

Research Trends in E-tourism: A Bibliometric Analysis Using VOS Viewer.

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Abstract:

Purpose:

This study was conducted to determine (1) the growth of the number of scientific publications in the field of E-tourism, (2) the number of publications per field/subject, and (3) the map of publication development based on keywords and publication year.

Methodology

This study used a quantitative descriptive method with bibliometric analysis. Data was collected by searching through the Google Scholar database with the keyword "E-tourism" with the category "keywords for 2012–2022 using Publish or Perish 8 software. In addition, VOSviewer software is used to analyze the publication of development maps.

Findings

The study results show that the growth of scientific publications in land e-tourism shows fluctuations and an increasing trend. The highest increase will occur in 2022, with 41 documents (13.67%). Most subjects and subjects are in the fields of services, development, technology, and systems. While the keywords that appear the least are effort and challenge. The interrelationships between topics are grouped into eight clusters, seen through network visualization.

Implication

This research is expected to assist researchers in determining themes to be researched and can also be a reference for tourism research.

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INTRODUCTION

Tourism is one of the economic drivers of today's society. Tourism is known as the largest industry in the world that contributes to the country's economic growth and employment (Farkhondezhadeh et al., 2013). Tourism is a service activity that focuses on the movement of individuals from one geographical location to another. for a specific destination as needed (Hamid et al., 2021). Due to the increasing function of web-based technology in people's social life activities, the internet is the leading choice of users to get information about desired products and services (Pantano & Pietro, 2013). E-tourism benefits the tourism industry through advances in technological infrastructure worldwide and can change tourist behavior (Singh & Bashar, 2021). The concept of e-tourism refers to efforts to digitize travel models for tourists so that they can be accessed through various electronic devices based on information communication technology to provide information choices for tourism service products so that without interference, tourists can choose according to their account (Alamoodi et al., 2022).

With rapid technological development, tourism is required to adopt electronic-based practices. Changes in tourist behavior need the support of information and communication technology that can pay attention to electronic tourism (Büyüközkan & Ergün, 2011). Internet-based tourism significantly impacts tourist behavior as a travel platform and guide to making travel plans for your favorite age (Authors, 2016). The rapid development of electronics has resulted in successful e-tourism services by developing e-tourism information to guide tourists in determining visit choices (Masri et al., 2020).

Users (tourists) will quickly get access to information through electronic tourism about tourist objects to be visited before visiting. Tourism Excellence provides e-tourism web-based services; e-tourism websites offer opportunities for tourists to make choices quickly (Ku & Chen, 2015). The role of information guides on the importance of electronic applications in tourism as one of the most influential technologies that can influence tourist behavior (Woodside, 2018). Tourists will seek information via the internet because it provides opportunities for access to various connected online information sources (Tatiana, 2018).

The need for data search for research purposes is currently overgrowing. Google Scholar is a bibliographic search engine for academic research to compare traditional commercial databases and free web search engines (Simon et al., 2017). Therefore, in Google Scholar, research notes include publications and citations in any academic outlets that can be a source of reference for the author (Harzing, 2014). Academic articles cited through GS offer insights on topics of interest to researchers that can be useful for developing future research that builds on their findings (Serenko & Dumay, 2015). Google Scholar is increasingly in demand as a bibliometric tool because as a database information medium that researchers need based on individual articles, researchers, or scientific-scientific journals (York, 2016).

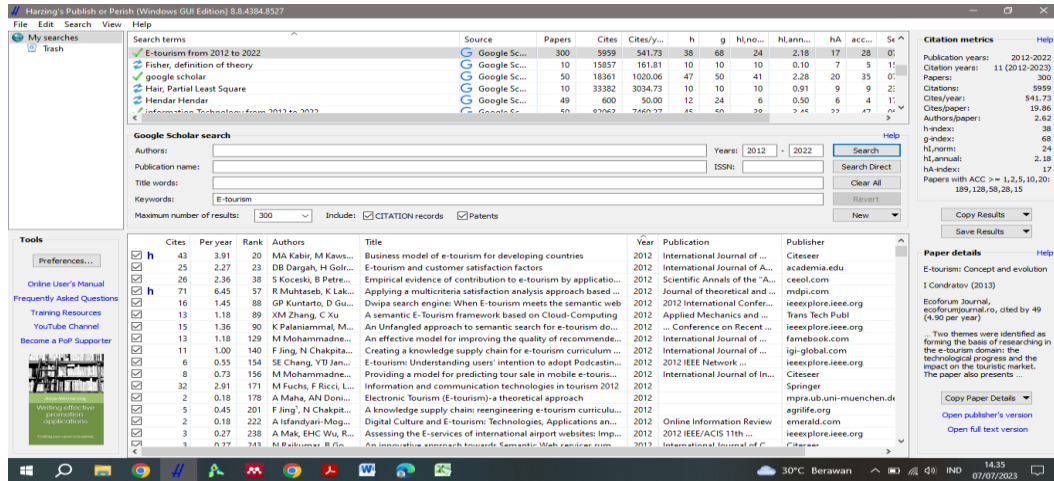
The increasingly stringent publication demands require applications that can be used to obtain bibliographic metadata of scientific works. Publish or perish, or PoP is a software that can be used to retrieve scientific work metadata for all fields of science for free by referring to database indexes such as CrossRef, Google Scholar, Google Scholar Profiles, Microsoft Academic*, PubMed, Scopus* and WoS (Kun, 2018). For this study, the researcher retrieved Google Scholar-indexed article data using Pop because Pop provides advanced filtering features for the type of metadata category in question, namely the publication name of the journal type. Pop also provides features for keywords and title words that allow researchers to find accurate journal metadata.

Another significant factor for researchers is how to build and visualize bibliometric networks. Teknik pengelompokan memainkan peran penting dalam mengidentifikasi kelompok publikasi, penulis, atau jurnal terkait dalam penelitian bibliometrik (Kuzior & Sira, 2022). VOSviewer helps in keyword analysis with a text approach to analyze the content of titles, keywords, and abstracts. The VOSviewer analysis will bring up clusters between related items shown with the same cluster color (Shah et al., 2020). VOSviewer provides a bibliometric image in the form of sample pieces of literature data and draws a knowledge map so that researchers can arrange research theme relatedness based on clusters (Huang et al., 2022). In this study, Vos Viewer is used to help answer the problems in this research, namely: (1) what is the pattern of growth in the number of scientific publications in the field of E-tourism; (2) the number of publications per field/subject, and (3) map of publication development based on keywords and year of publication.

RESEARCH METHODS

The method used in this study is descriptive bibliometric analysis through publication data on the topic of E-Tourism in the range of 2012 – 2022 with a limit on the number of documents of 300 documents with a focus on three fields of study, namely: E-tourism development, E-tourism service, and E-tourism website. It is done to pursue the search for themes about E-tourism. Data is collected by searching publications indexed by Google Scholar using the Publish or Perish application and Vosviewer with keyword searches: E-tourism and Years: 2012-2022.

Figure 1. Public or Perish Search Model



Source: *Publis or Perish* (2023)

Bibliometric analysis is a quantitative study of bibliographic materials that explains the research theme based on categories of papers, authors, and journals (Merigó & Yang, 2017). The mapping obtained by Vosviewer can later be used as a reference in conducting accurate content analysis based on the name of the researcher, year of publication, researcher productivity, and information architecture research trends. Bibliometric analysis displays co-authorship, bibliographic coupling, and co-citation information in a bibliometric map (Blanco-Mesa et al., 2017).

RESULTS AND DISCUSSION

Analysis of e-tourism research publication trends. Search results through Publish or Perish related to the Google Scholar-indexed E-tourism research theme obtained 300 documents with detailed explanations of citation metrics explained in Table 1

Table 1. Citation Metrics

No	Description	Information
1	Publication Year	2012-2022
2	Citation Year	11 (2012-2022)
3	Papers	300
4	Citation	5959
5	Cites/year	541.73
6	Cites/paper	19.86
7	Author/paper	2.62
8	h-index	68
9	g-index	68
10	hI, annual	2.18
11	hA-index	17
12	Papers with ACC > = 1,2,5,10,20	189, 128, 58, 28, 15

Source: *Publis or Perish* (2023)

Of the 300 published documents, filtering was then carried out by selecting the top 10 rankings that carried out the most research on the E-Tourism theme on the Google Scholar database. Springer ranks highest with 62 published article documents, while the lowest is Emerald and journal.sagepub.com, with four published article documents each.

Table 2. Top Ten Scientific Journal Publishers E-tourism

No	Publisher	Amount
1	Springer	62
2	ieeexplore.ieee.org	32
3	Academia.edu	11
4	researchgate.net	9
5	Taylor & Francis	8
6	Igi-globar. con	7
7	Mdpi	5
8	Elsevier	5
9	Emerald.com	4
10	Journals.sagepub.com	4
	Total	147

Source: Publis or Perish (2023)

The development of the growth of publications on E-tourism for 2012 – 2022 in the Google Scholar database by searching the Publish or Perish software shows fluctuating developments. Of the 300 article documents, 278 had publication information, while the other 22 did not show publication information on the Publish or Perish software. The highest trend of publication development regarding E-tourism occurs in 2022, namely reaching 41 publication documents (13.61%). At the same time, the lowest number of publications occurred in 2012 and 2015, with a total of 20 (6.67%) published documents.

Table 3. Development of Google Scholar Indexed E-Tourism

Year of Publication	Number of Documents	Percentage
2012	20	6,67
2013	24	8,00
2014	20	6,67
2015	29	9,67
2016	25	8,33
2017	21	7,00
2018	25	8,33
2019	22	7,33
2020	39	13,00
2021	34	11,33
2022	41	13,67
Total Publications	300	100,00

Source: Personal data processing results (2023)

Data Table 1. Explains that the development of the number of research documents in the field of E-tourism published on Google Scholar has fluctuated, increased, and decreased yearly. This description shows that the development of the E-tourism research theme has increased interest for researchers. This condition can become an interesting topic for researchers worldwide in the next few years. In detail, the growth of publications regarding E-Tourism using the Google Scholar-indexed database can be explained in Figure 2.

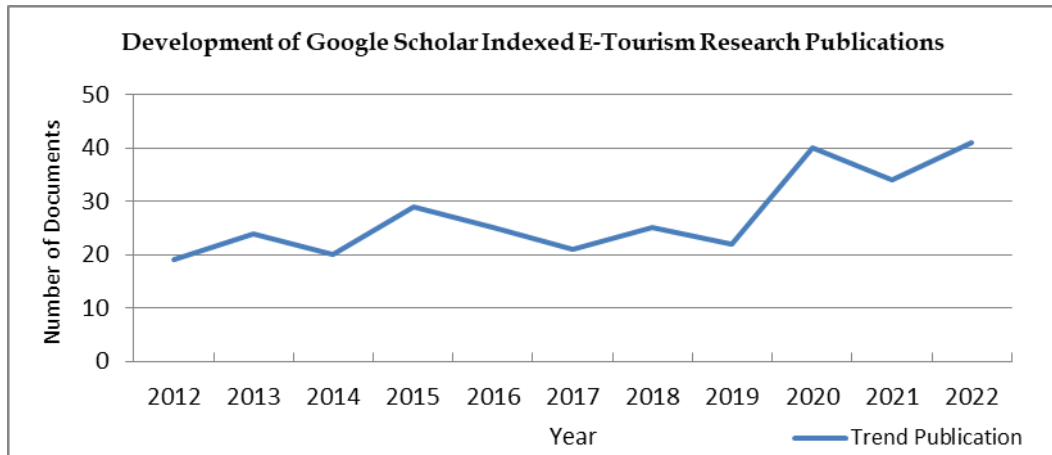


Figure 2. Graph of development of Google scholar indexed e-tourism research publications.

Source: Personal Data Processing Results (2023)

Bibliometric Analysis Stage. This study will analyze based on the seven aspects of problem formulation. With the bibliometric analysis, it is expected to be able to answer questions in the formulation of the problem that was stated earlier. The author uses the VosViewer application to help with bibliometric analysis by visualizing the analysis results. VosViewer is a computer program used to visualize bibliometric maps. The text-mining function can imagine a network or co-relation in an article excerpt. This bibliometric analysis greatly benefits from computerized data processing, and in recent years, there has been a significant increase in the number of publications. In addition, bibliometric research does not only rely on computerization in its processing but must enter specific volumes of data sequentially to be statistically reliable (T. Huang et al., 2020). VosViewer can present and visualize detailed information about bibliometric chart maps, making interpreting a relationship or network easier (Xie et al., 2020).

The first stage in the bibliometric analysis is the results of document RIS filters through Publish or Perish, which have been given limited criteria and exported to the VosViewer application. The stages of research with the Vosviewer application are by selecting options sequentially, namely: creates, creates a map based on text data, reading data from the reference manager file, choosing a type of analysis and counting method, choosing field (title and abstract field), preferred counting method (complete counting), choose threshold (minimum number of occurrences 4, choose the number of the theme (76), verify selected terms and finish.

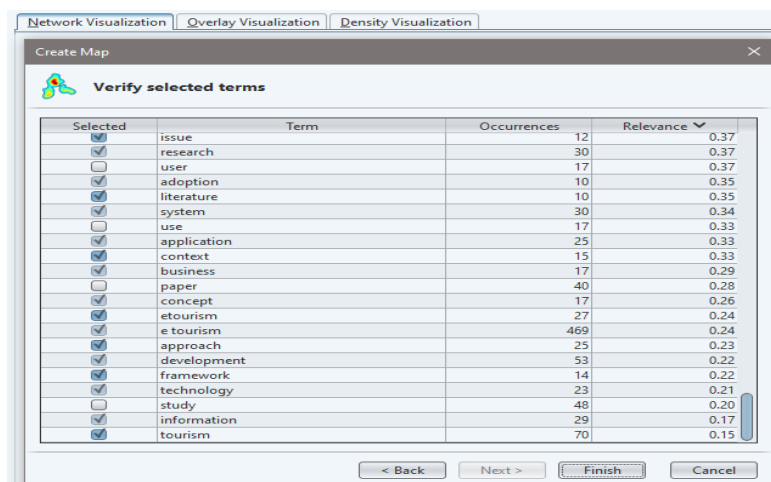


Figure 3. The Number of Themes That Appear Together

Source: VosViewer (2023)

Figure 3 explains the process of filtering words irrelevant to the research theme and how many related terms appear in the same abstract and title. E-tourism research appears 469 times in the same title document and abstract. Furthermore, the visualization analysis stage consists of three models: *network visualization*, *overlay visualization*, and *density visualization*.

Network visualization

Figure 4. Network Visualization E-Tourism

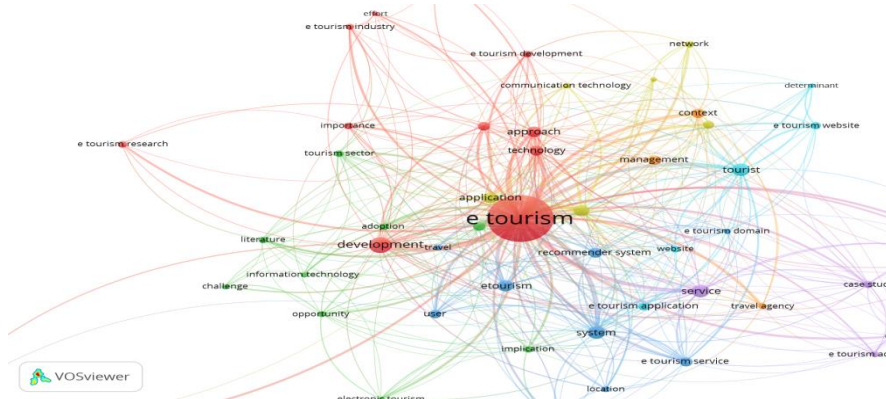


Figure 4. Network Visualization E-Tourism

Source: Vosviewer, (2023)

The results of network visualization show that out of 300 research titles in the Google Scholar E-tourism database through Visviewer bibliometric analysis, there are 50 items with 8 clusters with a total of 438 links and a total link strength of 1936. Cluster 1 consists of 11 items, and Cluster 2 consists of 9 items. Cluster 3 has nine things; Cluster 4 has six items; Cluster 5 has five items; Cluster 6 has five items; Cluster 7 has three items, and Cluster 8 has 1 item. Cluster 1 relates to the themes: approach, development, e-tourism, e.tourism development, e-tourism industry, e-tourism research, business, interests, knowledge, technology, and the tourism industry. Cluster 2 deals with themes: adoption, challenges, concepts, e-tourism, implications, information technology, literature, opportunities, and the tourism sector. Cluster 3 related to the theme: e-tourism domain, e-tourism services, e-tourism, implementation, location, recommendation system, system, travel, and users. Cluster 4 links to articles: applications, communication technology, e-tourism platforms, information, internet, and networks. Cluster 5 is associated with the theme: case studies, countries, e-tourism adoption, government, and services. Cluster 6 relates to determinants, e-tourism applications, e-tourism websites, tourists, and websites. Cluster 7 deals with love, management, and travel agencies. While Cluster 8 is only associated with one research theme, augmented reality.

Overlay visualization

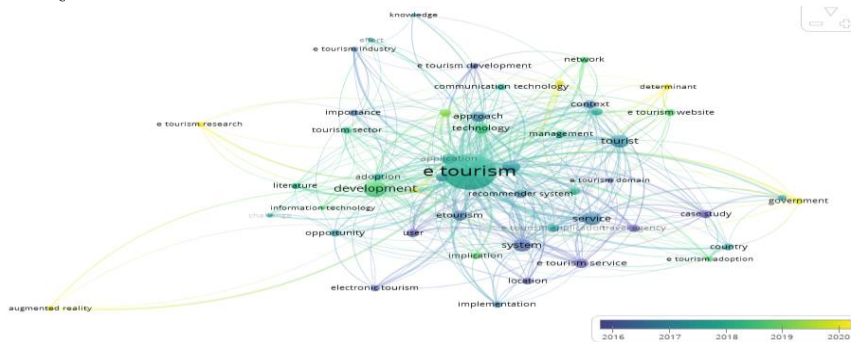


Figure 5. Overlay Visualization E-Tourism

Source: Vosviewer, (2023)

The keywords most frequently reflected by the circle size are service, development, technology, and system. While the keywords that occur the least are effort and challenge. In contrast, the most distant level is

augmented reality. It shows that specific keywords still need to be mentioned. Therefore, it can be a space for further research. To find the most common study subjects in global research, a cluster analysis using the author keyword is depicted in Figure 5. Trending topics are illustrated using an overlay network visualization. In the overlay visualization network, topics or keywords that contribute to research are presented by year of publication. “E-Tourism” was widely studied in 2019 (see Figure 5).

Cluster density is the same labeled elements as display items. Each dot has a color that depends on the density of that item. That is, the color of a point on the graph depends on the number of things associated with other objects. This section is handy for understanding the basic layout of a bibliometric map by identifying which elements are relevant for research. Throughout this worksheet, we can identify terms that are most commonly used in publications. The depiction of the co-word research growth density map with the theme of E-tourism is shown in Figure 6.

Density visualization.

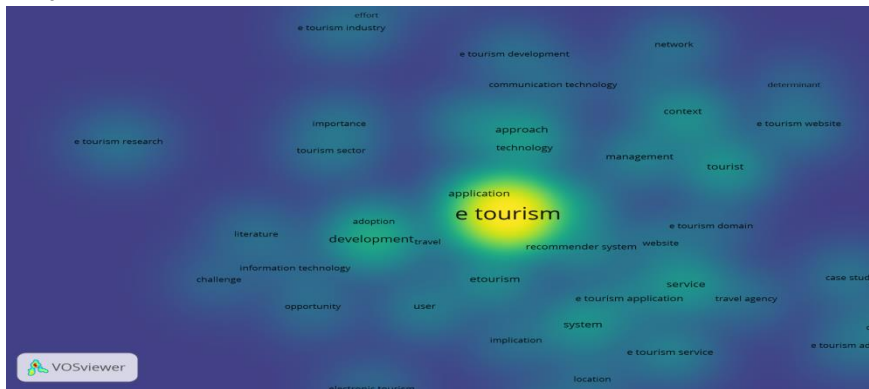


Figure 6. Density Visualization E-Tourism

Source: Vosviewer, (2023)

Figure 6 shows that the E-tourism keyword has a relatively large density and is covered by many additional keywords surrounding it in areas close to but far from it. Several dense keywords have triggered several research interactions interacting with the subject, indicating that the issue still needs to be thoroughly researched. Various understandings that are part of the growth of multidisciplinary science can become new gaps in research (Eck & Waltman, 2013).

Research Theme Analysis

E-tourism Service

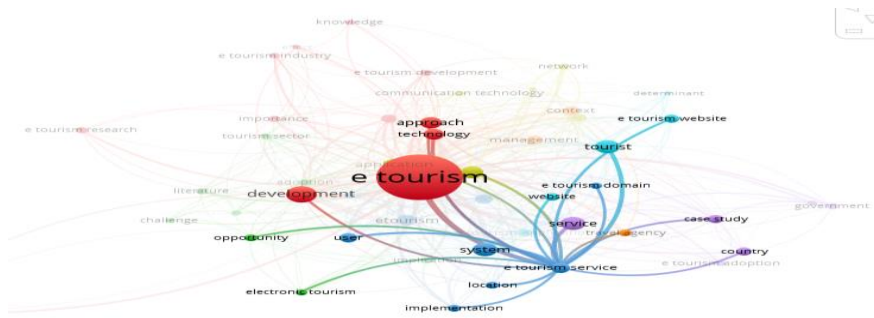


Figure 7. Network Visualisation E-tourism Services

Source: Vosviewer, (2023)

Figure 7. Explains the results of the visualization of the E-tourism research network in the field of E-tourism services. The results show that the network pattern of the E-tourism services research theme is related to 17 other research themes such as electronic tourism, development, e-tourism domain, approach, technology, e-tourism website, implementation, country, and others. At the same time, other themes have no relationship with e-tourism services, such as communication technology, management, the e-tourism industry, knowledge, e-

CONCLUSION

Based on the findings, the development of E-tourism research, especially in journals indexed on Google Scholar by reviewing literature through the bibliometric method from 2012 to 2022, tends to fluctuate but has increased. Most publications in 2022 reached 41 issues (13.67%). In 2012 and 2014, it had the lowest number of publications, namely 21 (6.67%). Several keywords are the least researched, related to the theme: effort, challenge, and augmented reality. It shows that specific keywords still need to be mentioned. Therefore, it can be a space for further research. This research is expected to assist researchers in determining the themes to be studied and can also be a reference for tourism research. The search results used are only limited to keywords and the year of publication, so the tendency still needs to represent accurate results about the relationship pattern of the research theme with other themes. Expanding search results such as the word title, author, and publication name is recommended for future research.

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- York, N. (2016). *A new methodology for comparing Google Scholar and Scopus Henk F. Moed *, Judit Bar-Ilan ** and Gali Halevi *** * Senior Scientific Advisor, Amsterdam, The Netherlands. Email: hf.moed@gmail.com ** Department of Information Science, Bar-Ilan Universi. 1–36.*