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Sustainability and ecology focused tourism research: A bibliometric evaluation with VOSviewer

Sürdürülebilirlik ve ekoloji odaklı turizm araştırmaları: VOSviewer ile bibliyometrik bir değerlendirme

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ABSTRACT

This study was designed with bibliometric analysis method to evaluate the academic literature in the fields of ecology, tourism and sustainability. In the research, articles obtained from Web of Science and Scopus databases were analysed and publication trends, citation networks and keyword analyses were performed. In the study, a descriptive and quantitative approach was adopted to understand the development of ecological tourism and sustainability concepts in the literature. In this study, a bibliometric analysis was carried out using VOSviewer software, which is widely used in bibliometric analysis of scientific publications. Through this software, the distribution of academic publications on tourism, ecology and sustainability by years, the most cited studies, researchers, institutions and keywords were analysed. In addition, the main research topics in the literature and the relationships between these topics were visualised. The results show that the issues of tourism, ecology and sustainability have been analysed with increasing interest especially in recent years and scientific studies in this field have become increasingly diversified. The analyses revealed that ecotourism stands out in terms of political ecology in tourism, ecology and sustainability issues. This study provides a roadmap for future research in the field of ecology, tourism and sustainability and provides valuable information for relevant stakeholders.

Key words: *Ecology, Tourism. Sustainability, Bibliometric, Vosviewer*

ÖZ

Bu çalışma, ekoloji, turizm ve sürdürülebilirlik alanlarındaki akademik literatürü değerlendirmek amacıyla bibliyometrik analiz yöntemiyle tasarlanmıştır. Araştırmada Web of Science ve Scopus veri tabanlarından elde edilen makaleler analiz edilerek yayın eğilimleri, atıf ağları ve anahtar kelime analizleri yapılmıştır. Çalışmada, ekolojik turizm ve sürdürülebilirlik kavramlarının literatürdeki gelişimini anlamak için betimsel ve nicel bir yaklaşım benimsenmiştir. Çalışmada, bilimsel yayınların bibliyometrik analizinde yaygın olarak kullanılan VOSviewer yazılımı

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kullanılarak bibliyometrik bir analiz gerçekleştirilmiştir. Bu yazılım aracılığıyla turizm, ekoloji ve sürdürülebilirlik konularındaki akademik yayınların yıllara göre dağılımı, en çok atıf alan çalışmalar, araştırmacılar, kurumlar ve anahtar kelimeler analiz edilmiştir. Ayrıca, literatürdeki ana araştırma konuları ve bu konular arasındaki ilişkiler görselleştirilmiştir. Sonuçlar, turizm, ekoloji ve sürdürülebilirlik konularının özellikle son yıllarda artan bir ilgiyle incelendiğini ve bu alandaki bilimsel çalışmaların giderek çeşitlendiğini göstermektedir. Analizler, turizm, ekoloji ve sürdürülebilirlik konularında ekoturizmin politik ekoloji açısından öne çıktığını ortaya koymuştur. Bu çalışma, ekoloji, turizm ve sürdürülebilirlik alanında gelecekte yapılacak araştırmalar için bir yol haritası sunmakta ve ilgili paydaşlar için değerli bilgiler sağlamaktadır.

Anahtar kelimeler: *Ekoloji, Turizm, Sürdürülebilirlik, Bibliyometrik, Vosviewer.*

1. INTRODUCTION

Many efforts have been made and various ideas have been put forward to solve the problems in the development of socially and economically disadvantaged regions. These ideas propose to support rural tourism and its management based on local natural, cultural and agricultural traditions and to help them catch up with the more developed regions of the country. The current requirement for any tourism strategy, policy or management process is that it should be 'sustainable' (David, 2011). Various methodologies have been developed for the sustainable conduct of tourism activities. However, regardless of the model used, it is recognised that sustainability has three main components: economic, social and environmental. Establishing a balance between these components helps to achieve sustainability.

Sustainable tourism requires maintaining attractiveness and guaranteeing returns for investors. It must be ecologically resilient in the long term, economically viable and socially and ethically just for local people. It also protects and expands future opportunities by meeting the needs of both present-day tourists and host regions.

Sustainable tourism emphasises development without exploiting the natural and built environment, preserving the culture, heritage and artistic values of the local community. This approach aims to both preserve the natural, historical and cultural resources of tourism and to benefit existing communities.

The concept of sustainable tourism has been discussed in different definitions by many authors in different studies (Wang & Pei, 2014). In these definitions, the concept of sustainable tourism, tourism environmental capacity, ecotourism, sustainable tourism policy, the relationship between sustainable tourism and community and regional sustainable development, sustainable development in tourism, destination tourism and balanced development of the environment have been emphasised (Bramwell & Lane, 1993; Cater, 1993; Forsyth, 1995; Müller, 1994).

Ecotourism is sustainable nature-based tourism that focuses on experiencing and learning about nature (Weaver & Lawton, 2007). Ecotourism also promotes sustainable development and long-term environmental sustainability by limiting the negative impacts of tourism (Liu, 2003). The ecotourism literature has identified different aspects of the demand side of ecotourism, especially the antecedents of behaviour (Dolnicar & Leisch, 2008; Hultman et al., 2015). Factors evidenced in the literature as determinants of behaviour include motivation (Luo & Deng, 2008; Mehmetoglu & Normann, 2013), environmental belief (Huang & Liu, 2017; Wurzinger & Johansson, 2006), ecotourism experience (Huang & Liu, 2017), and environmental identity (Teeroovengadum, 2019).

In the study, in order to identify and reveal the relationships between the concepts of sustainability, tourism and ecology and to determine the trends that the field has evolved, the Topic tab was selected in the Advanced Search section of the Web of Science database on 15.06.2024 and the keywords (SUSTAINABILITY OR SUSTAINABLE) and 'TOURISM' and 'ECOLOGY' were written. In the Topic tab, a search including the title, abstract and keywords of the articles was made and 638 documents, 476 of which were articles, were reached. In this study, only articles were included and analyses were made on the basis of articles.

2. MATERIALS AND METHODS

Bibliometrics is a branch of science that quantitatively analyses published information and is widely used to understand academic trends. Bibliometric analyses aim to determine the current status and trends in scientific fields by examining data such as publication numbers, authors and keywords (Ay, 2024a; Ay et al., 2024; Mayr & Scharnhorst, 2015). The choice of appropriate visualisation software is important in these analyses; commonly used software include CiteSpace, HistCite, Gephi, SciToo and VOSviewer. VOSviewer was preferred in this study because it can clearly present the connections between research topics by performing self-occurrence, co-occurrence and clustering analyses of scientific data (Ay & Dal, 2024a; Bekler et al., 2024; Burkut & Dal, 2024; Chen, 2017). Bibliographic reviews aim to establish correlations between authors, keywords and topics by identifying trends and focal points in academic publications. Such analyses provide information about the evolutionary processes of previous research and can provide guidance for future research (Ay, 2024b; Burkut et al., 2025; Burkut & Dal, 2023; Donthu et al., 2021).

This analysis aims to identify the dominant keywords in the titles of the articles, the keywords provided by the authors and the abstracts, and to create a network between these words. The density of links between keywords is based on how often these words are used together in various articles (Ay & Dal, 2024b; Dal et al., 2023; Tekin et al., 2024). The resulting network visualisation reveals both the frequency of particular keywords and their relationship with other related keywords (Entezari et al., 2023). In order for bibliometric analyses to be successful, certain stages need to be designed and implemented. The design process of the study (Donthu et al., 2021) is shown in Figure 1.

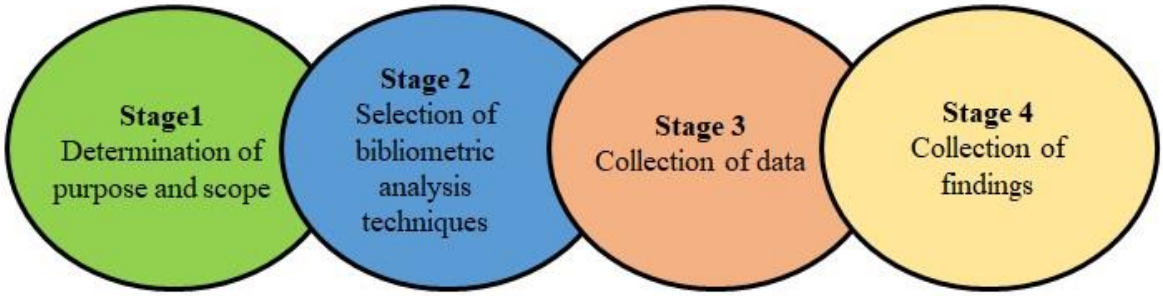

Figure 1. Bibliometric analysis design process

In the first stage, the purpose and scope of the study were determined. The main purpose of this study is to determine bibliometric maps by analysing the metadata of the researches related to (SUSTAINABILITY OR SUSTAINABLE) and 'TOURISM' and 'ECOLOGY' within the scope of variables such as keywords, journals, publications, authors and collaborations of the field. Accordingly, the following bibliometric indicators were analysed for performance analysis and science mapping: The data analysed are publication type distribution, publication language distribution, most effective journals, most effective articles, keyword analysis, most effective countries and institutions, most co-cited resources, journals and authors.

In the second stage, the analysis techniques to be applied in the bibliometric study were selected and designed. It is important to determine the techniques in a way to meet the study objectives stated in stage 1. Table 1 shows the analysis methods selected for the questions and purpose of the study.

In the third stage of the study, data sets were created using the Web of Science database to be analysed. In the creation of data sets, four steps were followed: keyword detection and scanning, sorting according to various parameters, examining whether the studies are suitable for the subject and exporting the obtained data. Figure 2 shows the preparation process of the data sets prepared in the Web of Science database.

In the last stage, stage 4, the data obtained were analysed and visualised and the findings of the analysis were reported. VOSviewer analytical tool (version 1.6.20) was used for visualising and reporting the data.

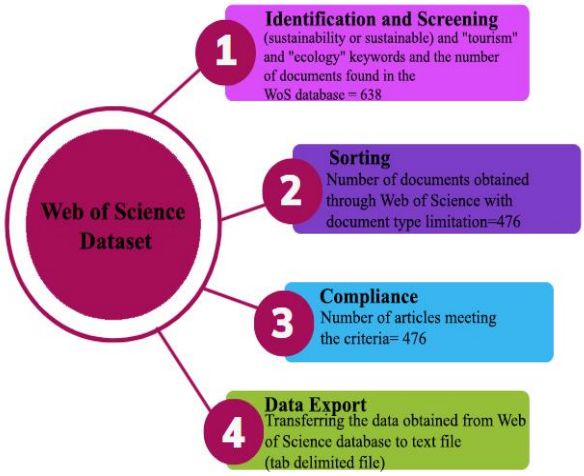

Figure 2. Preparing data set in Web of Science database

When visualising academic literature, VOSviewer uses circles to represent authors, keywords or other entities. The size of the circle indicates the importance of the entity in the network, while the lines indicate the relationships between these entities. The thickness and colour of the lines express the strength and type of relationship, while different clusters are also separated by colour. This visualisation tool increases scientific rigour and the capacity for objective assessment when analysing literature (van Eck & Waltman, 2010). Using Web of Science data, VOSviewer generates network maps to analyse clustering and citation relationships and this enables in-depth examination of the research area.

Table 1. Selected analysis methods to be used in the study

Research Question	Analysis Unit	Data Requirements	Type of Analysis Used
Distribution of publication types	Document	Publication	Web of Science Database
Most active journals	Document	Journal	Resource Citation Analysis (VOSviewer)
Most active articles	Document	Publication	Citation Analysis (VOSviewer)
Keyword analysis	Word	Keyword	Common Word Analysis (VOSviewer)
Most active countries and organisations	Authors' Affiliated Organisations	Author's Organisation (institution-country)	Citation Analysis (VOSviewer)
Most co-cited resources, journals and authors	Author	Author	Joint Citation Analysis (VOSviewer)

3. FINDINGS

In the study, 638 documents, 476 of which were articles, were found in the review conducted to determine the relationships between the concepts of sustainability, tourism and ecology. In this study, only articles were included and analyses were made on the basis of articles.

It was observed that the oldest indexed article related to the study was the study “Caribbean small-island tourism styles and sustainable strategies” co-authored by De Albuquerque and McElroy (1992).

Although the most intensive year in which the articles were published is 2022, it should not be ignored that the number of articles in 2024 does not cover the whole year, as the study data was received on 15.06.2024, before the year 2024 was completed. The distribution of the number of articles by year is shown in Figure 3.

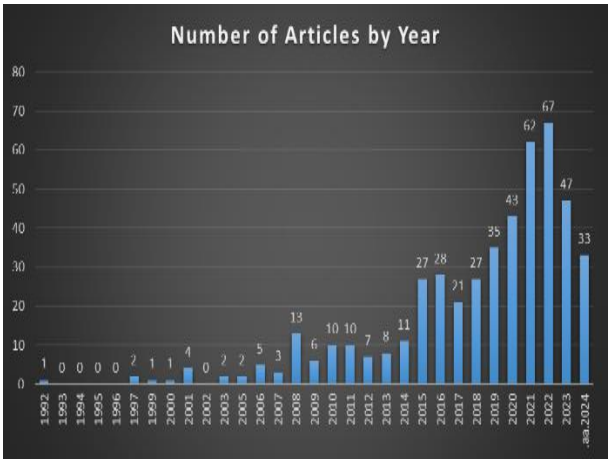

Figure 3. Distribution of the number of articles by year

According to the documents indexed in the Web of Science database; it has been determined that article studies including sustainability, tourism and ecology issues together started to be the subject of research in 1992, but did not attract much attention in the first few years. With the year 1997, it was observed that the subject started to be valued and a slight increase in the number of articles was observed, and the article publications, which continued with slight ups and downs, started to rise in 2015 and peaked in 2002.

The publication type distribution of 638 documents obtained as a result of searching the Web of Science database in the relevant criteria is shown in Figure 4.

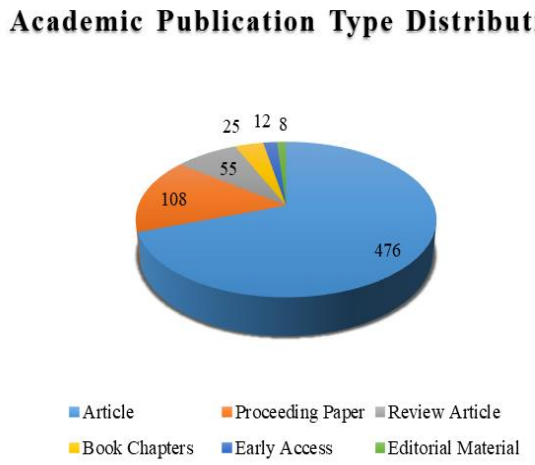

Figure 4. Distribution of academic publication types

When the publication language distribution of the 476 articles in the Web of Science database was analysed, it was observed that the majority of them were written in English (445 articles). The articles written in English are followed by Spanish with 14 articles.

Studies in Russian (Klimanova et al., 2021; Tsvetkov et al., 2020; Vukovic et al., 2010; Zhuravel, 2021); German (Freyer & Schreyer, 2010; Vorlaufer, 2007) and Turkish (Emir, 2006; Tugun & Karaman, 2014) were found. The distribution of publication language according to the relevant search criteria is shown in Figure 5.

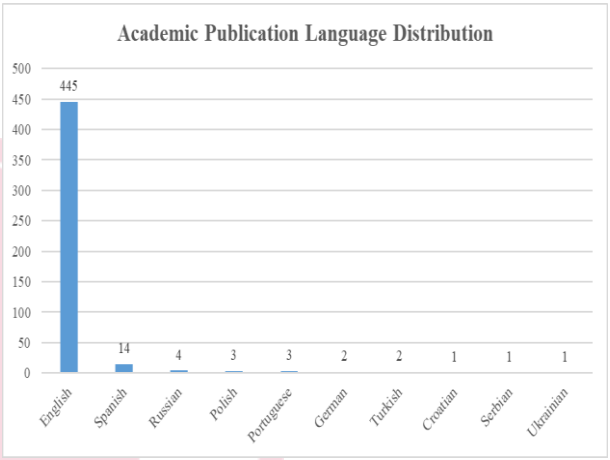

Figure 5. Academic publication language distribution

3.1. Keyword Analysis

A co-occurrence keyword analysis was conducted to reveal the conceptual structure of studies examining sustainability, tourism and ecology together and to identify the most effective keywords in these fields. This analysis shows the frequency of co-occurrence of the keywords selected by the article authors with the concepts in the article titles and abstracts. Each key concept is shown as a node and the nodes of frequently used concepts are pictured larger. In the study, a total of 1804 keywords were identified in 476 articles and visualised with VOSviewer. The keyword network analysis is shown in Figure 6.

Figure 6. Keyword network analysis

In the study, it was observed that the same key concepts were used with different spellings and these key concepts were combined under the same name by data cleaning. In order to identify the most frequently used keywords of the field and to determine the topics of the field, the number of keywords was reduced to 27 key concepts, provided that a keyword was used at least 5 times, and 27 keywords (items) were mapped by the programme as 6 clusters. The keyword network analysis visualisation is shown in Figure 7.

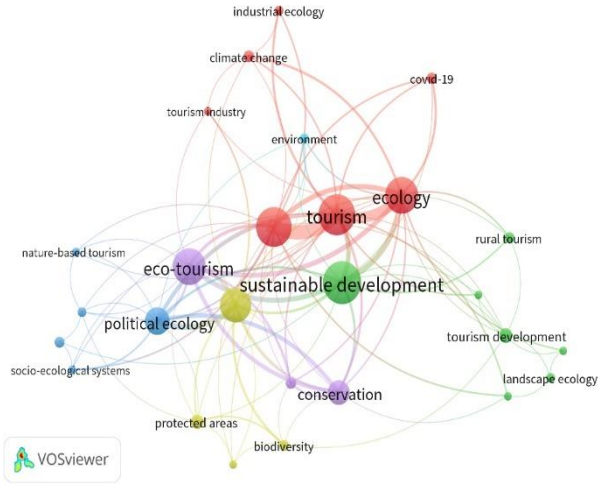

Figure 7. Keyword network analysis visualization

In order to reveal the most influential authors of the field by receiving the most citations in the subject of the study, citation /authors analysis was carried out, limited to the bibliometric database obtained from the Web of Science database. It was seen that there were 1554 authors in 476 articles constituting the sample of the study. It was determined that the same authors were included in the list with different spellings and data cleaning was performed. The most effective author network visualisation according to the number of citations is shown in Figure 8.

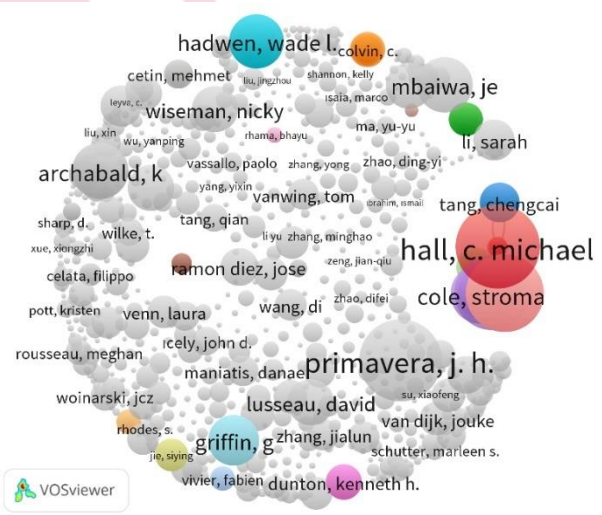

Figure 8. Most active author network visualisation (by number of citations)

The authors identified in the study were reduced to 40 authors with the restriction of publishing at least 2 documents. The programme visualised 9 authors (items) with collaboration between them as 3 clusters. The most effective author network visualisation is shown in Figure 9.

The authors in cluster 1 (red) are Hall, C. Michael, Saarinen, Jarkko, Saville, Samantha M., Seyfi, Siamak. It was determined that the most cited and most effective author of the cluster was Hall, C. Michael with 364 citations in the literature.

The 2nd cluster (green) is formed by the authors named Tang, Chengcai, Wang, Chao, Wang, Fuyuan, Zheng, Qianqian, and the most cited authors of the cluster are Tang, Chengcai and Zheng, Qianqian with 81 citations.

In the 3rd cluster (blue); Zeng, Haimei was found to be included with 3 citations.

The 10 most influential authors of the research topic according to the citations they received are presented in Table 2.

Figure 9. Most efficient author network visualisation

Table 2. The 10 most efficient authors according to citations

Author Name	Citation Count	Average Citation Number	Number of Documents	Total Link Strength
Hall, C. Michael	364	72.80	5	46
Primavera, J. H.	348	348.00	1	0
Pilato, Manuela.	313	313.00	1	15
Seraphin, Hugues	313	313.00	1	15
Sheeran, Paul.	313	313.00	1	15
Fletcher, Robert	289	144.50	2	5
Blazquez-salom, Macia	198	66.00	3	19
Cole, Stroma	184	46.00	4	11
Archabald, K.	161	161.00	1	2
Naughton- Treves. I.	161	161.00	1	2

Hall, C. Michael was identified as the most active author with the highest number of citations with 364 citations. Hall, C. Michael was also identified as the most prolific author who wrote the most articles on the subject.

3.3. Most Effective Articles Analysis

A citation/document analysis was conducted to identify the most effective articles according to the number of citations in which the keywords sustainability, tourism and ecology were used together. Through VOSviewer, 476 articles (items) constituting the sample of the study were visualised as 392 clusters. Only the first authors are indicated in the visualisation. The most effective article network analysis visualisation is shown in Figure 10.

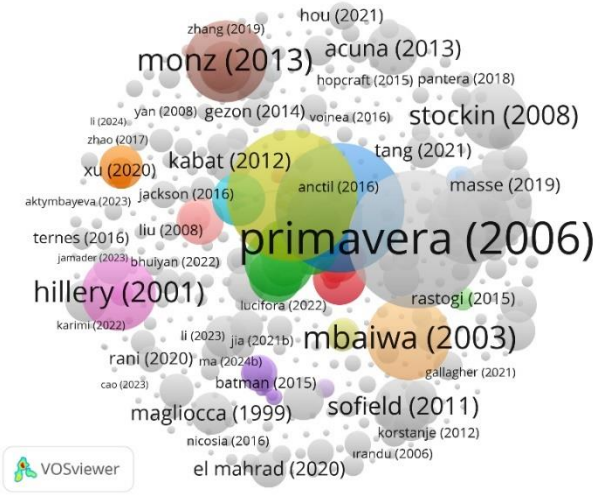

Figure 10. The most efficient article network analysis visualisation

In VOSviewer, 476 articles were reduced to 244 articles with 5 citations and 33 related articles were visualised by the program as 9 clusters. The most effective article network analysis visualisation is shown in Figure 11.

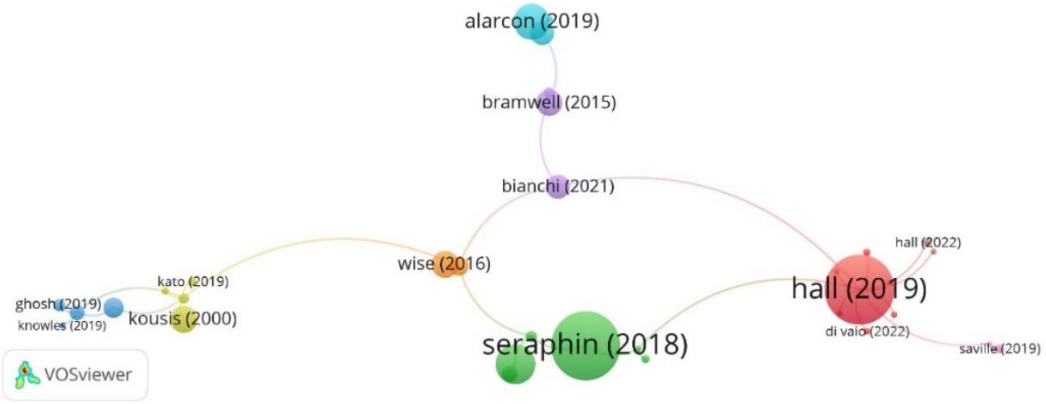

Figure 11. The most efficient article network analysis visualisation

1st cluster (red) Carnicelli (2022), Di Vaio (2022), Hall (2019), Kline (2023), Mabibibi (2021), Saarinen (2021) ve Wani (2024); 2. cluster (green) Anctil (2016), Blazquez- Salom (2023), Fletcher (2019), Öztürkoğlu (2021), Seraphin (2018), Sorensen (2021); Cluster 3 (blue) Douglas (2014), Ghosh (2019), Knowles (2019), Stoffelen (2015); Cluster 4 (yellow) Kato (2019), Kousis (2000), Mosedale (2015), Raftopoulos (2020); Cluster 5 (purple) Bianchi (2021), Bramwell (2007), Bramwell (2015); Cluster 6 (turquoise) Alarcon (2019), Cole (2014), Sinha (2020); Cluster 7 (orange) Hof (2015) ve Wise (2016); Cluster 8 (brown) Hall (2022) ve Scott (2023); Cluster 9 (pink) Saville (2019) ve Saville (2022) work in the field.

The 10 most effective articles according to the number of citations of the 476 articles subject to the study are presented to the reader in Table 3.

Table 3. Most active articles by number of citations

Author Name	Article Name	Published Source	Citation Count
Primavera, J.H. (2006)	Overcoming the impacts of aquaculture on the coastal zone.	Ocean & Coastal Management	348
Hall, C.M. (2019)	Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism.	Journal of Sustainable Tourism	318
Seraphin, H. (2018)	Over-tourism and the fall of Venice as a destination.	Journal of Destination Marketing & Management	313
Archabal, K. (2001)	Tourism revenue-sharing around national parks in Western Uganda: early efforts to identify and reward local communities.	Environmental conservation	161
Mbaiwa, J.E. 2003)	The socio-economic and environmental impacts of tourism development on the Okavango Delta, north- western Botswana.	Journal of arid environments	158

Table 3. Most active articles by number of citations (continued)

Author Name	Article Name	Published Source	Citation Count
Büscher, B. (2019)	Towards convivial conservation.	Conservation and Society	155
Monz, C.A. (2013)	Recent advances in recreation ecology and the implications of different relationships between recreation use and ecological impacts.	Frontiers in Ecology and the Environment	150
Fletcher, R. (2019)	Tourism and degrowth; an emerging agenda for research and praxis.	Journal of Sustainable tourism	134
Hillery, M. (2001)	Tourist perception of environmental impact.	Annals of Tourism Research	131
Alarcon, D.M. (2019)	No sustainability for tourism without gender equality	Journal of Sustainable Tourism	117

When the articles on sustainability, tourism and ecology were analysed, it was seen that the most cited article was Primavera (2006) with 348 citations. Hall (2019) with 318 citations ranked second, while Seraphin (2018) was the third most effective article with 313 citations.

3.4. Most Effective Resources Analysis In order to determine the most effective sources of the study subject according to the number of citations, Citation / References analysis was performed through VOSviewer programme. Based on the data obtained from the Web of Science database, it was determined that there are 277 sources related to the subject. The most effective source network analysis visualisation is shown in Figure 12.

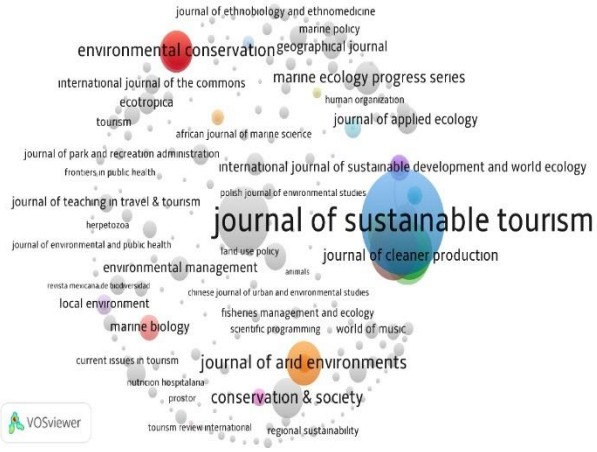

Figure 12. Visualisation of the most efficient resource network analysis

In order to reach the most effective sources and present the cooperation between them to the reader, the 277 sources identified on the subject were reduced to 32 sources with the conditions of publishing at least 3 documents and receiving at least 5 citations, and 14 interconnected sources (items) were visualised as 6 clusters by VOSviewer and shown in Figure 13.

According to the results of the analysis in Figure 13, the most effective sources were identified. Accordingly, the most influential sources were found to be Sustainability (312 citations) in Cluster 1 (red); Journal of Sustainable Tourism (1136 citations) in Cluster 2 (green); Tourism Geographies (153 citations) in Cluster 3 (blue); Annals of Tourism Research (365 citations) in Cluster 4 (yellow); International Journal of Sustainable Development and World Ecology (64 citations) in Cluster 5 (purple) and Geoforum (76 citations) in Cluster 6 (turquoise).

When the 277 sources of 476 articles, which constitute the sample of the research, are evaluated according to the number of citations; the 10 most cited sources are presented in Table 4.

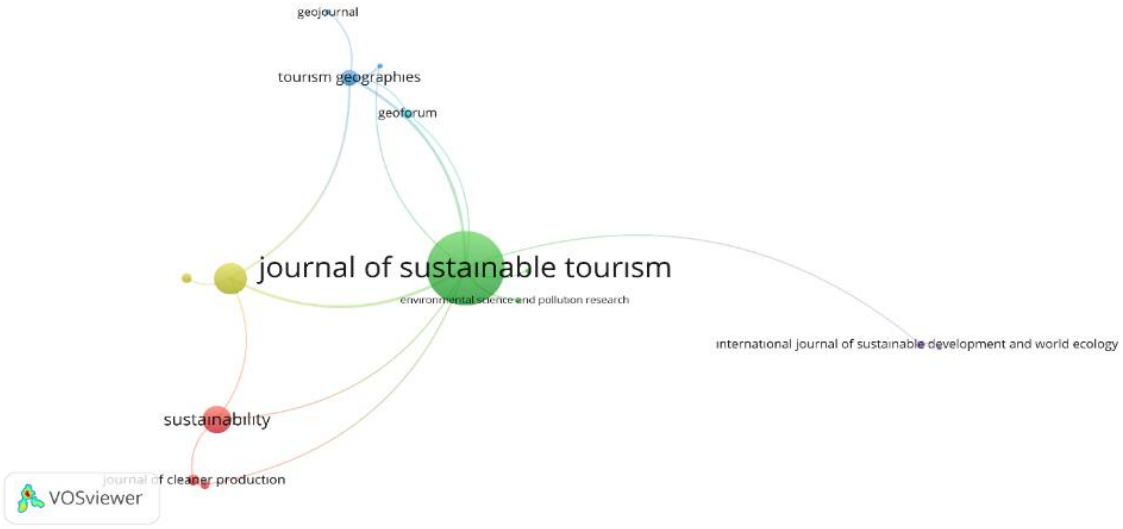

Figure 13. Most efficient resource network analysis visualisation

Table 4. The most effective sources according to the number of citations

Source Name	Number of Documents	Citation Count	Total Link Strenght
Journal of Sustainable Tourism	23	1136	28
Ocean & Coastal Management	5	440	0
Annals of Tourism Research	6	365	8
Journal of Destination Marketing & Management	2	329	4
Sustainability	35	312	5
Journal of Arid Environments	2	193	2
Environmental Conservation	2	174	2
Conservation & Society	2	158	0
Tourism Geographies	4	153	11
Frontiers in Ecology and the Environment	1	150	3

When the most effective sources were analysed according to the number of citations, it was seen that the Journal of Sustainable Tourism ranked first with 23 documents and 1136 citations. Ocean & Coastal Management ranked second with 5 documents and 440 citations and Annals of Tourism Research ranked third with 6 documents and 365 citations.

3.5. Most Effective Countries Analysis

A citation/countries analysis was conducted to identify the countries that contributed to the literature by receiving the most citations related to the research topic. In this analysis, each node represents a country and node sizes were mapped proportionally according to the amount of citations received by the countries. While analysing the data obtained from the Web of Science (WoS) database, it was found that the same country had different spellings and data cleaning was performed to eliminate this problem. After cleaning, 84 countries conducting studies on the subject were identified and visualised with the help of VOSviewer. The network analysis of the most effective countries is shown in Figure 14.

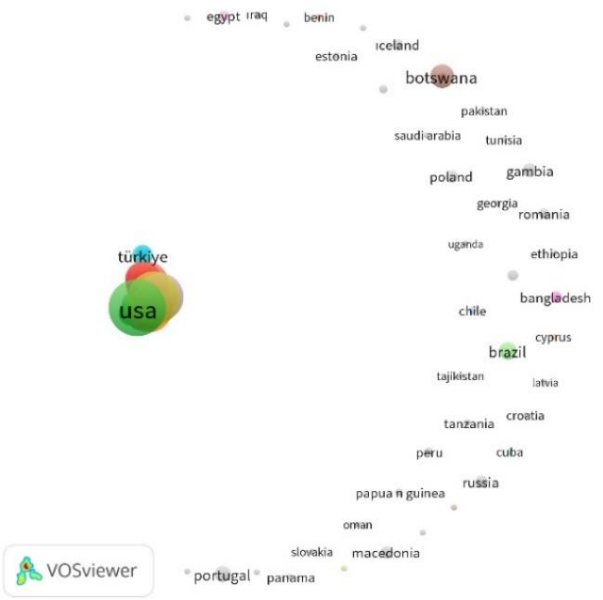

Figure 14. Most efficient country network analysis

In order to determine the most effective countries according to the number of citations they received, 84 countries were reduced to 19 countries that met the conditions of publishing at least 10 documents and receiving 5 citations, and 18 countries (items) related to each other by the Programme were mapped as 5 clusters. The most effective country network analysis is shown in Figure 15.

When the countries conducting studies on the research topic are evaluated, the 10 most effective countries according to the citations they received are presented in Table 5.

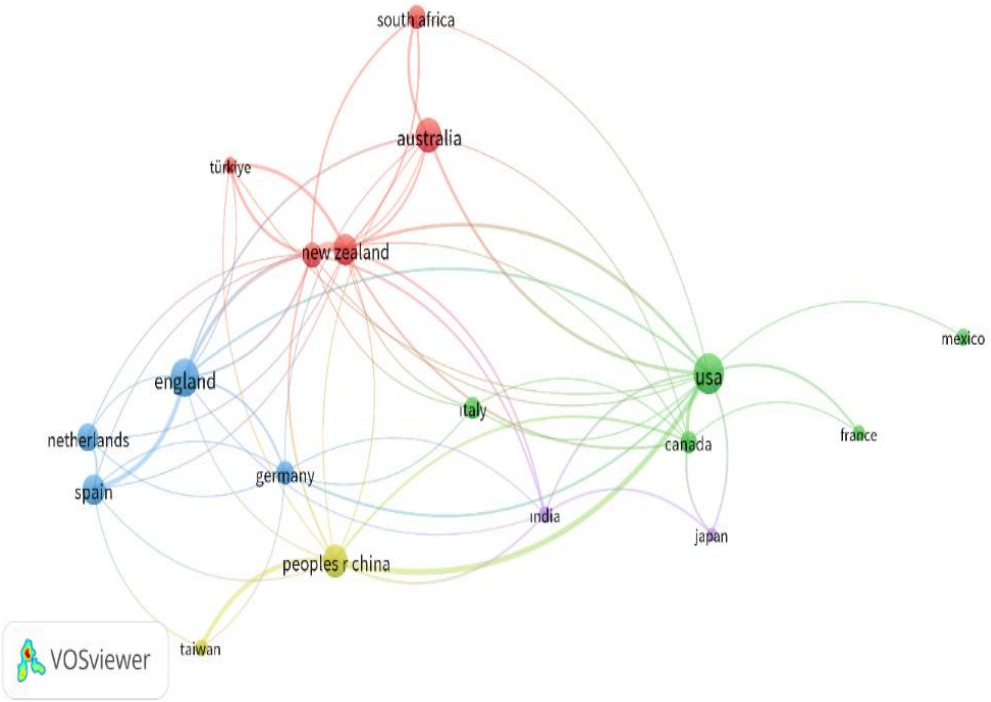

Figure 15. Most efficient country network analysis

Table 5. Most active countries by number of citations

Country Name	Citation Count	Number of Documents	Average Citation Number	Total Link Strenght
USA	1187	68	17.46	31
England	1006	35	28.74	21
Australia	804	30	26.80	14
People's Republic of China	728	117	6.22	22
New Zealand	614	10	61.40	29
Spain	584	23	25.39	12
Netherlands	477	10	47.70	6
Finland	393	11	35.73	24
South Africa	334	14	23.86	8
Germany	312	21	14.86	10

It was observed that the most cited country with the publications on the subject of study was USA with 1187 citations. USA was also the most active country according to the number of documents by publishing 68 documents.

4. CONCLUSIONS

In this study, it is aimed to determine how tourism, ecology and sustainability issues have evolved over the years. In the study, VOSviewer (version 1.6.20) programme was used for accurate and effective analysis. With the analysis program, the type of publication, language of publication, most effective keywords, most effective authors, sources, links between articles, journals and countries of the academic studies obtained on the determined topics were determined and bibliometric figures were created for visualisation maps. These analyses helped to identify key research trends, influential authors and emerging areas of interest, facilitating a deeper understanding of the field and guiding future research directions. The results obtained from the study are as follows;

Distribution and Types of Publications: With the keyword search, 638 academic studies were reached and it was observed that 476 of them were articles. In the study, it was observed that there were review articles, early access, book chapters, editorial material, meeting abstract, letter and book review. The fact that there are different types of publications shows that the subject of tourism, ecology and sustainability has attracted a wide interest in the academic field and that there is a significant accumulation of knowledge in this field.

Publication Language: According to the data obtained, it is seen that the subject of tourism, ecology and sustainability has a global interest. Although the majority of the articles are written in English, the fact that there are publications in Spanish, Russian, Polish languages shows that the subject of tourism, ecology and sustainability is not specific to a certain geographical region or language, on the contrary, it is a universal subject and constitutes a global research field.

Keywords: The keyword analysis conducted in this section has enabled the identification and grouping of keywords in the literature on tourism, ecology and sustainability. Co-occurrence analysis visualised the relationships between these keywords and clarified the focal points of the field. Cluster analyses revealed the subject content in which the study topics were concentrated and evolved. In particular, keywords such as tourism, sustainable development, political ecology, sustainable development, political ecology, sustainable tourism, eco-tourism, environment were found to be at the forefront. These analyses have helped us to understand the basic concepts and development trends of research in the field of prefabrication and prefabricated buildings.

Most Efficient Authors: As a result of the author analysis, the authors who published the most documents and received the most citations were identified. Hall, C. Michael was identified as the most active author with 5 documents and 364 citations. Hall is followed by Primavera, J. H. and Pilato, Manuela.

Most Efficient Articles: Among the articles on tourism, ecology and sustainability, the most cited article is 'Overcoming the impacts of aquaculture on the coastal zone' by Primavera (2006). This article was determined as the most influential article with 348 citations. The articles by Hall (2019) and

Seraphin et al. (2018) ranked second and third, respectively.

Most Efficient Sources: Among the most effective sources, Journal of Sustainable Tourism was identified as the most cited journal with 1136 citations. Ocean & Coastal Management and Annals of Tourism Research ranked second and third, respectively.

Most Efficient Countries: USA is the country that publishes the most on tourism, ecology and sustainability. This country has been identified as the most influential country with 68 documents and 1187 citations. USA is followed by England and Australia.

When the existing concepts and keywords in the literature are analysed, it is seen that some topics are less studied. In this context, research on less studied topics such as the effects of sustainable tourism policies on local communities and the dynamics between ecological balance and tourism activities can be encouraged. Tourism, ecology and sustainability issues have a structure that intersects with many disciplines. Therefore, increasing interdisciplinary studies can contribute to a deeper understanding of these fields. The presence of publications in different languages in the study shows that these issues have a global scope. Therefore, strengthening international co-operation can enable information sharing and the development of more comprehensive research projects. Supporting future research on sustainability and ecotourism with digital analyses and modelling by taking advantage of technological developments can provide more objective and comprehensive results.

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