

Exploring the Intersection of Tourism & Information Technology: A Bibliometric Evaluation Using Vosviewer and Rstudio, 1986-2024

Raji P B¹, Prasanth A P²

¹Research Scholar, Department of Commerce & Management, Amrita Vishwa Vidyapeetham, Kochi, India.
Email: rajipb@kh.students.amrita.edu, ORCID ID: 0009-0004-3492-4014

²Assistant Professor, Department of Commerce & Management, Amrita Vishwa Vidyapeetham, Kochi, India.
Email: prasanthap@kh.amrita.edu, ORCID ID: 0009-0006-0288-6150

Abstract—The dynamic interplay between tourism and information technology has undergone profound changes in recent years. IT integration into tourism has transmuted how businesses operate and shaped the expectations of present-time travelers. A bibliometric analysis is undertaken in order to unraveling the prolific output of publications, top contributing nations, the peakiest affiliations and its production overtime, the most cites studies in Scopus, the highest ranking in co-authorship with countries and the most productive authors. Also using Vos viewer to make network analysis of the data.

Keywords—*tourism, information technology, bibliometric analysis, Scopus database, Vos viewer*

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I. INTRODUCTION

The tourism industry is one of the world's fastest growing industries. Its reputation is further bolstered by its capacity to create employment opportunities, playing a crucial role in alleviating poverty and reducing unemployment rates [1]. According to the annual research report of WTTC, in 2022, the travel and tourism sector contributed 7.6% to global GDP. The technology has played a pivotal role in fostering significant economic growth within the tourism industry by contributing to the overall societal progress, providing individuals with increased financial means and leisure time there by fuelling a surge in travel activities [2]. The integration of information technology, IoT, smart phones and mobile applications is steering the ongoing digital transformation within the tourism industry. A particularly promising domain for technological advancements is the interpretation of destinations, especially heritage and pilgrim sites.[3]. Tourism industry growth intricately tied to more than just economic development, it hinges on the sectors capacity to provide novel product and experiences.[4]. The global trend of utilizing internet technology to create websites or portals for local and regional tourism destinations is increasingly gaining popularity as a means of promotion.[5].

Given the active growth of tourism industry and the exponential surge in information technology we find it pertinent to persist in examining the publication activity of scientists in this field utilizing the bibliometric method. The research aimed to solve the following tasks:

1. To identify the contemporary pattern in the scientific research on tourism and information technology
2. To make an analysis on scientific production, authorship, key terms, nations and type of documents from the data retrieved
3. To conduct citation analysis and the cooccurrence of the key terms
4. To explore the co-authorship, most influential authors by way of network visualisation

5. To identify the improvements in the tourism through the collaboration of information technology by way of thematic analysis

II. REVIEW OF LITERATURE

Information technology (IT) plays a crucial role in the tourism industry, particularly in the transportation, accommodation and attraction sectors, catering to the dynamic and evolving demands of travellers (Mahajan, 2015; Kiran, 2018). The use of web technologies and global distribution systems has significantly enhanced the efficiency and accessibility of travel industry organizations (Drosos, 2017). However, the rapid advancements in IT also bring about new challenges for the sector and tourism operators (Pease, 2005). For nearly a quarter of a century, technology has been integral to the tourism industry, connecting suppliers, customers and intermediaries globally. The indispensability of internet and information technologies in operational, structural and marketing and strategic aspects facilitates e-tourism, empowering companies to efficiently provide a range of services [6]. The role of information technology in tourism is mostly reflected during the pandemic situation, especially, in health, information technology plays a vital role in improving travel confidence and mitigating travel fear.[7]. Implementation of the Tourism Monitoring index system (TIMS) led to a notable increase in tourist satisfaction from 64% to 85% and staff satisfaction from 42% to 67%. The robust data capabilities of the Big Data platform played a crucial role in constructing TMIS, ensuring efficient collection, processing, and visualization of massive information data, ultimately enhancing overall service quality.[11].

III. METHODOLOGY

The primary aim of the study is to examine the literature concerning tourism and information technology. This study utilized a systematic quantitative methodology to chart and assess previous research on tourism focusing on information technology. Yang, E. C. L., Khoo-Lattimore, C., & Arcodia, C. (2017). A systematic literature review of risk and gender

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research in tourism. *Tourism Management*, 58, 89–100.
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Data collection: -

The initial phase involved choosing an appropriate database for the collection of scientific data. We choose Scopus database for collecting data based on its comprehensive coverage, academic acclaim and compatibility with the visualization of bibliometric analysis in the mapping process [8]. During the subsequent stage we established pertinent key terms for the study using “tourism” and “information technology” [8]. 1589 studies from 12 types of documents were extracted for a period of 1986-2024.

Bibliometric analysis: -

Bibliometric analysis implies the inspection and association of a body of published works, typically presented as a compilation of published information within a specific research field. [9]. Bibliometric approach helps researchers identify scientific collaborations, emerging concepts and trends facilitating exploration of future collaborations and relevant sources. [9].

IV. DISCUSSION AND FINDINGS

To get an insight in to the research questions by examining the recent trends, across the interconnection of tourism with information technology and to find out the future trends in this research, the following works have been analyzed, and the results are presented.

A. Type of Retrieved documents

TABLE I. LIST OF DOCUMENT TYPE

Document Type	Total Publications	Percentage %
Article	708	44.56%
Conference papers	603	37.95%
Book chapter	124	7.80%
Conference review	72	4.53%
Review	34	2.14%
Book	23	1.45%
Erratum	6	0.38%
letter	5	0.31%
Note	5	0.31%
Retracted	4	0.25%
Editorial	3	0.19%
short survey	2	0.13%

Documents have been classified according their respective types for efficient organization. The constantly used document is the journal article (708) accounting for 44.56%. Followed by the article, conference paper (603, 37.95%), Book chapter (124,7.80%) and conference review (72,4.53%). The left over 5.16%, includes Review, Book, Erratum, Letter, Note, Retracted, Editorial and Short survey.

B. Production Output and the trajectory of growth trend

TABLE II. LIST OF TOP CONTRIBUTING COUNTRIES AND AUTHORS

The most contributing countries		The most contributing authors	
Country	Frequency	Authors	Articles
China	976	Fesenmaier Dr	19
Indonesia	293	Gretzel U	14
USA	218	Law R	14
India	159	Xiang Z	14
Uk	159	Buhalis D	13
Spain	142	Li J	9
Malaysia	141	Liu Y	9
Portugal	103	Werthner H	9
Italy	96	Zhang Y	9
Australia	81	Ren P	8

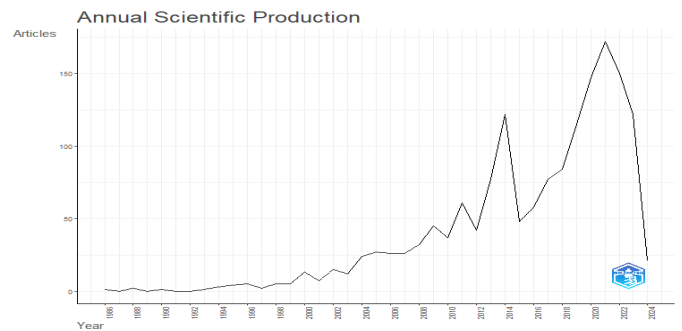


Fig.I (Annual Scientific Production)

Since 1986, there has been an unparalleled expansion observed in the study area. Figure 1, depicted the annual scientific production, and 122 publications in 2023 shows that there is a tremendous growth in the study area. The majority of the literature originated from China and Indonesia with trending topics information technology, tourism, tourism management and information management. The noteworthy contributors are Fesenmaier Dr, Getzel U, Law R and Xiang Z. The most frequently used key words information technology, tourism, the tourism industry, tourism management, and information management.

C. Most pertinent affiliations and its production overtime

TABLE III. LIST OF MOST RELEVANT AFFILIATIONS AND ITS PRODUCTION OVERTIME

List of most relevant affiliations		List of affiliations production overtime		
Affiliation	Articles	Affiliation	Year	Articles
Kyung Hee University	30	Kyung Hee University	2022	30
The Hong Kong	27	Kyung Hee University	2023	30

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Polytechnic University				
University of Surrey	17	Kyung Hee University	2024	30
Sichuan University	12	Kyung Hee University	2021	29
Wuhan Donghu University	12	The Hong Kong Polytechnic University	2024	27
Wuhan University	12	The Hong Kong Polytechnic University	2022	26
University of Central Florida	11	The Hong Kong Polytechnic University	2023	26
University of Granada	11	Kyung Hee University	2020	25
Macau University of Science And Technology	10	The Hong Kong Polytechnic University	2021	19
Matej Bel University	10	University of Surrey	2024	17

Fig. 2 (key word co-occurrence analysis)

E. Analysis of Authorship and co-authorship

Figure 3 represents the authorship and co-authorship analysis. Study authors “fesenmaier, Daniel r” “gretzel, Ulrike” “sigala, Marianna” “xiang, zheng” “koo, charlmo” “wang, dan” “werthner, hanna” were clustered together. Fig. 4 , the co- authorship study shows that the prominent researchers are from China and Indonesia.

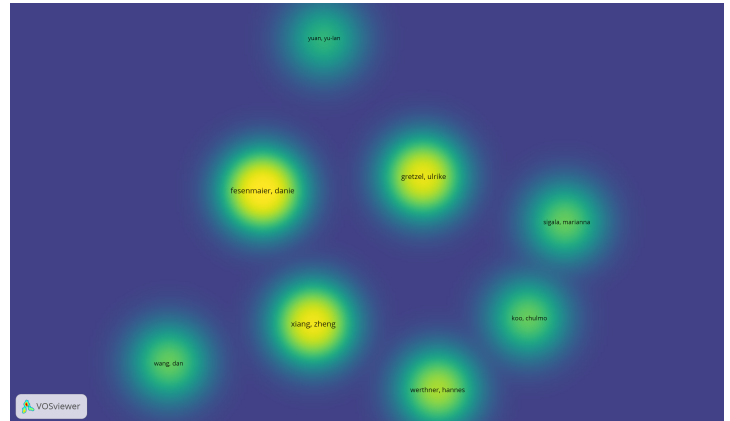


Fig. 3 (density visualisation)

While looking into the relevant affiliations, Kyung Hee University, followed by, The Hong Kong Polytechnic University and University of Surrey, contributed to the most to the production of output.

D. Analysis of co-occurrence of keywords

While studying 654 scholarly works established with a minimal key word requirement of four. In figure 2, the large circle denotes the frequently selected key word. The key word “information technology” showed a deep correlation with “tourism” and “tourism management”, and it exhibits a connection with tourism industry, E-tourism, internet, e-commerce, information management, sustainable development and big data.

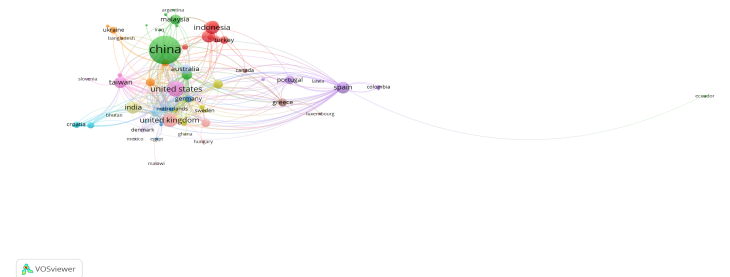
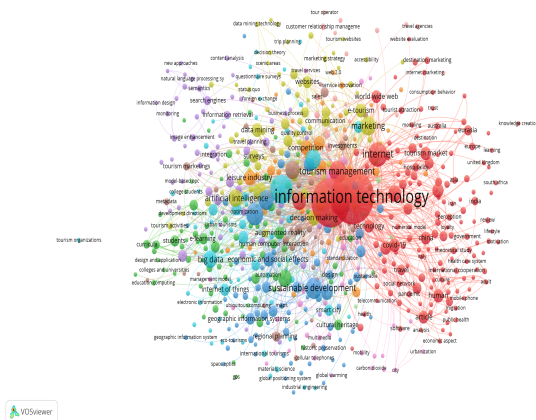


Fig.4 (co-author – country network visualisation)

F. Analysis of Citations

Make an analysis of 1589 papers with minimum criteria of one citation results in 1029 items selected. From this again 1000 documents with larger number of links being selected. From this largest set of 290 connected items analysed. The following fig. 4 exhibits the coloured circles which reflect different papers with their size according to the number of citations they have. Here Buhalis D (2008) with 2117 citations, Dwivedi y k with 481, Law r with 456 and Tussyadiah IP(2009) with 443.



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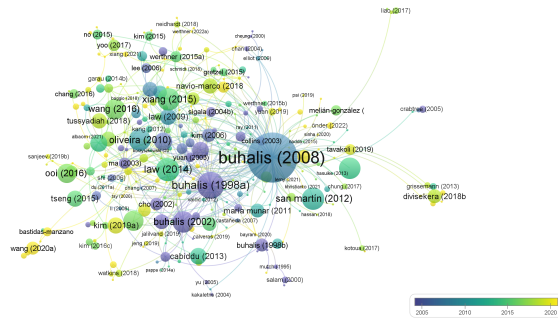


Fig.5 (citation visualisation)

G. Thematic evaluation and subsequent advancement in the combination of Tourism and Information technology
 Thematic evaluation is an approach to know the recent hikes occurred in the research area and also to know the emergence of novel terms in these areas during the historical period. It helps in examining the relations, path, and motif of thematic materials and its compositions. In figure 5, it is noted that information technology, information management and tourism industry are the trending themes, although the modern information technologies, sustainable development, tourist destination, rural tourism were the enduring terms. Thematic development illuminates the advancement of the main subject matter, starting with setting the substratum and presenting the concepts and cumulating in the exploration of information technology and tourism development as the study focus. The tourism industry being the largest job provider globally and a significant international sector, encompasses a diverse range of stakeholders, rivalling many other industries in heterogeneity. The industries dynamic progress and advancement find parallels in the rapid expansion of information and communication technologies (ICTs).[10]

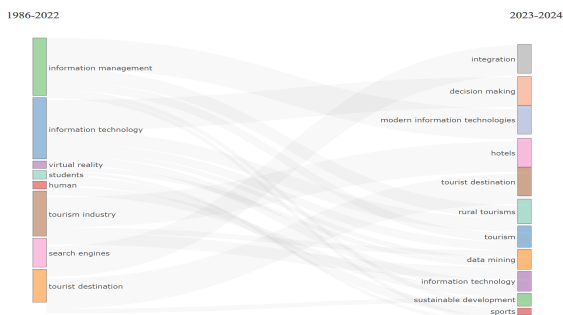


Fig. 6 (Thematic evaluation)

V. CONCLUSION

In this paper we conduct both thematic evaluation and scientific approach using bibliometric analysis and Vos viewer. Through the comprehensive review of 1589 documents from Scopus database during 1986-2024, our findings show that, the highest output on this combining theme of tourism and information technology is produced by China and Indonesia. The most productive works on the topic is done by Fesenmaier Dr and

Gretzel U. Utilizing a bibliometric approach facilitates a more comprehensive comprehension of the collaborative dynamics among authors, research concepts, and trends within the scientific community. This method empowers tourism researchers to pinpoint future collaboration and pertinent sources, aiding in the identification of relevant references. The findings of the study offer a comprehensive perspective on cross-disciplinary investigations centered around tourism, hospitality, information technology, tourism management, sustainability, data mining, rural tourism and contemporary information technologies.

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