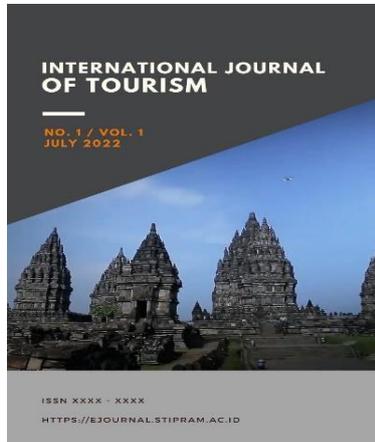# A Bibliometric Analysis of Ecotourism Development for Sustainable Tourism

Eko Haryanto[1*], Kiki Rizki Makiya[2], Fitria Noviati[3]
Sekolah Tinggi Pariwisata Ambarrukmo Yogyakarta, Indonesia
thomexs@stipram.ac.id, kikirizkimakiya@stipram.ac.id, fitrianoviati@stipram.ac.id

Abstract: Sustainable tourism development is a widely applied concept in various regions, both in Indonesia and abroad. Ecotourism, in particular, is a form of tourism activity that ensures the implementation of sustainable tourism. The theme of ecotourism has been extensively researched in various countries. Ecotourism has become a significant research theme over the last two decades, yielding critical results on environmental and natural conditions.

Purpose: This study aims to examine research in the field of ecotourism and sustainable tourism from 2018 to 2023.

Research methods: Using Publish or Perish (PoP) software to gather data from the Google Scholar database, specifically focusing on journal articles with the keywords "ecotourism" AND "sustainable tourism." A total of 500 journal articles were collected and the data in the Research Information System (RIS) format. I then entered this data into the Mendeley References application and processed the tabulated data using Microsoft Excel. The data was further analyzed using VosViewer software to map research topics and interpret their relationships and relevance values.

Results and discussions: The results of the analysis show that research with the theme of ecotourism has indeed been widely carried out and has a close relationship with similar research themes as following existing research clusters.

Conclusion: Specific themes such as marine ecotourism, ecotourism management, local communities, ecotourism projects, sustainable development, relationships, and sustainable tourism are likely to be important research areas in the future. It's worth noting that the journal articles obtained from the Google Scholar database may include articles from both accredited and non-accredited journals. For future research, it would be beneficial to use more credible databases such as Web of Science or Scopus to ensure that the articles collected are widely reviewed and credible, as they are published in reputable journals.

Keywords: *Sustainable Tourism, Ecotourism, bibliometric analysis*

INTRODUCTION

Sustainable tourism development is a widely applied concept in various regions, both in Indonesia and abroad. Ecotourism, in particular, is a form of tourism activity that ensures the implementation of sustainable tourism. It is considered a tool for protecting the environment economically, socially, culturally, and environmentally in the process of developing tourism in a region. Most ecotourism development occurs in fragile ecosystems, serving as a means to preserve nature, culture, and indigenous people (Hasana et al., 2022). Additionally, developing tourism with the ecotourism concept provides educational learning and experiences for tourists, contributing to the goal of protecting the interconnected ecosystem between humans, animals, and nature. Furthermore, ecotourism empowers local

communities to be directly involved in the management and development of facilities and services. Therefore, the infrastructure necessary for ecotourism development needs to be seriously considered. Regional governments and various local stakeholders must unite and share a common vision in their efforts to develop appropriate ecotourism (Heshmati et al., 2022).

The theme of ecotourism has been extensively researched in various countries. Most of the research on ecotourism is published in the United States, United Kingdom, Australia, South Africa, Canada, and China. Nonetheless, it is increasingly important to carry out research on ecotourism in African and Asian countries (Hasana et al., 2022). Ecotourism has become a significant research theme over the last two decades, yielding critical results on environmental and natural conditions (Fennell, 2020). The development of ecotourism can provide effective solutions for implementing various conservation activities essential for environmental sustainability in the future (Das & Chatterjee, 2023). To attract tourists, tourist destinations must provide unique environmental and local cultural values (Asadpourian, 2020). Furthermore, ecotourism activities can contribute to the economic resilience of a region (Tawfik & Sarhan, 2021).

LITERATUR REVIEW

Ecotourism is responsible travel to this natural area protecting the environment, supporting the well-being of local communities, and including interpretation and education (Stronza et al., 2019). Ecotourism is a strategy that supports the conservation and provision of Income for communities in and around the reserve. The declaration states that ecotourism:
- actively promote the conservation of natural and cultural heritage,
- involving local and Indigenous communities in planning, development, and operations and improving their welfare,
- interpreting the destination's natural and cultural heritage for visitors, e.g.
- Ideal for independent and organized travelers, and small group tours (Das & Chatterjee, 2015).

Sustainable tourism is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Stronza et al., 2019). Furthermore, sustainable tourism is how tourism has improved living standards and introduced positive cultural changes at the local level. Such changes can also occur at a global level as an effort to promote sustainable tourism is increasingly being framed within climate management change Stakeholders hold difficult dialogues and tourism promotion authorities who recognize the need for sustainable tourism products are also working to create tourism more sustainable. Travelers who care about sustainability do too aiming to create a 'better world', as they journey with social responsibility in mind. Generally, the host community and tourists work together to create a more sustainable environment world although the process is uneven and often difficult (Budeanu et al., 2016).

RESEARCH METHODS

This research uses the Bibliometric analysis method. In general, bibliometric analysis can be used to analyze scientific literature quantitatively with the help of bibliometric indicators (Choudhri et al., 2015). There are four stages in this research, including the stage of determining data search keywords, the data search stage, data preparation/tabulation, and the last is data analysis.
   1. Determining keywords
In 2023, we conducted research using "Ecotourism" and "Sustainable Tourism" as keywords for data searches. We used the Publish or Perish (PoP) software with a database from Google Scholar (GS). We chose Publish or Perish for its quick, precise, and accurate data collection capabilities, which have been widely used in bibliometric research worldwide. Google Scholar was selected as the data source due to its extensive database of research results and easy accessibility.

2. Data Search

Data searches using the Publish or Perish software were carried out with several restrictions, including only 500 types of publications in scientific journal articles published in the last 6 years (2018 – 2023). Next, the data search results from Publish or Perish are saved in Research Information System (RIS) format.

3. Data compilation/tabulation

The data collected was checked for completeness of the article components, including the year of publication, volume, number, edition, and number of pages, using the Mendeley Reference application.

4. Data analysis

The data analysis process in this research utilizes Vos Viewer software to visualize the bibliometric network. Vos Viewer is chosen for its quick and efficient data analysis capabilities, providing compelling visualizations. The software can generate publications, authors, and journal maps based on keyword similarities. The data analysis process can be outlined as follows:
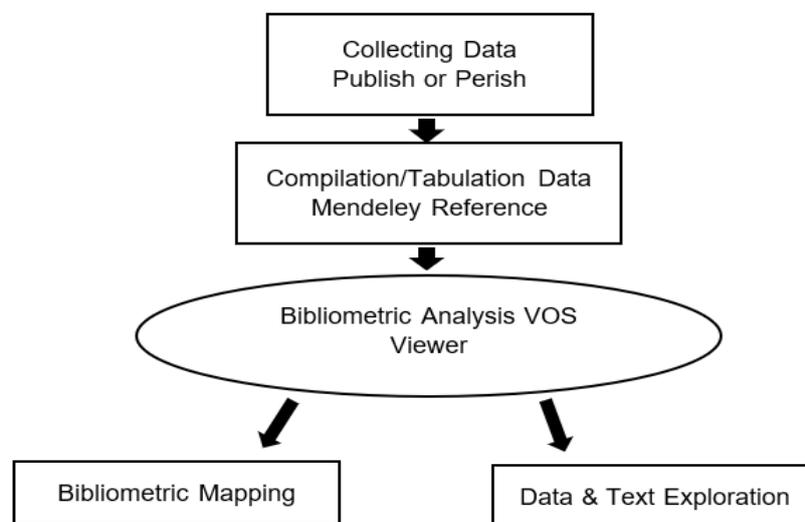

Figure 1. Design of the Study

RESULT AND DISCUSSIONS

The search results using the Publish or Perish software from the Google Scholar database for the period of the last 6 years (2018-2023) yielded 500 articles on the topic of Ecotourism. Upon further scrutiny, 3 articles were deemed unsuitable and subsequently excluded from the tabulated data. A comparison between the initial raw data and the refined data can be found in Table 1.

Table 1. Raw Data Matrix and Refinement Data

Keywords	journal, "ecotourism" and "sustainable tourism" from 2018	
Source	Google Scholar Raw Data	Google Scholar Repair Data
Papers	500	497
Citations	6684	6684
Years	6	6
Cites_Year	1336.80	1336.80
Cites_Paper	13.37	13.37
Cites_Author	3142.80	3142.80
Papers_Author	234.64	234.64
Authors_Paper	2.73	2.73
h_index	38	38

g_index	56	56
hc_index	54	54
hI_index	14.30	14.30
Cites_Author_Year	628.56	628.56

According to the data in Table 1, the Publish or Perish (PoP) software collected a total of 500 articles using the search keywords "Ecotourism" and "sustainable tourism," which have been cited 6,684 times. This indicates that research on ecotourism and sustainable tourism is both widely studied and frequently cited. The researcher's productivity index (h index) is 38, and the research citation distribution index (g index) is 56, showing that these topics are of significant interest. Additionally, there is no notable disparity between the raw and adjusted data in terms of the number of citations, h index, and g index.

Table 2. Number of Publications

Year	Total Publications	Total Citations	Average citations/publications
2018	61	1436	23.54
2019	77	1670	21.68
2020	96	1445	15.05
2021	109	1295	11.88
2022	109	719	6.59
2023	45	119	2.64

According to the data presented in Table 2, the number of publications on ecotourism and sustainable tourism was highest in 2021 and 2022, with 109 publications each. The articles published in 2019 received the highest number of citations, totaling 1670 since their publication. On the other hand, articles published in 2018 had the highest average number of citations per publication, with 66 articles cited a total of 1436 times, resulting in an average of 23.54 citations per publication.

Table 3. Ranking Top 5 Publishers

Publishers	Number of Publications
Taylor & Francis	141
researchgate.net	31
Elsevier	24
Cujo.id	15
emerald.com	15

The period from 2018 to 2023 saw numerous publishers releasing research articles on the topic of Ecotourism and Sustainable Tourism. However, the number of articles varied widely among the publishers. In the provided Table 3, you can see the top 5 publishers ranked by the volume of articles published during this period. Taylor & Francis topped the list by publishing 141 articles, followed by Researchgate.net with 31 articles, Elsevier with 24 articles, and Cujo.id and Emerald.com with 15 articles each. Other publishers not included in the table published less than 15 articles each.

Table 4. Top 10 Cited Articles

Cites	Author	Title	Publisher	GSRank	CitesPerYear
174	T.H. Lee, F.H. Jan (2018)	Ecotourism behaviour of nature-based tourists: An integrative framework	journals.sagepub.com	9	34.80
156	E. Mondino, T. Beery (2019)	Ecotourism as a learning tool for sustainable development. The case of	Taylor &Francis	1	39.00

Cites	Author	Title	Publisher	GSRank	CitesPerYear
128	R. Fletcher (2019)	Monviso Transboundary Biosphere Reserve, Italy Ecotourism after nature: Anthropocene tourism as a new Capitalist "fix"	Taylor & Francis	22	32.00
101	M.L. Tseng., et all (2019)	Ecotourism development in Thailand: Community participation leads to the value of attractions using linguistic preferences	Elsevier	20	25.25
92	T.T. Li., et all (2019)	Experiences, post-trip destination image, satisfaction, and loyalty: A study in an ecotourism context	Journals.co.za	216	23.00
92	O. Mtapuri, A. Giampiccoli (2021)	Tourism, community-based tourism and ecotourism: a definitional problematic	Elsevier	68	46.00

In table 4, we can see that the article "Ecotourism behavior of nature-based tourists: An integrative framework" by Lee (2018) received the most citations, with a total of 174. This article was published by Sage Journal and has an average of 34.80 citations per year. In second place is "Ecotourism as a learning tool for sustainable development. The case of Monviso Transboundary Biosphere Reserve, Italy" by Mondino (2019), published by Taylor & Francis, with 156 total citations and an average of 39 citations per year. The article "Ecotourism after nature: Anthropocene tourism as a new Capitalist 'fix'" by Fletcher (2019), also published by Taylor & Francis, follows in third place with 128 total citations and an average of 32 citations per year. Furthermore, an article by Tseng et al. (2019) on "Ecotourism development in Thailand: Community participation leads to the value of attractions using linguistic preferences," published by Elsevier, has been cited 101 times, with an average of 25.25 citations per year. Lastly, an article by Li et al. (2021) on "Experiences, post-trip destination image, satisfaction, and loyalty: A study in an ecotourism context," published by journal.co.za, has been cited 92 times, with an average of 23 citations per year. Additionally, based on table 4, the article with the highest average citations per year is "Tourism, community-based tourism and ecotourism: a definitional problematic" by Mtapuri & Giampiccoli (2021), published by Elsevier. This article has been cited 92 times since its publication in 2021, which means it has received an average of 46 citations per year.

Table 5. Publication Mapping Cluster

Cluster	Term	Occurrences	Relevance score
1	ecotourism	368	15.447
	ecotourism area	12	15.207
	ecotourism management	16	10.005
	local community	18	1.324
	marine ecotourism	12	14.182
	perspective	22	0.3499
	sustainability	24	18.886
	sustainable ecotourism	11	0.987
2	environment	21	0.3739
	nature	21	0.7379

Cluster	Keyword	Occurrence		
	sustainable tourism	11	0.3992	
	tourism	80	0.7177	
	tourist	34	0.7235	
3	challenge	14	0.5906	
	ecotourism project	12		16.709
	importance	14	0.4541	
	opportunity	18	0.3733	
4	ecotourism industry	13	0.9512	
	ecotourism potential	17		25.337
	prospect	14	0.4352	
	sustainable development	19		15.093
5	protected area	18	0.5619	
	relationship	15	0.9237	
	satisfaction	14		10.106

According to table 5, there have been 5 research clusters related to ecotourism over the past 5 years. In cluster 1, the widely used keywords are ecotourism, ecotourism area, ecotourism management, local community, marine ecotourism, perspective, sustainability, and sustainable ecotourism. The research on ecotourism has been conducted 368 times from 2018 to 2023, with a relevance value of 15.4%. The sustainability research topic has the highest relevance value in cluster 1 at 18.88%. In cluster 2, the research topics include environment, nature, sustainable tourism, tourism, and tourist, with occurrence rates ranging from 11 to 80 times, but the relevance value is low, less than 1%. In Cluster 3, the research topics include Challenges, Ecotourism projects, Importance, and Opportunities. Out of the 4 research topics, only one topic has a high relevance value of 16,709 or 16.7%, while the other research topics have a relevance value of less than 1%. Moving to cluster 4, the research topics include Ecotourism industry, Ecotourism potential, Prospect, and Sustainable development. In this cluster, two research topics have a high level of relevance, with the ecotourism potential research theme having the largest relevance value of 25.33%. In research cluster 5, the topics include Cluster Protected area, Relationship, and Satisfaction. Out of the three research topics, only one topic has a relatively large relevance value of 10,106 or 10.10%, while the other two research topics have a relevance value of less than 1%.
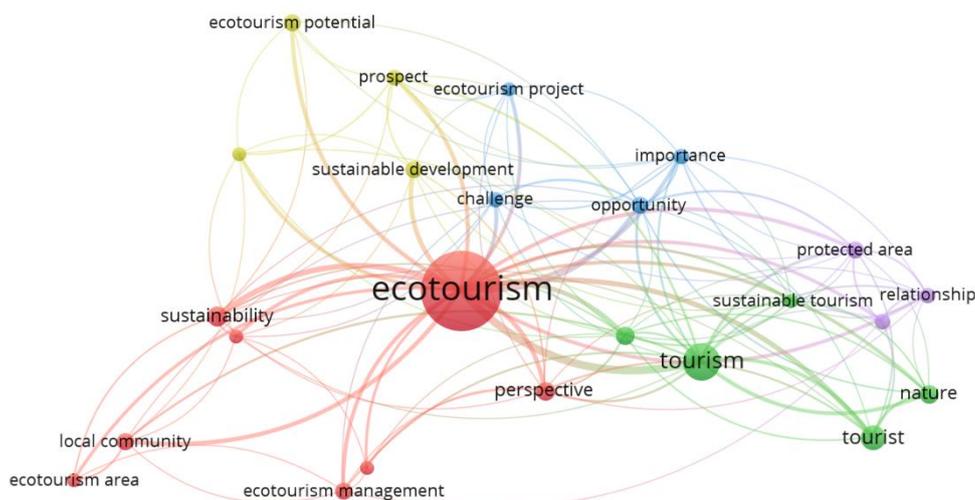

Figure 2. Visualization of Publication Network Mapping in the Ecotourism Sector

The image in Figure 2 displays 24 research topics divided into 5 clusters, each represented by a different colour: red for cluster 1, green for cluster 2, blue for cluster 3, yellow for cluster 4, and purple for research cluster 5. In addition to the color-coded clusters, the visualization shows the closeness of the relationship between research topics through the distance of the lines connecting them. The size of the label for each research topic indicates the volume of research done on that topic. In the visualization above, the research topic of ecotourism has the largest label, indicating that it is the most frequently researched topic, with a total of 119 links and a network strength of 497.
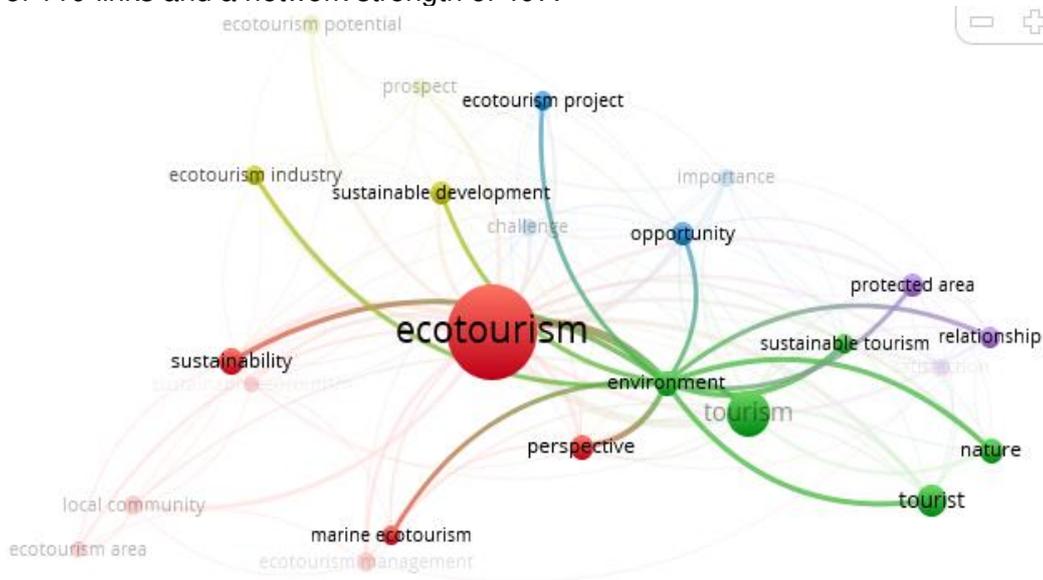

Figure 3. Visualization of Mapping of Cluster 2 Research Publications

The visualization in green shows the research area of cluster 2, which includes research topics such as environment, nature, sustainable tourism, tourism, and tourists. This means that within this cluster, research has been conducted on these topics. An opportunity for further research could involve linking the topics of ecotourism management and local community, creating an interesting subject for discussion.
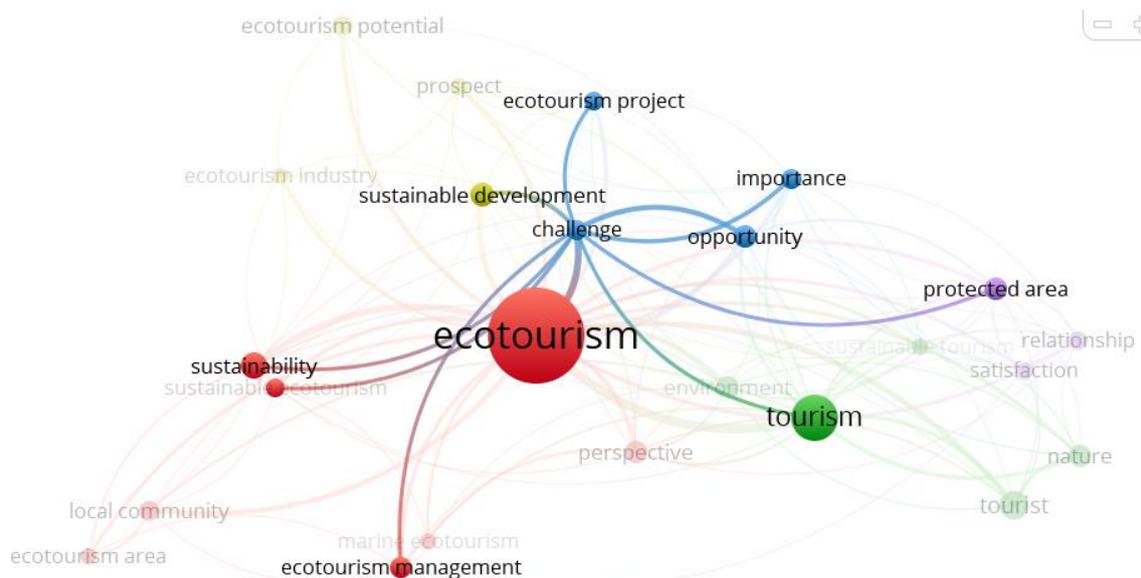

Figure 4. Visualization of Cluster 3 Publication Mapping

In the visualization of cluster 3 publication mapping, represented by the blue line, there is a clear connection between research themes within the cluster itself. These themes include challenges, ecotourism projects, importance, and opportunities. Additionally, there are also links between research topics from different clusters, such as ecotourism, sustainable development, ecotourism management, and tourism. Furthermore, there are potential research opportunities to explore connections with topics like local communities, marine tourism, and sustainable tourism in future studies.
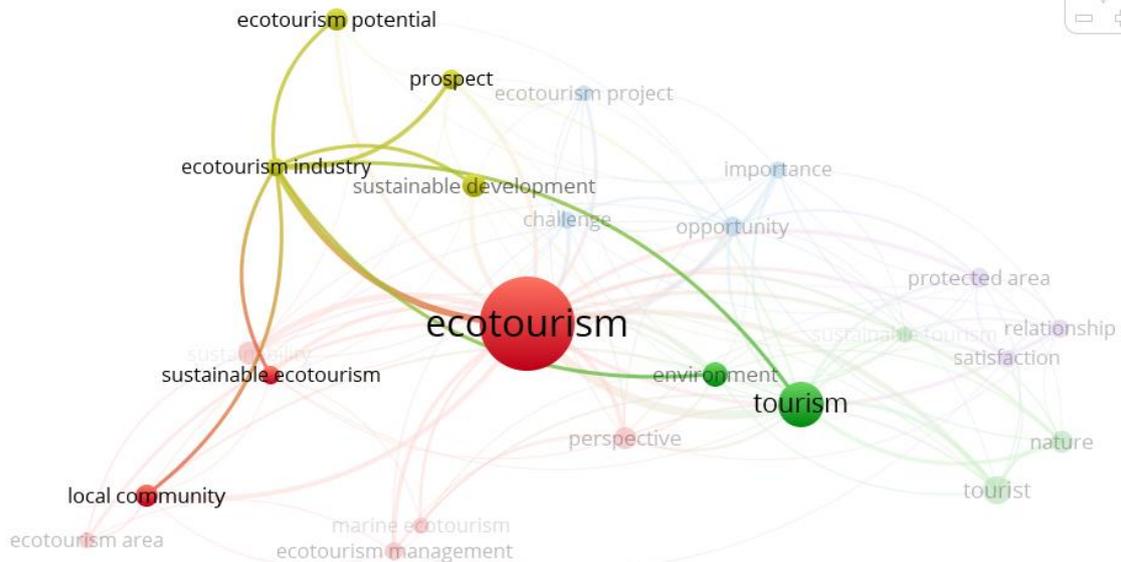

Figure 5. Visualization of Mapping of Cluster 4 Research Publications

Visualization of cluster 4 research field mapping shows research topics related to the ecotourism industry, ecotourism potential, prospects, and sustainable development. The ecotourism industry is closely related to ecotourism potential and prospects. Therefore, future research development can be carried out by linking research topics between the ecotourism industry and ecotourism management, as well as tourist or customer satisfaction.
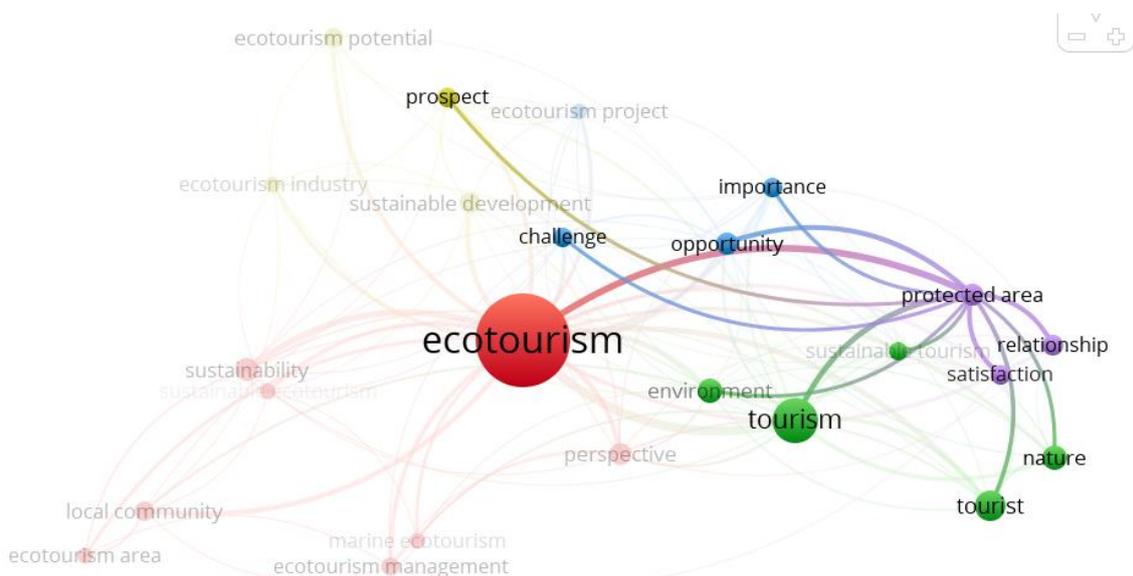

Figure 6. Visualization of Mapping of Cluster 5 Research Publications

The visualization of the 5th cluster research mapping in this research is purple, and it links research topics related to satisfaction and relationships. Upon reviewing this research checklist, it is apparent that the research topics with purple lines are not connected to research

topics related to sustainability or management. This presents an opportunity for the development of research topics in the future.
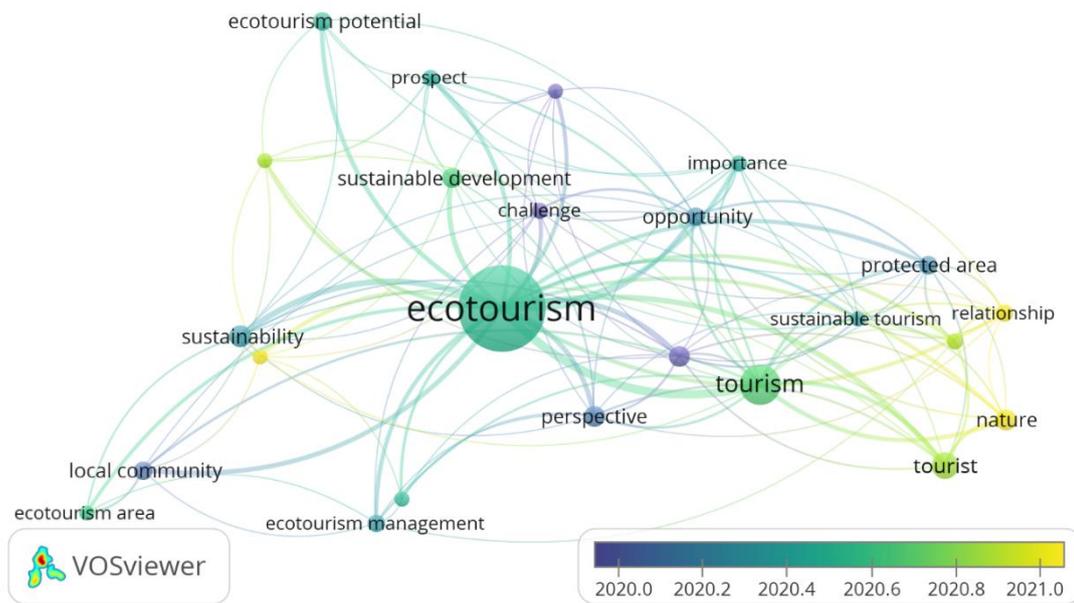

Figure 7. Overlay Visualization Ecotourism

The visual representation from VOSviewer, created through keyword co-occurrence analysis, demonstrates the evolving trends in recent research. The visualization indicates various research topics color-coded in purple, blue, green, and yellow to represent the significance and novelty of each topic. Journals colored blue generally have an impact factor below 1, while those in green have an impact factor around 2, and those in yellow have an impact factor of 3 or higher (Van Eck & Waltman, 2014). According to this representation, it seems that significant research has been conducted on the topic of ecotourism, given its large label with a bluish-green color. This suggests that ecotourism research was prevalent in mid-2020. On the other hand, themes such as sustainable ecotourism, ecotourism industry, tourist, nature, relationships, and satisfaction appear as relatively new research themes, indicating potential opportunities for further investigation in these areas.

Figure 8. Visualization of Research Density with the Ecotourism Theme

Based on Figure 8, which visualizes research density related to the theme of ecotourism, it's evident that ecotourism has the largest label size and the brightest colors. According to Van Eck & Waltman (2014), the larger the label size and the brighter the color, the more research has been conducted on a particular theme. This indicates that a significant amount of research has been carried out on the topic of ecotourism. However, there are still numerous opportunities for future research that can be connected to ecotourism. Figure 7 also highlights that research on themes such as marine ecotourism, ecotourism management, local communities, ecotourism projects, sustainable development, relationships, and sustainable tourism has not been extensively explored yet.

CONCLUSION

In this research, bibliometric analysis was used to provide a comprehensive overview of the ecotourism research literature from 2018 to 2023. The analysis of 500 journal articles revealed that research on ecotourism has been conducted globally, with specific themes such as marine ecotourism, ecotourism management, local communities, ecotourism projects, sustainable development, and sustainable tourism likely to be prominent in future research. The study utilized the Google Scholar database, which includes articles from both reputable and non-accredited journals. However, it is recommended that future research uses more credible databases like Web of Science or Scopus to ensure that the data collected are from reputable and widely reviewed journals.

REFERENCES

Asadpourian, Z. (2020). SWOT-AHP-TOWS Analysis for Sustainable Ecotourism Development in the Best Area in Lorestan Province, Iran. Social Indicators Research, 152(1), 289–315.

Budeanu, A., Miller, G., Moscardo, G., & Ooi, C. S. (2016). Sustainable tourism, progress, challenges and opportunities: an introduction. *Journal of Cleaner Production*, *111*, 285-294.

Choudhri, A. F., Siddiqui, A., Khan, N. R., & Cohen, H. L. (2015). Understanding bibliometric parameters and analysis. Radiographics, 35(3), 736–746.

Das, M., & Chatterjee, B. (2023). Ecotourism a solution or deception for conservation: a case of Bhitarkanika Wildlife Sanctuary, Odisha, India. *Journal of Hospitality and Tourism Insights*, *6*(3), 1380-1399.

Fennell, D. A. (2020). Ecotourism. Routledge.

Fletcher, R. (2019). Ecotourism after nature: Anthropocene tourism as a new capitalist "fix." Journal of Sustainable Tourism, 27(4), 522–535.

Hasana, U., Swain, S. K., & George, B. (2022). A bibliometric analysis of ecotourism: A safeguard strategy in protected areas. *Regional Sustainability*, *3*(1), 27-40.

Heshmati, M., Gheitury, M., & Shadfar, S. (2022). Factors affecting possibility of ecotourism development and sustaining natural resources using SWOT approach in west Iran. *International Journal of Geoheritage and Parks*, *10*(2), 173-183.

Lee, T. (2018). Ecotourism Behavior of Nature-Based Tourists: An Integrative Framework. Journal of Travel Research, 57(6), 792–810.

Li, T. T., Liu, F., & Soutar, G. N. (2021). Experiences, post-trip destination image, satisfaction and loyalty: A study in an ecotourism context. *Journal of Destination Marketing & Management*, *19*, 100547.

Mondino, E. (2019). Ecotourism as a learning tool for sustainable development. The case of Monviso Transboundary Biosphere Reserve, Italy. Journal of Ecotourism, 18(2), 107–121.

Mtapuri, O., & Giampiccoli, A. (2019). Tourism, community-based tourism and ecotourism: a definitional problematic. South African Geographical Journal= Suid-Afrikaanse Geografiese Tydskrif, 101(1), 22-35.

Stronza, A. L., Hunt, C. A., & Fitzgerald, L. A. (2019). Ecotourism for conservation?. *Annual Review of Environment and Resources*, *44*(1), 229-253.

Tawfik, R., & Sarhan, M. (2021). Ecotourism and Protected Areas Sustainable Financing: A Case Study of Wadi El Gemal Visitor Center. Journal of Spatial and Organizational Dynamics, *9*(2), 156-172.

Tseng, M. (2019). Ecotourism development in Thailand: Community participation leads to the value of attractions using linguistic preferences. Journal of Cleaner Production, 231, 1319–1329.

Van Eck, N. J., & Waltman, L. (2014). Visualizing bibliometric networks. In *Measuring scholarly impact: Methods and practice* (pp. 285-320). Cham: Springer International Publishing.