

# Sustainable Development, Hotels, and Tourism with the perspective of RCN Theory: A Bibliometric Analysis with VOSViewer and Implications for a Future Research Agenda

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**Abstract:** Sustainable development is one of the hot issues discussed by many disciplines including tourism. As this issue should be extremely concern of hotels, many studies have been conducted about these two terms in the literature. However, this study is the first one combining sustainable development, hotels, and tourism with a bibliometric approach. The aim of this study is investigating the interrelationships of these concepts and exploring how these concepts are used together in literature. Moreover, it is aimed to identify bibliometric patterns or trends. To be able to do that, VOSViewer software was used to construct and visualize the bibliometric networks. 314 studies obtained from WOS database were used as a dataset. Some of the metrics and analysis results of WOS were given and Citation of the Sources, Co-occurrence of the Author Keywords, Co-authorship of Countries, Co-authorship of Organizations, Citations of Authors, Bibliographic coupling of countries analysis were run respectively. Seven research questions were answered. Also, it was explained and illustrated how RCN Theory can be used for a better sustainable development in hotel industry and tourism by considering the bibliometric findings which is the added value of this paper. Finally, five suggestions were asserted for a future research agenda.

## 1. Introduction

Meeting current requirements without compromising the capacity of future generations to meet their own needs is referred to as sustainable development. To ensure that development is long-term sustainable, it includes striking a balance between economic, social, and environmental factors. Sustainable development is important because it recognizes that economic growth, social equity, and environmental protection are interconnected and must be addressed together to ensure long-term sustainability. By promoting sustainable development, we can create a better future for ourselves and for future generations.

With the addition of the notion that it could be possible to strike a balance between economic development and the sustainable use of natural resources, the Brundtland report expanded on the four fundamental criteria of the definition of sustainable development to create a polyhedral idea (Brundtland, 1987; Bramwell and Lane, 1993). Sustainability evolved as a notion that cuts through all reports and declarations with the introduction of the still nebulous concept of sustainable development, establishing itself as the dominant paradigm. Once the Brundtland report was published in 1987, "sustainability" was incorporated into a political framework that harmonized the concept across all disciplines (Saarinen, 2013; Serrano et al., 2019).

Sustainable development refers to a way of living and operating that meets the needs of the present generation without compromising the ability of future generations to

meet their own needs (Barkemeyer et al., 2014). It involves balancing economic, social, and environmental considerations in a way that supports long-term well-being. Sustainable development recognizes that the world's resources are finite and that we need to use them in a way that ensures their availability for future generations (Ingram et al., 2006). This means taking a holistic approach to decision-making that considers the economic, social, and environmental impacts of our actions. Examples of sustainable development practices include using renewable energy sources, reducing waste and pollution, protecting biodiversity and ecosystems, promoting social equity and inclusion, and adopting sustainable business practices. Sustainable development is critical for addressing global challenges such as climate change, poverty, and inequality. It requires collaboration across sectors and stakeholders, including governments, businesses, civil society, and individuals, to create a more sustainable and resilient future for all (Caiado et al., 2018).

On a global and local level, tourism is a dynamic and economically significant industry. It has critical economic, social, and cultural significance and presents viable opportunities for inclusive and sustainable development (UNWTO, 2020). Sustainable development, tourism, and hotels are closely connected, as the tourism industry relies on the natural environment and cultural heritage to attract visitors. Sustainable tourism and hotel practices aim to minimize the negative impacts of tourism on the environment, society, and economy while maximizing its benefits. Sustainable tourism and hotel practices include Environmental conservation: Hotels and tourism operators can reduce their impact on the environment by implementing measures such as energy and water conservation, waste reduction, and the use of renewable energy sources. Cultural preservation: Sustainable tourism and hotels also aim to promote the preservation of cultural heritage and traditions by supporting local communities, respecting local customs, and promoting cultural diversity. Social responsibility: Sustainable tourism and hotels also have a responsibility to promote social equity and inclusion by providing fair wages, good working conditions, and opportunities for local people. Economic benefits: Sustainable tourism and hotels can provide economic benefits to local communities by creating jobs, supporting local businesses, and generating income for the local economy (Verma and Chandra, 2018; Abdou et al., 2020; Tanford et al., 2020).

Sustainable development is important for tourism as numerous negative consequences brought on by mass tourism have thrown a shadow over several well-liked tourism destinations. The significant environmental impact is one of the most concerning effects. Tourist numbers overwhelm fragile ecosystems, upsetting the delicate biological balance (Thapa, 2001). As a result of deforestation, pollution, and the destruction of natural habitats, areas that previously teemed with biodiversity are now suffering (Mulder and Coppolillo, 2005). As trails disintegrate and sensitive marine ecosystems deteriorate under the weight of uncontrolled tourism, iconic sites and pristine landscapes wear the scars of excessive foot traffic (Gómez-Barris, 2017).

Furthermore, the concept of mass tourism encourages crowding, which puts a burden on regional infrastructure and lowers the standard of living for locals (Brohman, 1996). Due to inadequate waste management systems' inability to handle the increase of garbage, picturesque areas and once-pristine beaches are now tainted by litter (Dawson, 2017). The peace of communities is negatively impacted by traffic and noise pollution, while the commercialization of areas erodes their true cultural identity (Langman, 2005).

Beyond the ecosystem and nearby communities, the adverse effects have an impact on sustainability itself (Peci et al., 2017). Mass tourism has a propensity to exploit resources and communities for financial gain by emphasizing short-term gains above long-term ones (Weaver, 2014). The tourism sector frequently has low pay, unfavorable working conditions, and insufficient labor rights (Liu & Wall, 2006). As local economies become dependent on seasonal tourism, communities become more susceptible to downturns in the economy and lack a variety of income streams (Law, 1992). Such disparities contribute to social inequality by concentrating income in the hands of a select few while the majority struggles to gain from tourism (Scheyvens and Momsen, 2008).

Sustainable tourism has arisen as a concept that addresses the urgent need for change (Frey and George, 2010). Sustainable tourism strives to lessen the detrimental effects of mass tourism by fostering responsible travel habits (Medina, 2005). Sustainable tourism prioritizes environmental protection, community involvement, and ethical business practices in order to protect local communities' well-being, natural resources, and cultural legacy (Jamal and Stronza, 2009). It encourages visitors to make thoughtful decisions, help out local companies, respect cultural customs, and leave as little of an environmental legacy as possible (Garrod and Fyall, 2000).

The adverse effects of mass tourism highlight the urgent need for a change to sustainable methods, to sum up (Liu, 2003). We can lessen environmental deterioration, maintain cultural integrity, and advance just economic growth by taking a more responsible approach to travel and tourism (Hassan, 2000). Adopting sustainable tourism is not only morally right, but also a crucial step in protecting the environment and securing a better future for future generations (Holden, 2005).

Examples of sustainable tourism and hotel practices include using local and organic products in hotel restaurants, reducing water and energy consumption through green building design and efficient operations, providing guests with information about local culture and customs, and supporting local conservation and community development projects. Due to expectations regarding hotels' adherence to the principles of sustainable development, the public's attention has been drawn to many commercial organizations, including hotels, as a result of unfavorable features of the tourism industry (Font et al., 2016). In conclusion, sustainable development, tourism, and hotels are interconnected and rely on each other for long-term success. By adopting sustainable practices, tourism and hotel industries can contribute to the preservation of natural and cultural resources, while providing economic and social benefits to local communities.

When it comes to sustainable tourism and hotels, there are a few additional considerations. Hotels are a significant part of the tourism industry and can have a significant impact on the environment and local communities. Sustainable tourism theory emphasizes that hotels should strive to minimize their negative impacts while maximizing their positive impacts (Esparon et al., 2014; Lesar et al., 2023). One-way hotels can achieve sustainability by implementing energy-efficient practices, such as using renewable energy sources, minimizing energy consumption, and reducing waste (Khatter et al., 2021). Another important aspect of sustainable tourism is the conservation of natural and cultural resources, which hotels can promote by providing education to guests about local cultures and the importance of environmental conservation (Mensah, 2012). In addition, hotels can support the local economy by sourcing goods and services from local businesses, which can help to promote economic development in the region. This approach can also contribute to the preservation of local culture and traditions, as well as providing guests with a more authentic experience of the destination (Chen and Chen, 2015). Sustainable tourism theory emphasizes that hotels should operate in a way that benefits the environment, local communities, and the economy, while also providing guests with an enjoyable and memorable experience. By adopting sustainable practices, hotels can contribute to the long-term sustainability of the tourism industry and help to preserve natural and cultural resources for future generations.

The relationship between sustainable tourism theory, tourism, hotels, and sustainable development is one of interdependence, as these concepts work together to promote responsible and sustainable tourism practices that benefit both the present and future generations. Adding Research Coordination Network (RCN) to these subjects can further enhance the research and collaboration efforts in sustainable tourism and hotels and promote sustainable development goals (Solem and Boehm, 2018). RCN is a network of researchers, policymakers, and practitioners who work together to promote research and collaboration in specific fields (Childers et al., 2014). The RCN provides funding to groups of researchers to develop networks that can help to advance research in a specific area or field, by facilitating communication and collaboration among scientists and promoting the sharing of knowledge, resources, and tools. In sustainable tourism and

hotels, RCN can play a crucial role in fostering collaboration between researchers, policymakers, and industry stakeholders to promote sustainable tourism practices and policies. RCN can facilitate sharing of knowledge, best practices, and research findings between stakeholders, which can help inform policy decisions and promote sustainable tourism practices (Porter et al., 2012). It can also help to identify research gaps and opportunities for future research, which can contribute to the development of sustainable tourism practices and policies. Overall, the addition of RCN to sustainable tourism theory, tourism, hotels, and sustainable development can help to promote collaboration and knowledge sharing between stakeholders, which can contribute to the development of sustainable tourism practices and policies that benefit both the tourism industry and the wider society.

Bibliometric analysis is a quantitative method used to analyze scientific literature and scholarly communication. It involves analyzing patterns of publication, citation, and co-citation in a given field of study, to identify research trends, influential authors and publications, and research gaps. In the field of tourism, bibliometric analysis can provide insights into the research landscape, the most influential researchers and publications, and emerging trends and research areas. It can also help identify potential collaborators and research partners, and inform policy and decision-making (Köseoglu et al., 2019; Phulwani et al., 2020).

Bibliometric analysis in tourism can be used to inform research agendas, identify research gaps, and support evidence-based policy and decision-making. It can also help researchers to identify potential collaborators and research partners and position their research within the wider research landscape (Gupta and Valeri, 2022). Some of the key insights that can be gained from bibliometric analysis in tourism include identification of the most influential authors and institutions in the field of tourism, mapping of the most popular research topics and emerging trends in tourism research, assessment of the impact and citation trends of key tourism journals and publications, identification of potential research gaps and opportunities for future research in tourism.

Overall, bibliometric analysis is a valuable tool for understanding the landscape of tourism research and identifying areas for further exploration and development. It can help researchers and practitioners to stay up to date with the latest trends and developments in the field of tourism, and to make informed decisions about research priorities and directions.

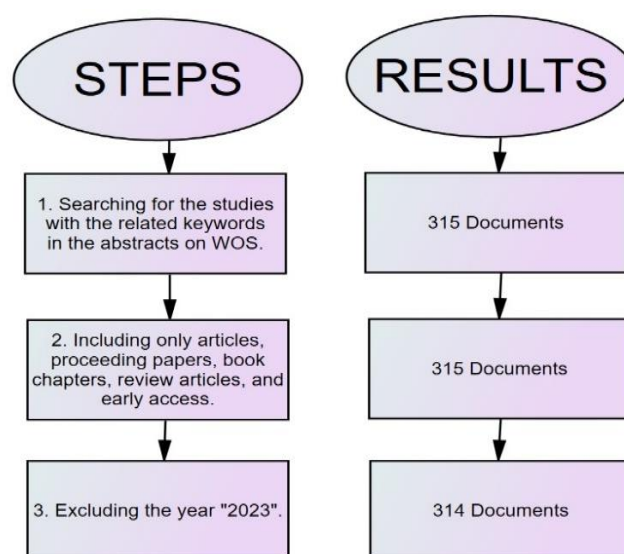
The aim of this study is to investigate the interrelationships between the concepts of sustainable development, hotels, and tourism. The study aims to explore how these concepts are used together in the academic literature and identify any patterns or trends in their use with the contribution of RCN theory. Specifically, the study will analyze the language and terminology used in academic publications related to sustainable development, hotels, and tourism. It will examine the frequency and nature of the connections between these concepts and explore the ways in which they are conceptualized and discussed within the literature. Additionally, this study aims to investigate how the application of sustainable development principles within the hotel and tourism industries is discussed and analyzed within the academic literature. Ultimately, the study aims to contribute to a deeper understanding of the relationships between sustainable development, hotels, and tourism, and to identify opportunities for further research and development in this area as there is no other bibliometric study examining these three concepts. Also, using bibliometric findings and combining them with the RCN theory makes this study unique in the academic literature which would contribute to sustainable development.

## 2. Materials and Methods

The term bibliometrics, which is a combination of the words "biblio" and "metrics" when considered as a unified concept, is a term derived from the Latin and Greek words "biblion" meaning book and "metricus" meaning to measure (Patel et al., 2021). In terms

of the development process, it would not be wrong to say that the concept of statistical bibliography, first used by Wyndham Hulme in 1922, forms the basis of the term bibliometrics. Bibliometric analysis is the analysis of the performance of items (study, author, journal, keyword, country, institution) in any research field by classifying, measuring, and ranking their performance using mathematical and statistical methods (algorithms, softwares, etc.) and visualizing the intellectual, conceptual, and social structure reflecting the scientific communication in the studied field with the help of mapping techniques (Simsir, 2022, p.8-14).

VOSviewer is a modern and popular software tool for bibliometric studies. The two main functions of VOSviewer can be categorized as creating maps based on network data and visualizing & exploring maps. The main reason for authors to use this software is its functionality for displaying bibliometric maps which are referred to as the label view, the density view, the cluster density view, and the scatter view. As VOSviewer can support five different database files which are Web of Science files, Scopus files, Dimensions files, Lens files, and PubMed files, Wos database was chosen for this study. Because WoS has been recommended for bibliometric analyses in numerous studies. When the literature is reviewed, it can be understood that it has proven its worth by not only providing citation information but also ensuring database quality through strict listing requirements (Van Eck and Waltman, 2010; 2011; 2014; Aromataris and Pearson, 2014; Oh and Lee, 2020; Solórzano et al., 2022; Şimşek and Kalıpçı, 2022; Toker and Kalıpçı, 2022; VOSviewer Manual, 2022). Dataset was gathered from Wos database in February 2023. 3 keywords entered which are "Sustainable Development", "Hotel", "Tourism" and the search was started by choosing the abstracts as authors did not want to include any irrelevant publications. 2023 was not included as the year has not finished. After all, 314 publications were found. The figure below illustrates the data collection process.



**Figure 1.** The Data Collection Process (Modified from Ogretmenoglu et al., 2021)

Some of the metrics and analysis results of Wos database were given in the figures and tables as well. They were stated in the parentheses. Then, Citation of the Sources, Co-occurrence of the Author Keywords, Co-authorship of Countries, Co-authorship of Organizations, Citations of Authors, and Bibliographic coupling of countries analysis were run respectively to be able to answer the research questions below:

RQ1: What are the bibliometric findings about publication years, number of publications by category, publishers, and document types?

RQ2: What are the bibliometric findings about citation of the sources analysis and how density visualization (citation of the sources) is structured?

RQ3: What are the bibliometric findings about keyword analysis and how network visualization (co-occurrence of the author keywords) is structured?

RQ4: What are the bibliometric findings about geographical analysis of publications and how network visualization (co-authorship of countries) is structured?

RQ5: What are the bibliometric findings about analysis of publications by organization and how density visualization (co-authorship of organizations) is structured?

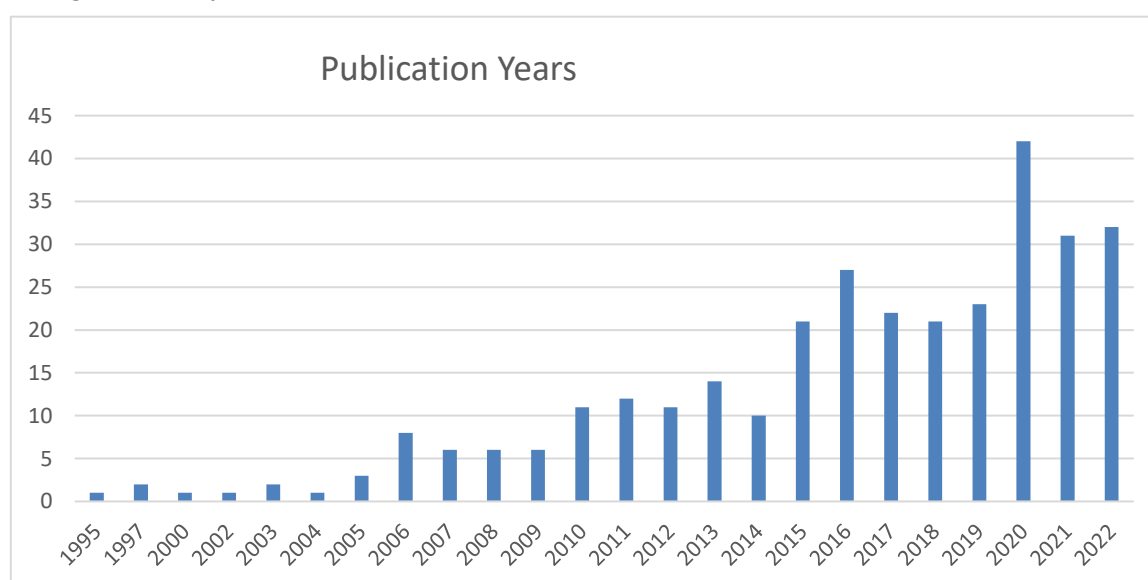
RQ6: What are the bibliometric findings about analysis by author and how overlay visualization (citations of authors) is structured?

RQ7: What are the bibliometric findings about bibliographic coupling and how overlay visualization (citations of authors) is structured?

### 3. Results

#### 3.1 Publications by Year and Number of publications by category

The first article related to this study's keywords which are "Sustainable Development", "Hotel", and "Tourism" that was found in Web of Science (WoS) belongs to the year 1997 after a search. The name of the article is "Business Tourism - A Study of The Market for Hotel-Based Meetings and Its Contribution to Wales's Tourism" by Wootton and Stevens (1995). When the abstract of this article is examined, the keywords can be clearly seen. It was published by Tourism Management. In 2006, there is a slight increase not only in the number of publications on the topic but also in the number of articles and since that year there is a steady increase (shown in Figure 2). 2020 reached a peak in the number of publications (n=42). Furthermore, the field is expanding as data gathering began in February 2023 and more articles are anticipated to have been published in 2023 than in 2020. The study will be modified to reveal information allowing for a better understanding of the relevance of prior research after examining the growth in the number of papers on "Sustainable Development," "Hotel", and "Tourism" published throughout the years.



**Figure 2.** Publication Years (Source WOS Database)

Number of publications were shown in the Table 1. When the first 10 categories are examined, Hospitality Leisure Sport Tourism has a 35.987% percentage with 113 research count. The second category with the most linked content is "Environmental Studies" with 53 articles, followed by "Environmental Sciences" with 51 articles. It can be

inferred from the results that articles on this subject can be categorized as multi-disciplinary.

**Table 1.** Number of publications by category (Source WOS Database)

<b>Web of Science Categories</b>	<b>Record Count</b>	<b>% of 314 Studies</b>
Hospitality Leisure Sport Tourism	113	35.987%
Environmental Studies	53	16.879%
Environmental Sciences	51	16.242%
Green Sustainable Science Technology	49	15.605%
Management	37	11.783%
Business	29	9.236%
Economics	29	9.236%
Social Sciences Interdisciplinary	15	4.777%
Engineering Environmental	10	3.185%
Multidisciplinary Sciences	9	2.866%

### 3.2 Publications by Journal

5 journals with 10 or more articles published on the subject can be seen in Table 2. These journals published 314 studies together. It can be seen that the journal "Taylor & Francis" is the leader in the number of publications (34 studies), which represents 10.828% of the total sample, followed by the "Mdpi" with 10.191% (32 studies), "Elsevier" with 9.554% (30 studies), "Emerald Group Publishing" with 8.599% (27 studies) and "Springer Nature" with 7.325% (23 studies). The distribution of the studies was shown in the Table 3 titled as the document types.

**Table 2.** Publishers (Source WOS Database)

<b>Publishers</b>	<b>Record Count</b>	<b>% of 314 Studies</b>
Taylor & Francis	34	10.828%
Mdpi	32	10.191%
Elsevier	30	9.554%
Emerald Group Publishing	27	8.599%
Springer Nature	23	7.325%

314 studies divided into 5 document type were shown in Table 3. When the document type is analyzed via Wos, not surprisingly articles come first with 67.834% percentage and 213 record count. The second document type is proceeding paper with 28.662% percentage and 90 record count. Both book chapters and review article have a 3.503% percentage with 11 record count. And early access has a 0.955% percentage with 3 record count.

**Table 3.** Document Types (Source WOS Database)

<b>Document Types</b>	<b>Record Count</b>	<b>% of 314 Studies</b>
Article	213	67.834%
Proceeding Paper	90	28.662%
Book Chapters	11	3.503%
Review Article	11	3.503%
Early Access	3	0.955%

### 3.3 Citation of the Sources Analysis

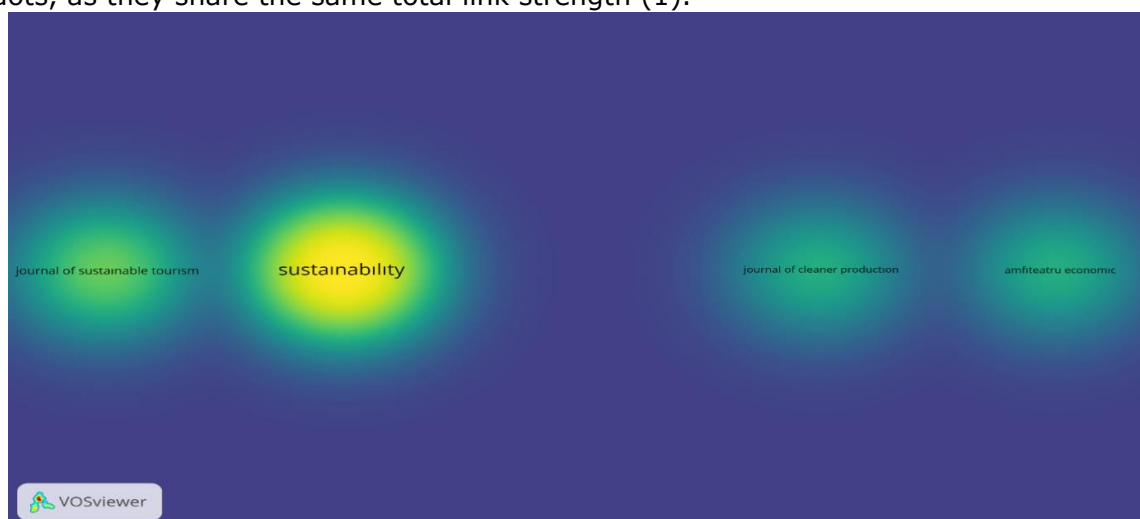
Vosviewer was limited with 3 documents of a source and 5 citations of a source. Only 11 of the 220 sources met the thresholds. When the Table 4 is examined, Journal of Sustainable Tourism has the most citations till 2023 with 219 and 8 documents.

Sustainability comes after that with 212 citations and 28 documents. Journal of Cleaner Production is ranked 3<sup>rd</sup> with 169 citations and 4 documents. Other sources with the number of the documents, citations, and total link strength were presented below.

**Table 4.** Citation of the Sources

Rank	Source	Documents	Citations	Total Link Strength
1	Journal of Sustainable Tourism	8	219	1
2	Sustainability	28	212	3
3	Journal of Cleaner Production	4	169	3
4	International Journal of Hospitality Management	3	124	0
5	Worldwide Hospitality and Tourism Themes	13	51	0
6	Journal of Tourism and Cultural Change	4	40	0
7	Tourism Management Perspectives	3	33	0
8	Plos One	3	28	0
9	Amfiteatru Economics	4	26	1
10	Tourism and Hospitality Management-Crotia	3	9	0

After the limitation process, 4 journals were shown in the Figure 3. The more concentrated the colors, the more citations they get related to the topic area in this analysis (Kuzior and Sira, 2022). According to total link strength, “Sustainability” can be seen easily. Although, “Journal of Cleaner Production” have total link strength (3) with “Sustainability”, it is not as clear as the other journal. Because it has less citations. The two sources which are shown in the right side of the figure can be seen less with yellow dots, as they share the same total link strength (1).



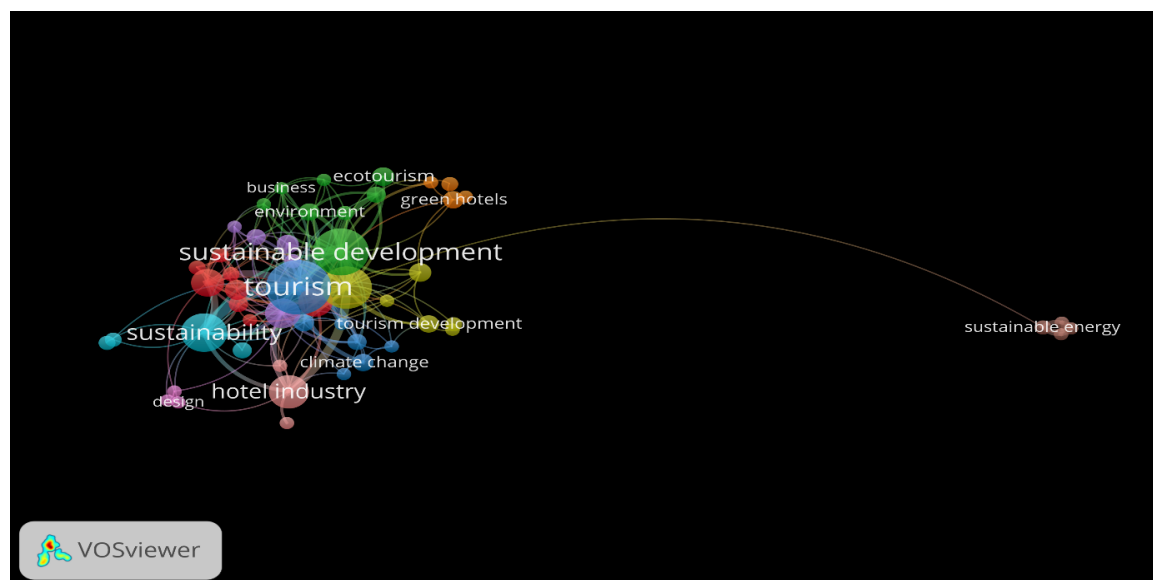
**Figure 3.** Density Visualization (Citation of the Sources)

### 3.4 Keyword Analysis

Co-occurrence (Author Keywords) was utilized to determine the most used keywords, which were evaluated to categorize the 314 papers that make up the sample. Minimum number of occurrences of a keyword were chosen as 3. 22 met the threshold out of 1000. The subjects that come up more frequently in the analyzed area stand out because of the algorithm. The keywords are divided into seven clusters on the map shown in Figure 3. The main keyword per cluster is tourism (dark blue cluster), sustainable development (green cluster), sustainability (turquoise cluster), sustainable



tourism (yellow cluster), hospitality (red cluster), hotel industry (light pink cluster) and hotels (purple cluster). As "sustainable energy" is from other discipline, it can be seen not in the network but in the right side of the figure. This map also shows that "Sustainable Development," "Hotel", and "Tourism" appear to be the directions the research is going in and the potential locations for future research. Occurrences and total link strength of the keywords, which were shown in the Figure 4 as clusters, were presented in Table 5. They were ranked according to their Total Link Strength as shown in the Figure 4.



**Figure 4.** Network visualization (Co-occurrence of the Author Keywords)

**Table 5.** Occurrences and Total Link Strength of Keywords

Rank	Keyword	Occurrences	Total Link Strength
1	Tourism	58	67
2	Sustainable Development	42	62
3	Sustainable Tourism	35	40
4	Sustainability	29	40
5	Hotels	17	30
6	Hospitality	15	28
7	Corporate Social Responsibility	16	24
8	Hotel Industry	22	22
9	Environment	6	16
10	Ecology	5	12

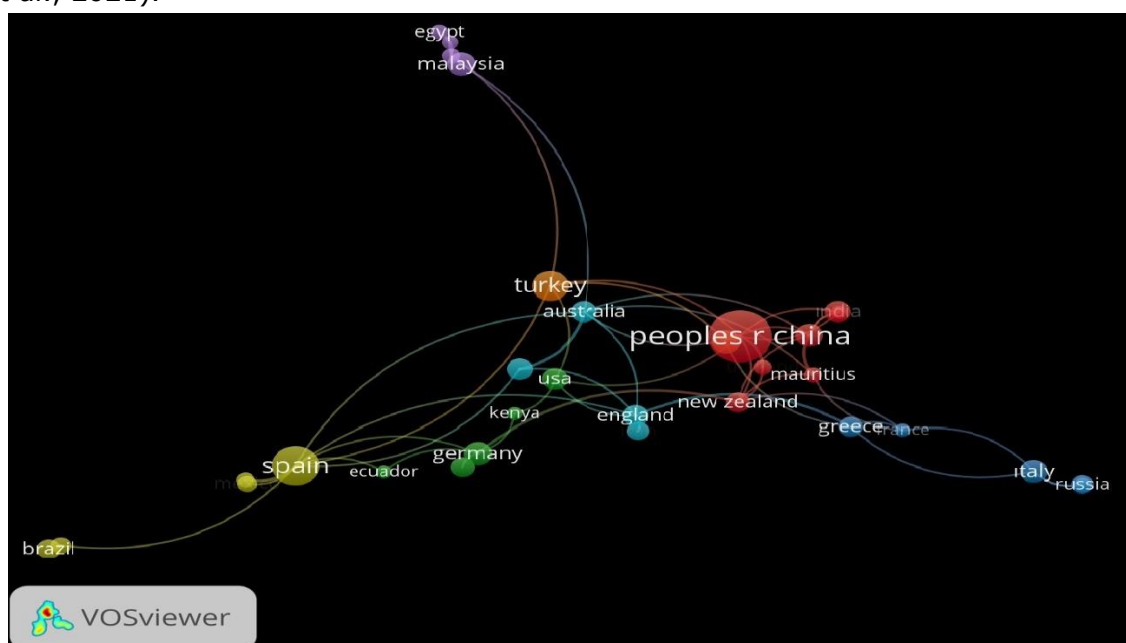
### 3.5 Geographical Analysis of Publications

The 314 studies that make up the sample are spread across 77 different nations, which indicates that this study's issue is international when the authors' countries of affiliation are examined. However, minimum number of documents of a country was chosen as 3 and minimum number of citations of a country was chosen as 1. This eliminated most of the countries and 38 met the threshold. 32 of them has connection. The ten nations with the highest production of scholarly research articles are listed in Table 6. According to the data, Peoples R China is the country with the highest number of publications, totaling 48 studies, followed by Spain with 27 studies, and Croatia with 24 studies. Turkey is in 4th place in publications. The most remarkable country in this table is Romania, which is in the 5th place. It has more publications than most of the touristic countries such as Italy, France, Taiwan, and so forth. USA, which was not included in the table, has 9 publications, although it has a tremendous touristic income as a country.

**Table 6.** Countries/Regions (Source WOS Database)

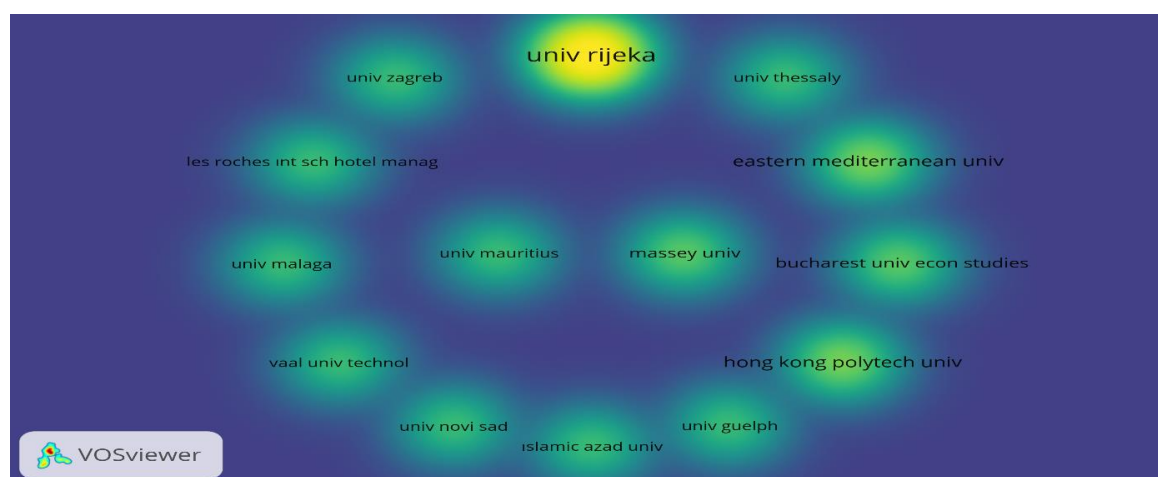
Countries/Regions	Record Count	% of 314 Studies
Peoples R China	48	15.287%
Spain	27	8.599%
Croatia	24	7.643%
Turkey	16	5.096%
Romania	14	4.459%
Germany	10	3.185%
Malaysia	10	3.185%
Poland	10	3.185%
Taiwan	10	3.185%
Italy	9	2.866%

The country co-authorship map from the sample of 314 studies is shown in Figure 5. It is feasible to notice that Croatia, Spain, and People’s Republic of China are present in a group. This occurs because of the fact that these three nations account for 31.529% of all publications. The distance between the clusters on the map and the lines connecting them illustrate the intensity of the relationships between the countries and how frequently they publish as co-authors. This provides a useful indication of the strength of international collaboration in the fields of sustainability and tourism research (Cavalcante et al., 2021).

**Figure 5.** Network visualization (Co-authorship of Countries)

### 3.6 Analysis of Publications by Organization

Minimum number of documents of an organization was chosen as 3 and minimum number of citations of an organization was chosen as 1 in this analysis. According to the results, the top university which is responsible for the publications of the 9 studies is University of Rijeka with 27 citations and 4 Total Link strength. Due to that reason, it can be clearly seen in the Figure 6. However, there is no connection with the organization which can be commented as there is no network within these organizations. The details of the top 10 organizations were given in the Table 7. The other 5 organizations were not included in the table, as they have less than 10 citations.



**Figure 6.** Density Visualization (Co-authorship of Organizations)

**Table 5.** Documents, Occurrences and Total Link Strength of Organizations

Rank	Organizations	Documents	Citations	Total Link Strength
1	Univ Rijeka	9	27	4
2	Juraj Dobrila Univ Pula	7	30	4
3	Hong Kong Polytech Univ	5	60	0
4	Eastern Mediterreanean Univ	5	38	0
5	Bucharest Univ Econ Studies	4	28	0
6	Massey Univ	4	28	0
7	Univ Mauritius	3	90	0
8	Univ Guelph	3	50	0
9	Vaal Univ Technol	3	37	0
10	Univ Novi Sad	3	14	0

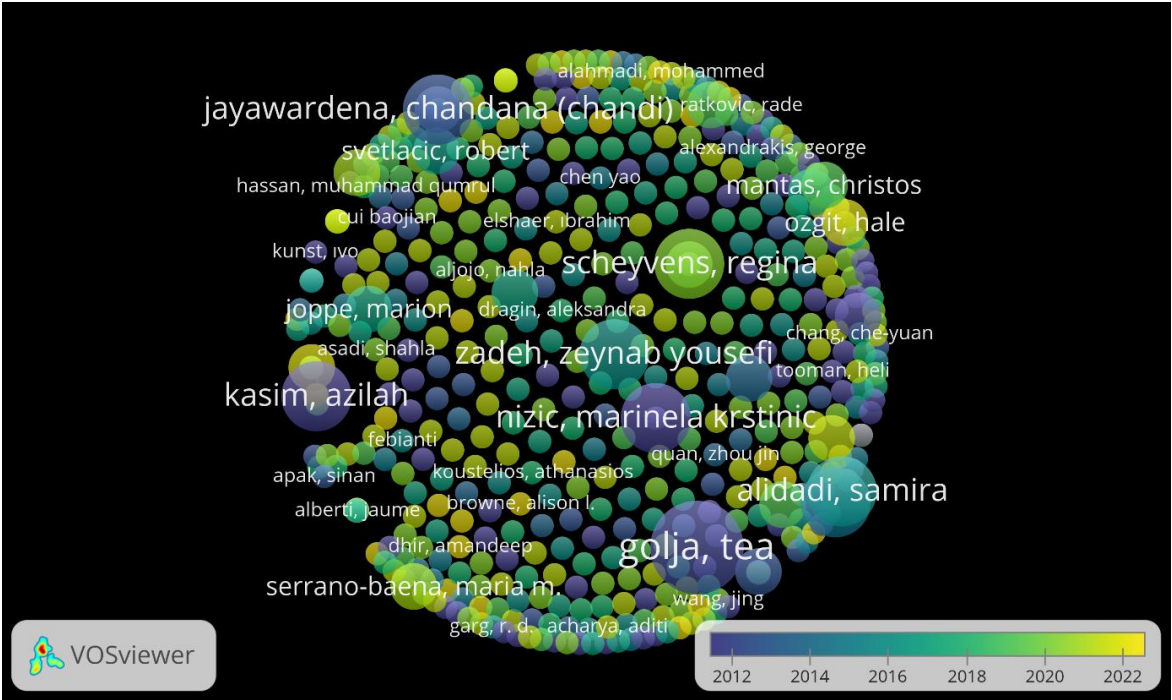
### 3.7 Analysis by Author

This analysis focuses on ~~about~~ the author's production and publication. The most active authors are listed in Table 6. Azilah Kasim, who is a Professor of Tourism Management at Universiti Utara Malaysia has 3 of the 314 publications, followed by the others whom all have 1 publication for each. Ranking in the table differs due to the citations. As it can be seen clearly Kasim Azilah has 156 citations which creates the biggest dot which is blue in the Figure 7. This name has also had 14 Total Link Strength which helps its name to be seen in the figure. The number of the document per each author and the number of all publications show us that these topics should be studied more. In other words, the literature needs more studies about "Sustainable Development", "Hotel", and "Tourism".

**Table 6.** Authors, Occurrences and Total Link Strength of Organizations

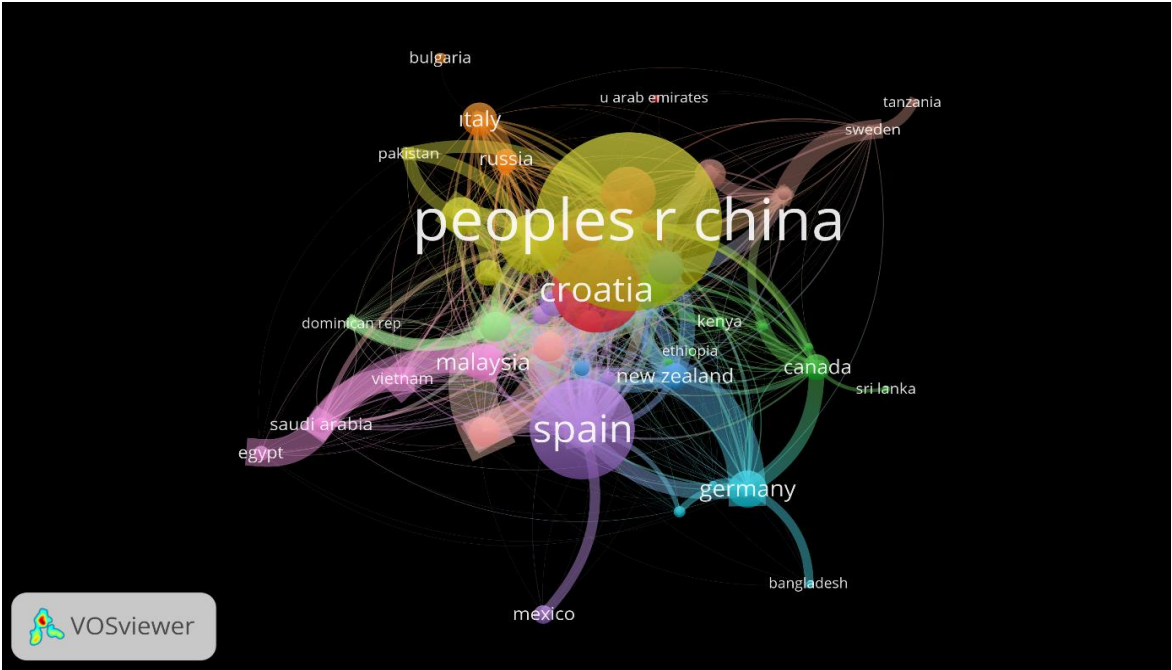
Rank	Author	Documents	Citations	Total Link Strength
1	Kasim, Azilah	3	156	14
2	Abdullah, Rusli	1	116	0
3	Aljojo, Nahla	1	116	0
4	Asadi, Shahla	1	116	0
5	Nilashi, Mehrbakhsh	1	116	0
6	Pourhashemi, Seyedeh Omsalameh	1	116	0
7	Razali, Nor Shahidayah	1	116	0
8	Samad, Sarminah	1	116	0
9	Yadegaridehkordi, Elaheh	1	116	0

10	Amran, Azlan	1	88	0
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**Figure 7.** Overlay Visualization (Citations of Authors)

When two documents cite the same one, this is known as bibliographic coupling, and it can show how strong one publication is in comparison to a group of other publications (Mulet-Forteza et al., 2018). Minimum number of documents of an organization was chosen as 3 and minimum number of citations of an organization was chosen as 1 in this analysis. 59 has met the threshold. Figure 8 illustrates the bibliographic coupling of nations and enables us to see and gauge the strength of the ties that bind them. The map shows four clearly defined clusters, and the lines indicate correspondences between the nations.



**Figure 8.** Network visualization (Bibliographic coupling of countries)

Table 7 identifies the Bibliographic coupling of countries and gives more specific and detailed information about the analysis.

**Table 7.** Countries, Documents, Citations, and Total Link Strength of Countries.

Rank	Countries	Documents	Citations	Total Link Strength
1	Australia	8	190	1886
2	Spain	27	157	1771
3	People's R.of China	48	320	1685
4	England	8	99	1282
5	S. Africa	9	216	1196
6	New Zealand	7	37	1006
7	Turkey	16	165	924
8	Malaysia	10	378	866
9	Indonesia	8	26	850
10	U.S.A.	8	31	830

#### 4. Conclusions

The current study contributes to our understanding of the state-of-the-art in the fields of "Sustainable Development", "Hotel", and "Tourism". The most prolific publishing nations and organizations, specialized journals in those sectors, keyword-based trends in the topics being covered, and the value of publications via co-citation networks are all made easier to find. As a result, it is crucial for identifying knowledge gaps in this domain and potential future trends in research.

This study provides an analysis of the leading journals, authors, institutions, countries, and keywords to find the answers of 7 RQs. According to the results, first publication belongs to the year 1997 and publications reached a peak in 2020 with 42 published studies. When the first 10 categories are examined, Hospitality Leisure Sport Tourism has a 35.987% percentage with 113 research count. "Taylor & Francis" is the leader in the number of publications (34 studies), which represents 10.828% of the total sample, followed by the "Mdpi" with 10.191% (32 studies). Journal of Sustainable Tourism has the most citations till 2023 with 219 and 8 documents. The main keywords are tourism, sustainable development, sustainability, sustainable tourism, hospitality, hotel industry, and hotels. People's Republic of China is the country with the highest number of publications, totaling 48 studies, followed by Spain with 27 studies, and Croatia with 24 studies. Turkey is in 4th place in publications. The most remarkable country in this table is Romania, which is in the 5th place, as it was stated above. Because, it has more publications than most of the touristic countries such as Italy, France, Taiwan, and so forth. USA, which was not included in the table, has 9 publications, although it has a tremendous touristic income as a country. It also shows the importance of the attention it pays to sustainability. The top university which is responsible for the publications of the 9 studies is University of Rijeka with 27 citations and 4 Total Link strength. Azilah Kasim, who is a Professor of Tourism Management at Universiti Utara Malaysia is the most productive academician. It is surprising that most of the academicians are from the eastern countries. In the bibliographic coupling of countries, Australia was ranked 1st.

Sustainable tourism theory, tourism, hotels, and sustainable development are closely interrelated concepts that work together to promote responsible and ethical tourism practices. Sustainable tourism theory provides a framework for tourism development that seeks to balance economic, social, and environmental considerations, with the goal of maximizing positive impacts while minimizing negative impacts. This strategy adheres to the sustainable development principles, which aim to satisfy the

requirements of the present generation without endangering the capacity of future generations to satisfy their own needs. Tourism is an industry that can have significant impacts on the environment, local communities, and economies, and as such, it is important to adopt sustainable tourism practices to ensure that these impacts are positive rather than negative. Hotels are a significant part of the tourism industry and can have a significant impact on the environment and local communities, and sustainable tourism theory emphasizes that hotels should operate in a way that benefits the environment, local communities, and the economy.

Sustainable development is a broader concept that encompasses a wide range of sectors and industries, including tourism. The goal of sustainable development is to meet the demands of the present without sacrificing the capacity of future generations to meet their own requirements. It aims to foster economic progress, social well-being, and environmental sustainability. Sustainable tourism and sustainable hotels are key components of sustainable development, as they promote responsible and ethical tourism practices that contribute to the long-term sustainability of the tourism industry and help to preserve natural and cultural resources for future generations. Overall, the relationship between sustainable theory, tourism, hotels, and sustainable development is one of interdependence, as these concepts work together to promote responsible and sustainable tourism practices that benefit both the present and future generations.

Adding Research Coordination Network (RCN) regarding country grouping with sustainable development, hotels, and tourism, one suggestion could be to focus on the specific challenges and opportunities facing different regions or countries in promoting sustainable tourism and hotels.

For example, researchers examine the sustainability challenges and opportunities facing developing countries in promoting sustainable tourism and hotels and explore how RCN can help to address these challenges and promote sustainable development in these regions. Researchers also focus on the role of government policies, regulations, and incentives in promoting sustainable tourism and hotels, and examine how RCN can help to facilitate collaboration between government agencies, industry stakeholders, and researchers in developing and implementing these policies. Another suggestion could be to examine the role of different stakeholders in promoting sustainable tourism and hotels in different regions or countries and explore how RCN can facilitate collaboration and knowledge sharing between these stakeholders. This could include examining the role of local communities, industry associations, NGOs, and other stakeholders in promoting sustainable tourism practices.

Overall, the addition of RCN to country grouping with sustainable development, hotels, and tourism can help to promote collaboration and knowledge sharing between stakeholders in different regions or countries, which can contribute to the development of sustainable tourism practices and policies that are tailored to the specific needs and challenges of different regions or countries. These countries can be classified by using bibliometric data such as bibliometric coupling of countries according to their scientific contribution to the academy and a more sustainable world. Some grouped countries can cooperate efficiently according to the Figure 5, Table 6 and 7 such as People's Republic of China, Spain, Croatia and Turkey and Romania. Again so, institutions such as universities given in Figure 6 to provide academic data such as theories to RCN and they can learn from other groups and institutions. So, they can publish articles about sustainable development, and these publishing can be put into practice by the help of UN and UNWTO.

There are several areas of future research that could be explored in the context of sustainable development, hotels, and tourism as well. Here are a few suggestions:

1. The impact of new technologies on sustainable tourism: With the emergence of new technologies, such as artificial intelligence, blockchain, and virtual reality, there is a need to explore their potential to support sustainable tourism practices. Research could examine the use of these technologies in areas such as energy efficiency, waste management, and sustainable transportation.



2. Community-based tourism: Community-based tourism is a form of tourism that emphasizes the involvement of local communities in the tourism industry. Future research could examine the impact of community-based tourism on local communities, including its potential to promote economic development, preserve cultural heritage, and support environmental conservation.

3. Sustainable hotel design: The design and construction of hotels can have a significant impact on the environment, and there is a need to explore sustainable hotel design practices that minimize negative impacts and promote sustainable development.

4. Sustainable tourism policies and governance: Research could examine the effectiveness of sustainable tourism policies and governance mechanisms in promoting sustainable tourism practices, including their impact on environmental conservation, social well-being, and economic development.

5. Climate change and tourism: Climate change is one of the most pressing environmental issues of our time, and there is a need to examine its impact on tourism and the potential for tourism to contribute to climate change mitigation and adaptation.

These are just a few suggestions for future research topics in sustainable development, hotels, and tourism. There are many other areas of research that could be explored, depending on the specific interests and expertise of researchers.

Future research can expand on the current study's scope by merging other databases such as Scopus and publications to produce a more comprehensive knowledge map for the disciplines of "sustainable development", "hotels", and "tourism". Because this study uses only WOS database which can be considered as a limitation. Also, utilizing a number of analytical and visualization tools, including Bibliometrix, researchers can cluster, examine, and present data. Or, researchers can use more than one software in one study which would not limit them as all bibliometric software's have different advantages. Besides, researchers can conduct new qualitative, quantitative, or mixed type researches about these concepts as bibliometric studies are only limited with the current literature. By doing so, they can extend the literature with the new findings and they can shed light on these concepts.

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