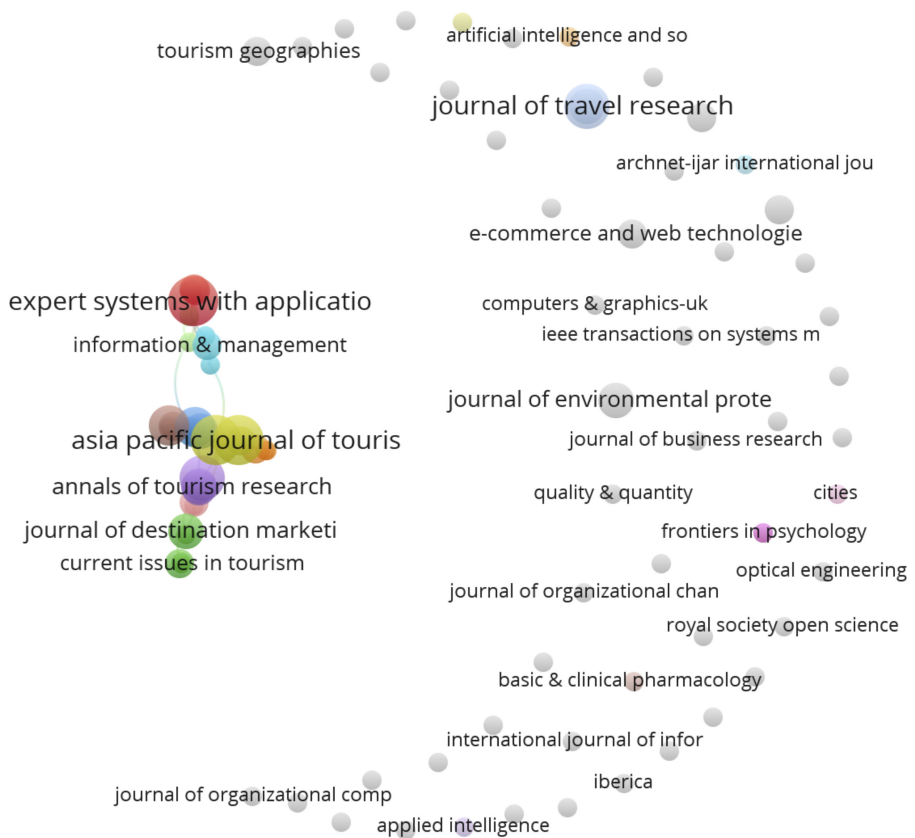
Figure 4.
VOSviewer output for
most cited sources

(Figure 7). In the visualization, the size of the dots shows the number of citations of each author. We have got five clusters of data; each cluster is representing specific sub-topic in the area of e-tourism that the researchers work on and published their work which seems to influence the characteristics of the clusters. The clusters are having 110 items, 1945 links and the total link strength of 2889. Cluster 1 is having 33 scholars, 39 cited references; it is largest among five data clusters. Bai, B, Fornell C, Law R and Davis FD are the highest cited authors in this cluster.

With 23 authors, 25 cited references, cluster 2 is the second largest cluster of authors on the basis of pre-set criteria. The most cited authors are Gretzel U, Litwin SW. and Filieri R. Cluster 3 is also having 25 items and 23 authors, the size of this cluster is exactly the same as that of cluster 2. The most cited authors in this cluster are Dimitrios Buhalis and Rob Law for their paper published in 2008 (Buhalis and Law, 2008). The works of these authors are well cited as compared to cluster 2.

With 16 authors, 20 cited references, cluster 4 is the third largest cluster, and the most cited authors are Dimitrois Buhalis and Angel García-Crespo. Cluster 5 is the smallest one with one cited reference and one author, Rob Law. We can see that some of the authors such as Dimitrois Buhalis, Rob Law and Zheng Xiang are clustered in more than one cluster.

The universities that contributed most in terms of total scientific productions are Ton Duc Thang University and The University of Granada having almost 8.3 documents per year
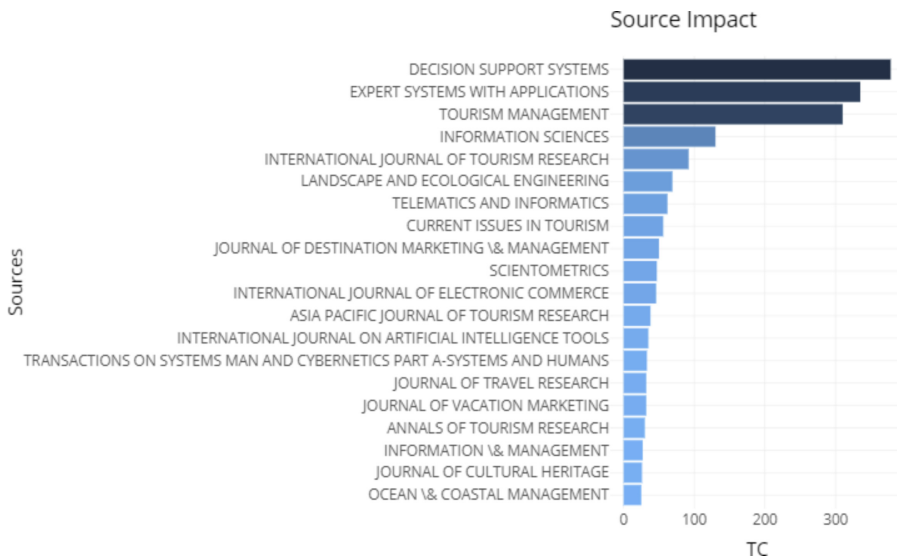
Figure 5.
Source impact in terms
of total citations

followed by The Hong Kong Polytechnic University and National Kaohsiung University of Hospitality and Tourism contributing almost 7.8 documents annually (shown in Figure 8). National Taiwan University of Science & Technology, Griffith University, Sun Yat-sen University and University of Teknologi Malaysia are adding 7.3 literature per annum.

Most of the contributions have been from China as depicted in Table 1, China alone is accounting 30% of total scientific production in the area of e-tourism, and the next biggest contributing country is Spain 14% and then USA 8%. So these three countries are achieving almost 50% of total production in e-tourism. This concentration of contribution is almost intact in almost every field of scientific production, and it may vary in specific sub-field of study.

The research production for e-tourism research has been also presented through map visualization in Figure 9. This figure depicts the countries (China, Spain, USA, etc.) highlighted with blue colour which have major contribution to the e-tourism research. Whereas the countries highlighted with grey colour in Figure 9 have negligible contribution to this research area.

Main keywords
For preparation of data, we used various keywords and refined them to get most appropriate studies for e-tourism. We found most appropriate 93 keywords which are being used for the keywords analysis (see Figure 10). VOSviewer output for keyword co-occurrence divides the total keywords into seven clusters.

The most occurred keyword is e-tourism and falling in cluster 1 (red-coloured cluster). Cluster 1 (red-coloured) is having 18 keywords such as s-commerce, trust, sustainability, loyalty, framework and so on. Cluster 2 (green-coloured cluster) is also having 18 keywords, containing items such as hospitality, tourism advisor, online reviews and so on. Cluster 3 (dark-blue-coloured cluster) is also having 18 items and includes keywords such as attitude, behaviour, experiences, design, authenticity and so on. Clusters 4 (purple-coloured cluster) and 5 (yellow coloured cluster) both contains 11 items each, and major keywords are model, adoption, technology framework, user acceptance, virtual tourism and so on. With nine items,
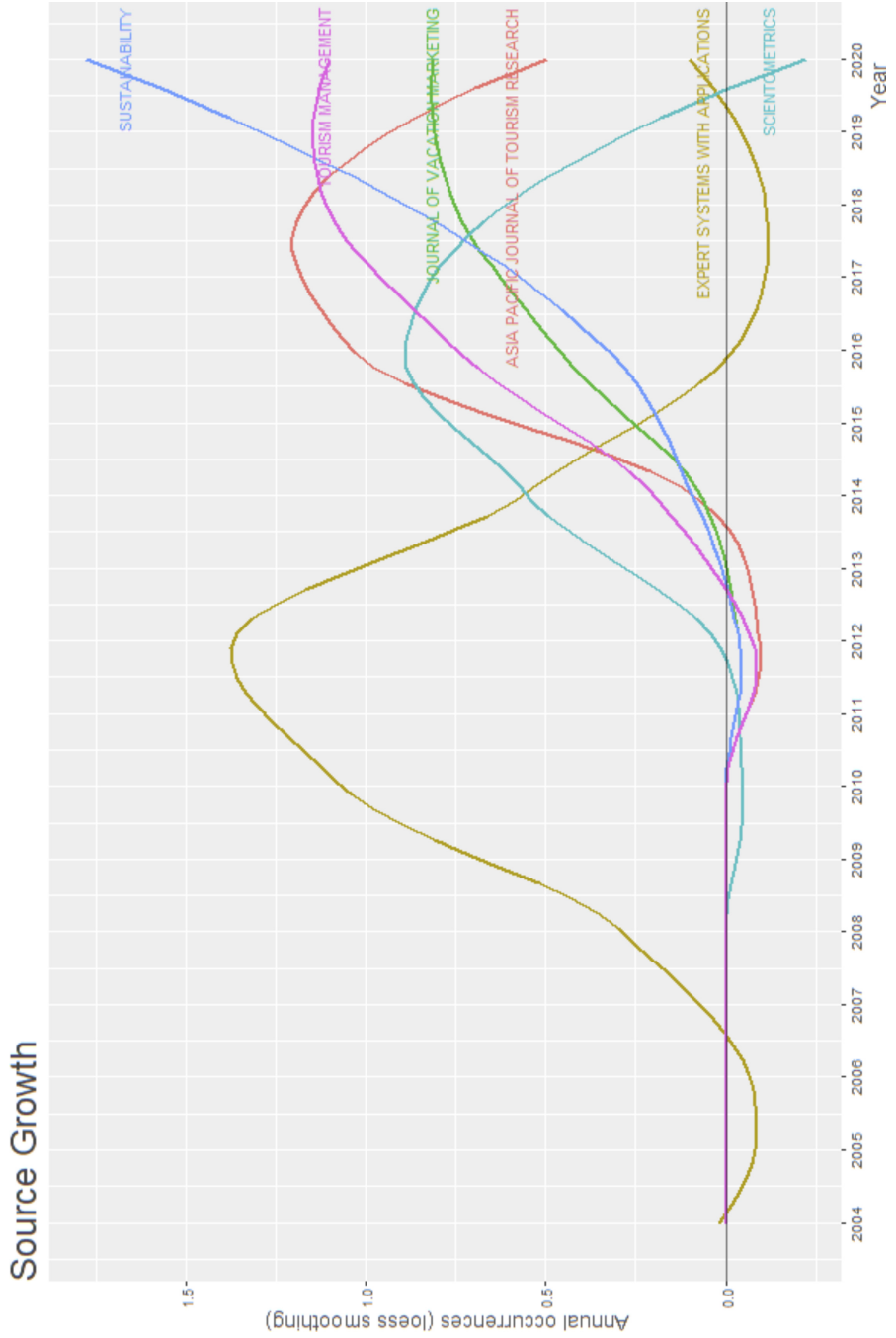
Figure 6.
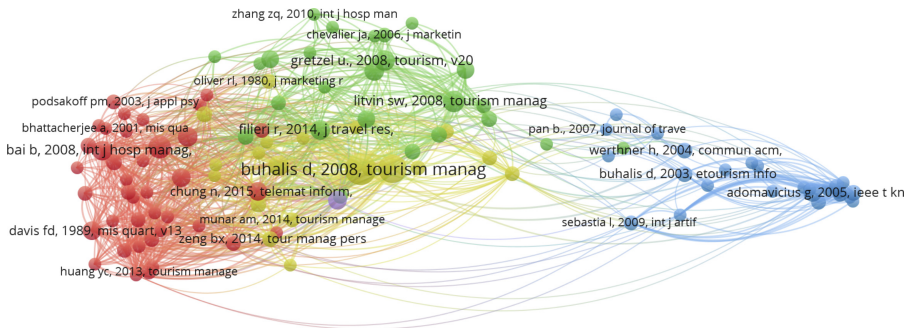Source growth for
e-tourism research

Figure 7.
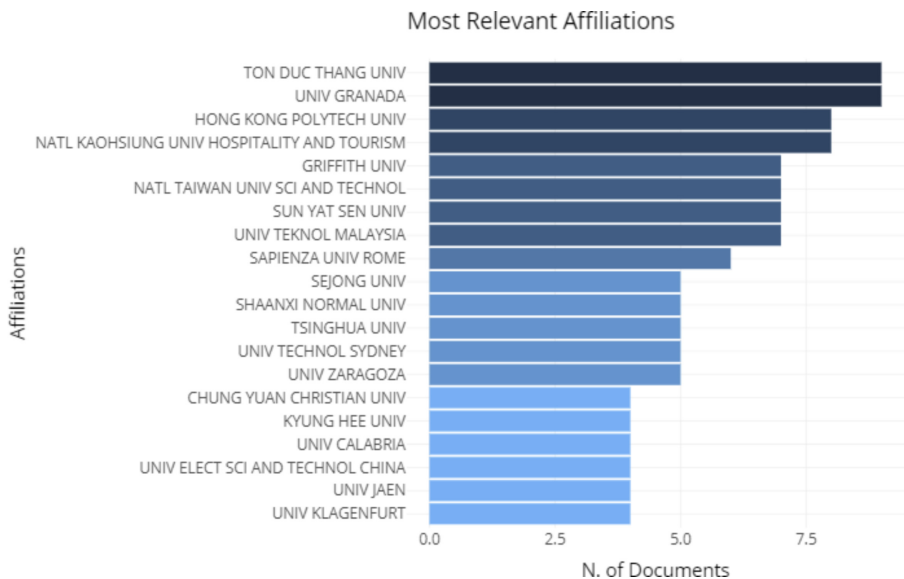Author clusters on
e-tourism

Most Relevant Affiliations

Figure 8.
Most relevant
affiliations

cluster 6 (light-blue-coloured) is more about social media, word of mouth, Facebook, netnography and so on. Cluster 7 (orange-coloured cluster) is having keywords related to community structure, Internet, information technology, destination image and so on.

The graph in Figure 11 shows the trend of the topic of research in e-tourism field, and service quality, progress, impact, destination tourism are most trending topics in current time.

The trends developed in the e-tourism research from 2004 to 2020 include some common topics such as ICTs, e-commerce, web page design and so on (Cao and Schniederjans, 2006; Chiang and Huang, 2015; Cranmer *et al.*, 2020; Fodor and Werthner, 2005; Susser and Ariga, 2006; Szopinski and Staniewski, 2016) As per the review analysis, the time period 2004–2008 has been considered as one of the significant periods for e-tourism where genesis of various trends such as web-based technology (Fodor and Werthner, 2005), reputation-based electronic tourism system (Cao and Schniederjans, 2006), 3D e-tourism (Berger *et al.*, 2007) and so on took place. The focus of the practitioners shifted from B2B to B2C using e-commerce technologies. To enhance the consumer interactivity on tourism e-commerce portals different

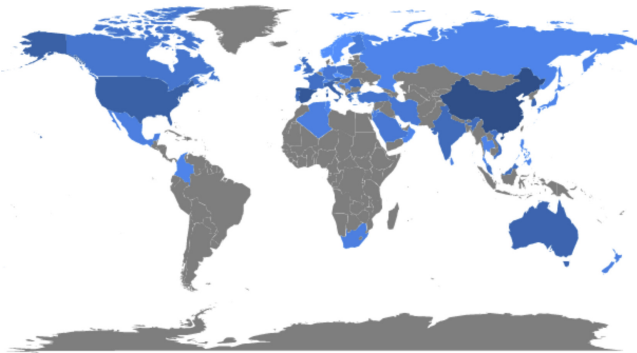| Country	China	Spain	USA	Italy	Australia	South Korea	Austria	Portugal	India	Greece	Romania	Malaysia	UK
Frequency	129	60	33	29	23	19	18	14	13	12	12	11	10

Table 1.
Research contribution
across the countries

Figure 9.
Maps of scholars of
e-tourism
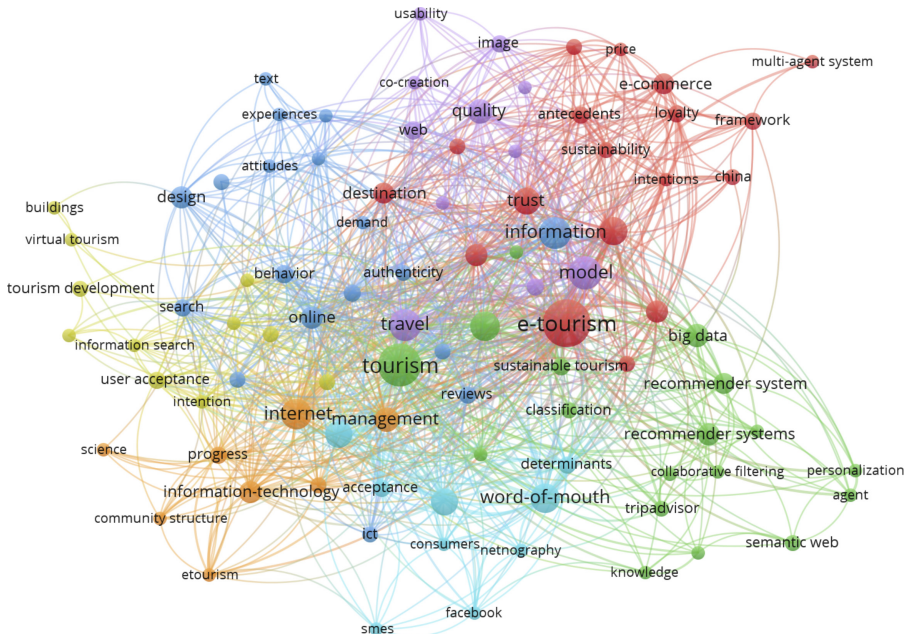
Figure 10.
Keywords cluster
analysis

techniques such as social network sites (Facebook tourism) (Pantano and Pietro, 2013);
computer modelling software (Styliadis *et al.*, 2009); digital architecture (Styliadis *et al.*, 2009);
haptic equipment and e-learning technology (Styliadis *et al.*, 2009) have been used in the
period of 2009–2012. In the period of 2013–2016, the focus was to improve the customer's web
experiences (Liu *et al.*, 2014a) on e-tourism sites by addressing different issues including
high-definition quality of video with stabilization and alignment; blurriness and frame
detection; audio-visual graphics quality and so on (Xu and Mulligan, 2013). This is the period
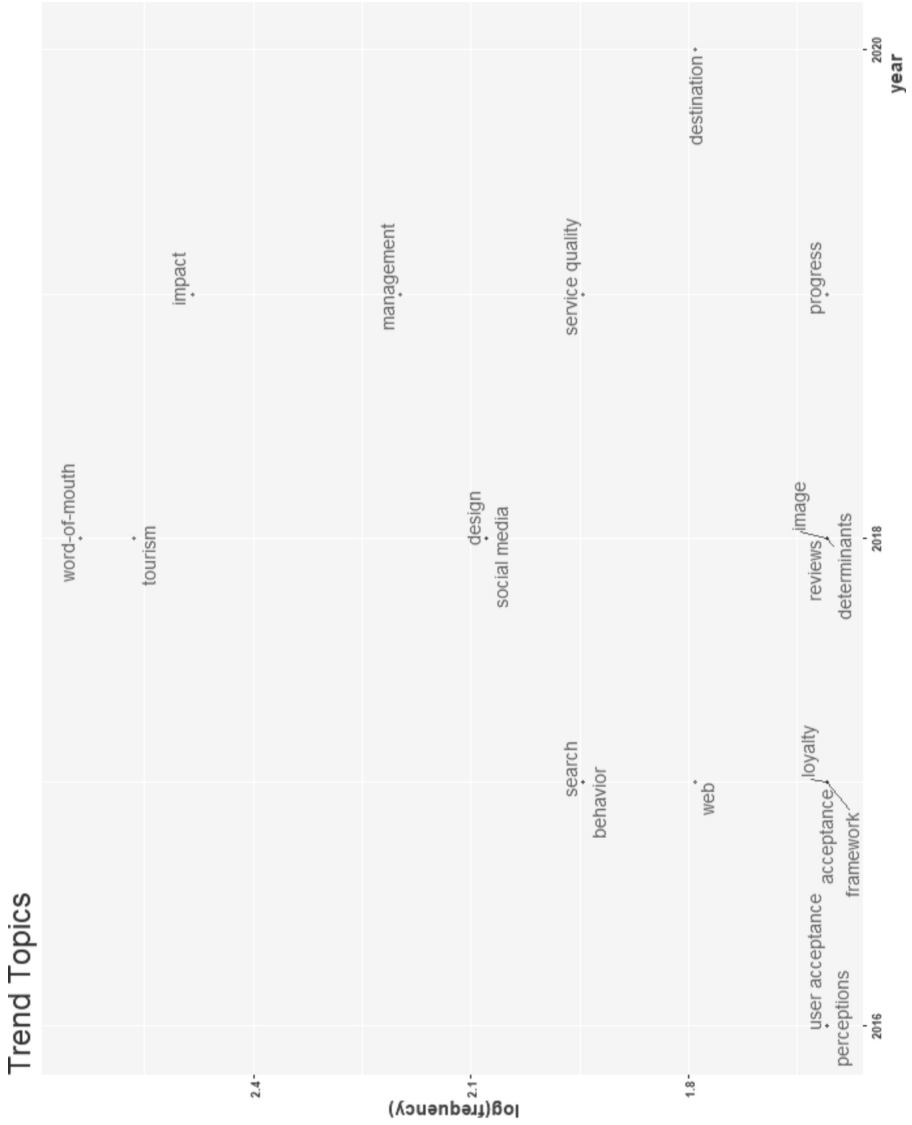when e-service quality, augmented reality, virtual reality and recommendation system

Figure 11.
Trend topics

(Herban *et al.*, 2014; Yiakoumettis *et al.*, 2014) attracted most of the practitioners and brought a revolution in tourism industry. The development of different conceptual frameworks and models has been achieved in this period soliciting robustness to the e-tourism research (Cristobal-Fransi *et al.*, 2017; Do *et al.*, 2020; Kazandzhieva and Santana, 2019; Zhu *et al.*, 2019). The last phase 2017–2020 discussed in Table 2 emphasized more over the advanced technologies used to upgrade the e-tourism such as smart and calm technologies; e-alienation; netnography; network science; mobile computing; big data; sequential pattern mining; tourism 4.0 and so on (Baggio and Fuchs, 2018; Stankov and Filimonau, 2019; Tribe and Mkono, 2017). At the end of this phase 2020–2021, the implications of e-tourism with context to pandemic effect of COVID-19 have been also discussed (Xie *et al.*, 2021), where the consumers are more relying on the Internet technology rather than traditional ways of communication. The entire trend discussed above highlighted the ever-increasing demand of e-tourism due to the continuous upgradation in the technological trends.

Conclusion

The aim of the current research is to enumerate and provide a comprehensive understanding in e-tourism research by determining the best journal, the most prolific author, the best journal, best university, best country in total contribution and the development and trends and to find out new areas for future research. By using Biblioshiny package of R Studio and VOSviewer software, a streamlined and lucid picture of e-tourism research has been emerged. The analysis is providing a great visualization of the bibliographical information about the area of research. There is an increase in the number of publications in last few years, and it shows that the area is in its developing phase. New areas e-tourism developments have been highlighted through this study. Smart tourism, robotic implementation, robust recommender system, implementation of virtual and augmented reality in tourism, social network sites, 3D visualization and web personalization, digital architecture, human-less interaction in tourism, tourism 4.0, ML and so on have emerged as the major trends in tourism industry. The dynamic changes evolved in tourism due to technological innovation soliciting a wider spectrum for the e-tourism. E-tourism is not only aiding in social and tourism infrastructure but also helping in attracting global tourism by creating valuable awareness. ICT implementation is also helping the tourism industry to survive in this pandemic situation of COVID-19 by reducing human interaction in tourism industry. In crux, it is obvious to state that technology is imbibed strongly in the tourism culture, and e-tourism is the real future of the tourism industry.

Implications

Research implications

Results revealed that several branches of technological developments such as smart technology, virtual reality, augmented reality, digital architecture, ML, recommendation system and so on have emerged into e-tourism research. It provides a wider platform to the tourism researchers to evolve useful insights. The bibliometric review done for the time period 2004–2020 solicits a broader spectrum of understanding that may fill the research gap in e-tourism.

Managerial implications

Industry practitioners, tourism authorities and government and non-government bodies may get useful insights from the developments in e-tourism since almost two decades and make better policies and governance for the tourism sector. They may implement the recent technological developments to the tourism sector for the lucid awareness among global tourists and to improve their electronic experiences.

Duration	Trends developed in e-tourism	Sources
2004–2008	ICT diffusion in small and medium-sized tourism enterprises (SMTEs); e-commerce; business-to-consumer (B2C) e-commerce; travel applications; web page design; spatial data infrastructure; agent technology; reputation-based electronic tourism (RET); skeleton agent; RoboSkeleton; multi-agent environment; logic programming; personalization, information filtering and recommendation; 3D e-tourism environment; CRM for self-service technologies	(Berger *et al.*, 2007; Buhalis and Deimezi, 2004; Camacho *et al.*, 2006; Oliver Fodor and Werthner, 2005; Hsiao *et al.*, 2015; Popescu *et al.*, 2006; Scholten *et al.*, 2006; Stockdale, 2007; Susser and Ariga, 2006; Zanker *et al.*, 2006)
2009–2012	Recommender system; fusion of context-aware pervasive systems, GIS systems, social networks, and semantics; knowledge-based recommenders; sales support systems; quality in e-tourism; online purchase intention; design computing; digital architecture and archaeology; imaging sensors and scanners; computer modelling software; haptic equipment and e-learning technology; B2C and B2B e-marketplace; virtual organizations; application of logic programming; semantic web technology; mobile services; 3D digital content; information and communication technologies; 3D map-based interface; real-time location-sensitive recommendations; social network sites (SNS); destination management system (DMS)	(Buyukozkan and Ergun, 2011; Catalano *et al.*, 2011; Chiu, 2009; Felfernig *et al.*, 2009; García-Crespo *et al.*, 2009; Isfandyari-Moghaddam, 2012; Markus *et al.*, 2010; Noguera *et al.*, 2012; Ricca *et al.*, 2010; Ruiz-Martínez *et al.*, 2011; Sebastia *et al.*, 2009; Stiakakis and Georgiadis, 2011; Styliadis *et al.*, 2009)
2013–2016	Social media; user-generated contents; Facebook tourism; management of user profile; digital camera; smartphone technologies; high-quality images and video (high-resolution panoramic); virtual reality system; city planning application; robot navigation; virtual tourism; terrestrial laser scanner; point cloud data; Gaussian map; shape analysis of a three-dimensional (3-D) scene; reputation management; web marketing; application of 2.0 systems thinking; online tourism ads; visual methods; image-focussed social media; mobile tourism; 3D geo-informatics; 3D scene exploration; personalized path planning; 3D virtual reality; digital reconstruction; laser scanning; collaborative filtering (CF) approach; mobile technologies; collaborative e-learning; linked open data (LOD); blog mining; information retrieval; e-service personalization; recommender system; website quality; website interactivity; traveller's rating pattern; online reviews; hyperlink network analysis; webometrics	(Al-Hassan *et al.*, 2015; Banerjee and Chua, 2016; Batat and Prentovic, 2014; Chiang and Huang, 2015; Fang *et al.*, 2016; Fermoso *et al.*, 2015; Herban *et al.*, 2014; Huang and Bian, 2015; Huang *et al.*, 2016; Ku and Chen, 2015; Liu *et al.*, 2014b; Lu *et al.*, 2015; Moreno *et al.*, 2013; Ning *et al.*, 2013; Pantano and Pietro, 2013; Pilar Latorre-Martinez *et al.*, 2014; Xu *et al.*, 2015; Xu and Mulligan, 2013; Yiakoumettis *et al.*, 2014; Ying *et al.*, 2016)

Table 2.
Evolution of e-tourism trends as per the timeline

Duration	Trends developed in e-tourism	Sources
2017–2020	Web 2.0; web content analysis; e-lienation; netnography; network science; social network analysis; smart tourism; destination management; calm technology; smart technology; context-aware computing; digital storytelling; e-tourism; recommender system; ICT; transformative research; COVID-19; human machine interaction; human-computer interactions; mobile augmented reality apps; mobile computing; technology adoption; human-centred design; technology-mediated tourist experience; tourism 4.0; augmented reality; collaborative filtering; context-awareness; sequential pattern mining; e-tourism package recommendation; big data; gravitational search algorithm; machine learning	(Baggio and Fuchs, 2018; Casillo *et al.*, 2019; Cranmer *et al.*, 2020; Cristobal-Fransi *et al.*, 2017; Do *et al.*, 2020; Gretzel *et al.*, 2020; Johnson and Samakovlis, 2019; Kolahkaj *et al.*, 2020; Pilar Latorre-Martinez *et al.*, 2014; Stankov and Filimonau, 2019; Stankov and Gretzel, 2020; Tribe and Mkono, 2017; Xie *et al.*, 2021)

Table 2.

Social implications
The upgradation in technology and the effect of pandemic COVID-19 both are urging the adoption of ICT in the tourism sector. The adoption of e-tourism will uplift the social infrastructure with the proliferation of accurate tourism information. Society may access tourism opportunities and information without involving much human interaction and helps in maintain social distance. E-tourism also helps the society monetary as well by attracting international tourists.

Limitation and future research direction
The major limitation of the study is that it has considered only data from Web of Science software and the way of execution of the analysis. This analysis is based on software and algorithm and completely depends on the secondary data base which is indexed in Web of Science. This analysis is data-driven and findings depend on the indexed publications, while searching there exist certain terms which are multidisciplinary or allied to area which results in studies that might not be much relevant and difficult to exclude completely. The data search for other related keywords such as digital tourism; online travel agency; online tourism portal and so on has not been incorporated to avoid inclusion of some irrelevant literature. Future study may seek to incorporate these searches separately to develop a more intense spectrum for evaluating technology transformation in tourism industry.

The area of e-tourism offers lots of interesting avenues for further research in this field. As this area is relatively new and most of the aspects have not been studied much, and it can be expanded well in those prospective. The evolution of industry 4.0 technologies in tourism industry may be further studied. The scope and applications of e-tourism at rural level may also be discussed in future. The challenges in electronic media and Internet technology adoption in tourism industry as per the different geographical, economic and social aspects may also be an interesting area to be discussed. The impact of social commerce on e-tourism attractiveness can also be investigated. Impulsive purchasing in e-tourism can be studied further to determine the factors influencing the phenomenon. Considering the limited work done on the online service quality in tourism and hospitality industry, it can expand further.

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Corresponding author
Shalini Singh can be contacted at: singh.shalini2@gmail.com