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# How Web of Science is shaping the research on publications on wine tourism: Bibliometric analysis approach

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## Abstract

Previous research and industry trends have shown increasing preferences and likeliness on Wine Tourism. That is why; the primary objective of this study was to show the current state of scientific research regarding wine tourism. This paper employs the data extracted from WOS (Web of Science) and has applied quantitative methods. For this purpose, a bibliometric analysis of the publications indexed in WoS was conducted. This has analyzed the correlation between increases, coverage, overlap, dispersion and concentration of documents. During the search process, a set of 472 articles and 198 different sources were obtained. We have concluded with the important keywords and other important things. The analysis part leads with the directions for future research.

**Keywords:** Wine tourism, bibliometric analysis, WOS, Index

### 1. Introduction

During recent 60 years, tourism has experienced continuous expansion and diversification that has turned it into one of the economic sectors with greater weight and growth in the world. Before COVID-19, this sentence was realistic and after COVID-19 tourism has been most hit economic sector. Thus, this paper is about an innovative market where travelers are with different motivations. In future the tourists will be looking beyond visiting the traditional sun, sand and beach destinations. The industry need to identify the new ways and means, for finding new places and moreover new experiences. To respond to these shifts in preferences, the tourist offers are presenting very creative and innovative formats.

One of the popularly rising trends is found related to the food and wine of the region visited. This is how, gastronomic and wine related activities may sometimes become the main reason to visit specific area. These activities are no longer a mere complementary activity of the tour (López-Guzmán, Rodríguez-García, & Vieira-Rodríguez, 2012; Merli, Preziosi, & Acampora, 2018).

As its importance and relevance is increasing, it is found necessary to analyze and accumulate the past, present and futuristic literature, on this sector. The primary objective of this paper is to offer a skeleton on the papers of

"Wine Tourism" through its bibliometric analysis. (Spinak, 1996). This paper has also an objective to determine the selves of scientific production, how, who, what, where and how it was investigated.

"A set of data organized in a logical sequence that allows simple access, so that the information it contains can be: updated, used at any time by any computer program which it is connected to and operated at all times according to different criteria" this is how bibliometric analysis is defined by a top rated and premier author Luque (1995). The validity of the analysis of the papers will be contingent on the appropriate selection of the databases. The selected database should cover sufficiently the area under study (Granda-Orive et al., 2013).

### *1.1 Why bibliometric analysis?*

Science in general is always cumulative. New researches are always build on preceding works, and therefore, extend knowledge in the particular field. The review consists of "identifying, obtaining and consulting the literature and other materials, which are useful for the purposes of our study" (Hernández, Fernández, & Baptista, 2007).

The past two decades we have observed a good number of innovative practices in research. The scientific production has witnessed the growth and its collection in bibliographic databases. This phenomenon has led to the use of "bibliometrics" tools as a useful resource to measure scientific activities based on the statistical analysis by scientific literature (Sancho, 1990). Pritchard (1969) was the first authors who have defined the term bibliometrics, based on his scientific production- "application of statistical and mathematical methods set out to define the processes of written communication and the nature and development of scientific disciplines by using recounting techniques and analysis of such communication".

## 2. Methodology

### *2.1 About the database*

For over 40 years, the databases Web of Science of Thomson Reuters (hereinafter WoS) was the only one that allowed this type of bibliometric studies. Its multidisciplinary character and availability of references, among other features, made it continue at the forefront for decades.

This part of the paper describes how the data were prepared for the bibliometric analysis. This paper identifies the papers based on the scientific literature on keyword phrased "wine tourism". The papers extracted were available in multidisciplinary databases of WOS.

The objective was to create a descriptive-quantitative analysis of the presence of the concept of wine tourism since last twenty years, i.e. 2000-2020. Web of Science is a platform based on Web technology created in 1960 and owned by Thomson Reuters. It has collected a wide range of bibliographic databases, citations and references of scientific publications in any discipline of knowledge; scientific, technological, humanistic and sociological since 1945 (refer table 1 for details).

**Table 1: Key details of extracted documents by WOS**

| Description | Results |
|---|---|
| MAIN INFORMATION ABOUT DATA | |
| Timespan | 2000:2020 |
| Sources (Journals, Books, etc) | 199 |
| Documents | 472 |
| Average years from publication | 5.5 |
| Average citations per documents | 9.911 |
| Average citations per year per doc | 1.213 |
| References | 13646 |
| DOCUMENT TYPES | |
| article | 343 |
| article; early access | 13 |
| article; proceedings paper | 2 |
| book review | 14 |
| correction | 1 |
| editorial material | 5 |
| proceedings paper | 81 |
| review | 13 |
| DOCUMENT CONTENTS | |
| Keywords Plus (ID) | 492 |
| Author's Keywords (DE) | 1199 |
| AUTHORS | |
| Authors | 916 |
| Author Appearances | 1204 |
| Authors of single-authored documents | 82 |
| Authors of multi-authored documents | 834 |
| AUTHORS COLLABORATION | |
| Single-authored documents | 92 |
| Documents per Author | 0.515 |
| Authors per Document | 1.94 |
| Co-Authors per Documents | 2.55 |
| Collaboration Index | 2.19 |

The important thing to note is the maximum number of documents is journal articles, i.e., 343. However, the conferences proceedings are also in good number, i.e. 80. In other themes, this high number of conference proceedings is not found. Almost equal review papers and book reviews has been published. As per the records

of WOS total number of 916 authors was found. Collaboration index is quite low on the theme, i.e. 2.19. If the authors collaborate on the theme probably more number of documents could be produced.

Wine tourism has got place in academic papers since very long. The first paper appeared in year 2000 in WOS index journals on wine tourism. The academic world has given many papers to the peer reviewed literature, (figure 1) helps in understanding that many of them are not in WOS list, which is most reputable list. For about 4-5 years, less number of papers has got attraction form academia. Since 2004-2005 this started growing exponentially. Since then it is continuously increasing and one through was observed during 2013-15, may be post-recession effect can be observed.

## 3. Analysis

### *3.1 Documents and Sources*

During the initial years, the theme (of wine tourism) was publishing 1-3 articles every year. Since last five years, this number has significantly grown. All an average last five years the theme is witnessing more than ~50 papers each year. It is clearly evident that as the number of publications is increasing concurrently the number of citations is increasing. The reason may be that academia, now has a keen interest in wine tourism too. The figure 1 helps in identifying that since last five years each year the academia is publishing a good and significant number of publications. This is the natural result that should occur in most of the theme and should be faced by most of the journals too due to the huge growth of researchers and scientists worldwide (Merigo et al., 2015)

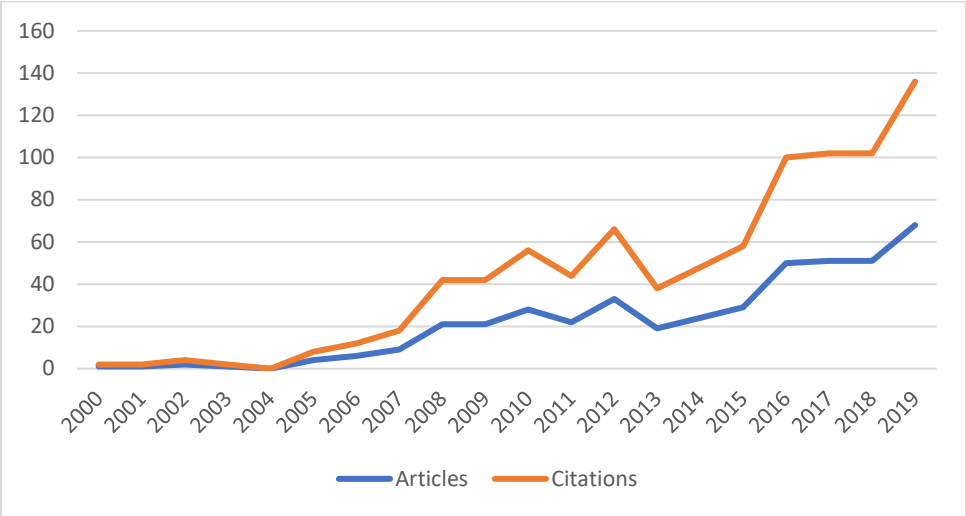


Figure 1: Cumulative figure on annual number of documents on the theme

### *3.2 Most important journals*

It was a question that – which journals are publishing most of the papers? Which journals, the prospective authors, should target for their future publications? Therefore, the criteria were taken that the journal should have published minimum 10 numbers of articles (see figure 2 for details). In total there were 10 journals which have published more than ten documents, as minimum. Those are named as:

1. International Journal of Wine Business Research – English
2. PASOS-Revista De Turismo Y Patrimonio Cultural - Spanish

3. Tourism Management – English
4. Current Issues in Tourism – English
5. Poljoprivreda-Economics of Agriculture - Bosnian
6. Tourism – English
7. Tourism Analysis – English
8. Tourism Review International – English
9. Cuadernos De Turismo – Spanish
10. Journal of Travel & Tourism Marketing – English

This is very interesting to note that out of top ten, there are three journals which are not published in English. This indicates that there is a good scope of non-native English speakers and writer too.

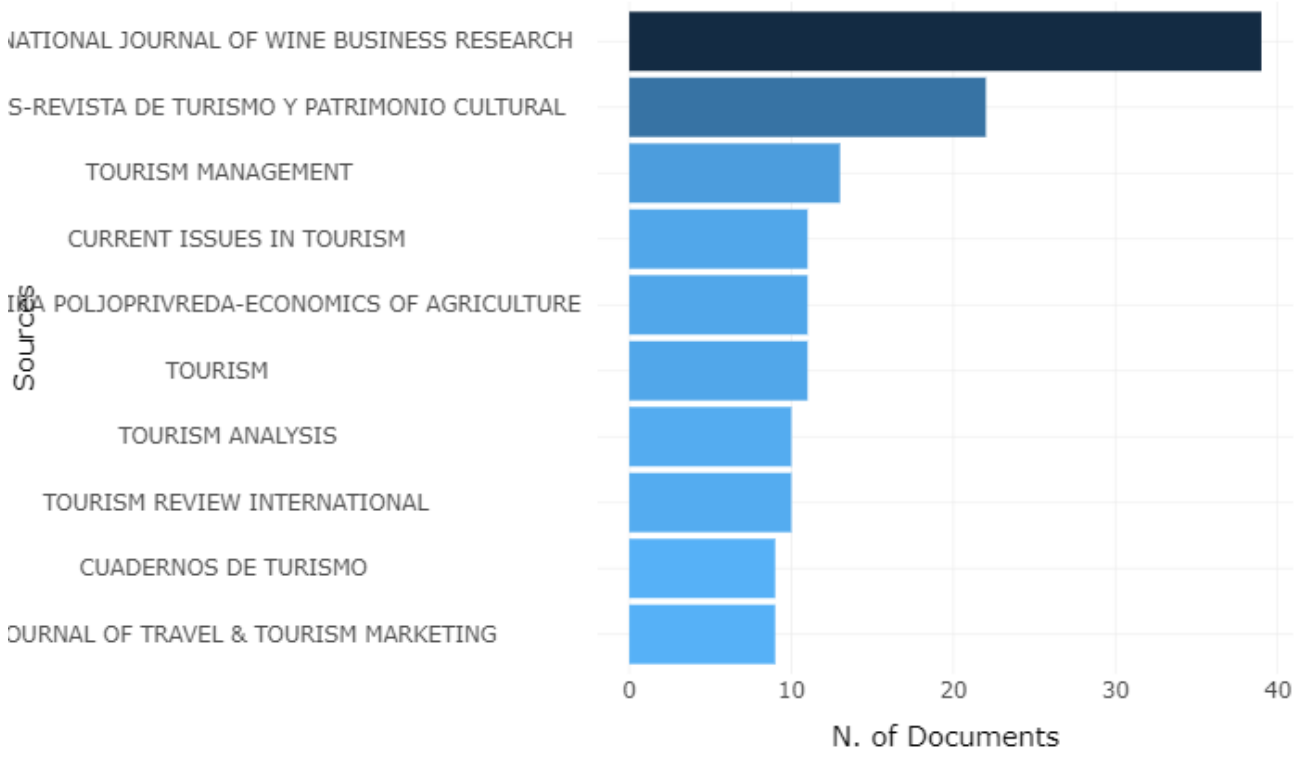


Figure 2: Cumulative figure on the most relevant sources, based on documents on the theme

### *3.3 Growth of sources/ journal*

It is evident that IJWBR has contributed more than enough, which mean most of the publications on the theme "wine tourism" are published by the IJWBR. The growth of top five sources was recorded and found that IJWBR has significantly published the papers and continuously publishing on the same theme. During 2008-2012 Tourism Management and PASOS were with the highest publications. Later, the publications declined on the themes on wine tourism and related themes. Rest journals have contributed significant but their publications are far lesser then these top three sources (see Figure 3 for details).

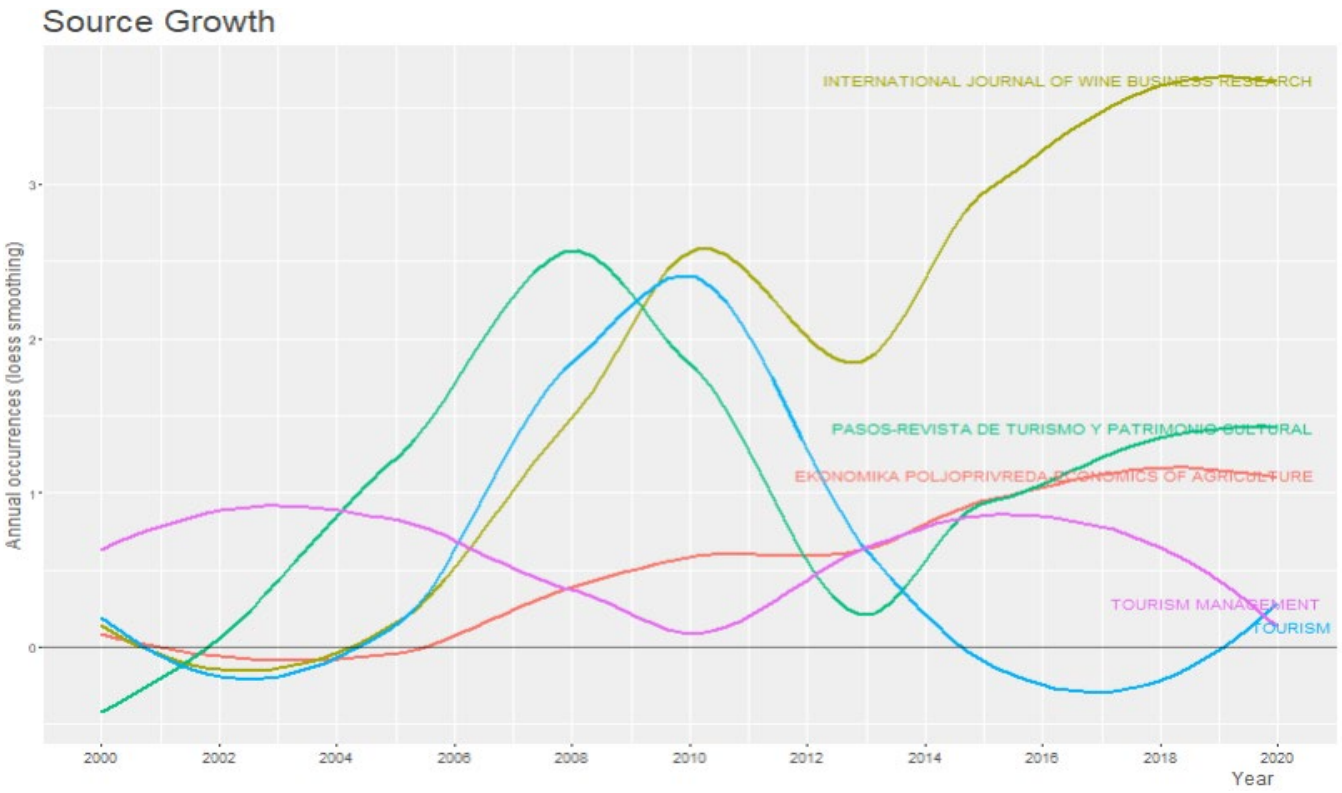


Figure 3: Cumulative figure on the most relevant sources and the pattern in their growth, based on documents on the theme

**Most contributing authors to the domain**

After the sources the important discussion remains about the significant contributing authors on the theme "Wine Tourism". This paper has set criteria that we will take only the authors who have produced more than five documents at least and the authors must carry the h-index more than three.

*h-index:* The h-index is an author-level metric that attempts to measure both the productivity and citation impact of the publications of a scientist or scholar.

The h-index is defined as the maximum value of h such that the given author/journal has published h papers that have each been cited at least h times. The index is designed to improve upon simpler measures such as the total number of citations or publications. The index works properly only for comparing scientists working in the same field; citation conventions differ widely among different fields (Bornmann & Daniel, 2007).

$$h\text{-index } (f) = \max_i \min(f(i), i)$$

*g-index:* The g-index is an author-level metric suggested in 2006 by Leo Egghe. The index is calculated based on the distribution of citations received by a given researcher's publications, such that given a set of articles ranked in decreasing order of the number of citations that they received, the g-index is the unique largest number such that the top g articles received together at least $g^2$ citations.

It can be equivalently defined as the largest number n of highly cited articles for which the average number of citations is at least n (Egghe, 2006). This is in fact a rewriting of the definition

$$g^2 \leq \sum_{i \leq g} c_i$$

as

$$g \leq \frac{1}{g} \sum_{i \leq g} c_i$$

m-index: '*m*-index', is simply one's *h*-index divided by the number of years one has been publishing. While this acts as a sort of age correction, it's still unsatisfactory, essentially because it is noticed that it tends to penalize early career researchers in particular.

The table 2 is visibly helping to understand that the Author ALONSO AD has got most of the papers. Whereas, even having less number of papers, Bruwer J has got the highest h-index, because this author has got large number of citations also. Table 3 supports in the endeavor and decipher that the top contributing author has got sixth rank, if local citations removed.

**Table 2: Most contributing authors and different index**

| Sr. No/ Rank | Authors | Articles | Percentage | h_ind | g_ind | m_ind | TC | NP | PY_start |
|---|---|---|---|---|---|---|---|---|---|
| 1 | ALONSO AD | 23 | 4.872881 | 8 | 13 | | 195 | 13 | 2007 |
| 2 | BRUWER J | 18 | 3.813559 | 11 | 18 | 0.611 | 675 | 18 | 2003 |
| 3 | BRESSAN A | 6 | 1.271186 | 4 | 6 | 0.5 | 54 | 6 | 2013 |
| 4 | CHARTERS S | 6 | 1.271186 | 4 | 6 | | 387 | 6 | 2002 |
| 5 | LOPEZ-GUZMAN T | 6 | 1.271186 | 5 | 6 | 0.455 | 88 | 6 | 2010 |
| 6 | COHEN DA | 5 | 1.059322 | 5 | 5 | 0.357 | 59 | 5 | 2007 |
| 7 | FESTA G | 5 | 1.059322 | 1 | 2 | 0.143 | 8 | 5 | 2014 |
| 8 | GOMEZ M | 5 | 1.059322 | 4 | 5 | 0.444 | 90 | 5 | 2012 |
| 9 | HALL CM | 5 | 1.059322 | 5 | 5 | 0.313 | 165 | 5 | 2005 |
| 10 | KRAJSIC V | 5 | 1.059322 | 4 | 5 | 0.444 | 54 | 5 | 2012 |

Note: h_ind=H index, g_ind = G index, m_ind = M index, TC = total citations, PY_start = production year of 1st document

| **Table 3: Most cited authors** | |
|---|---|
| Authors | Global Citations |
| BRUWER J | 473 |
| GETZ D | 399 |
| HALL C M | 397 |
| CHARTERS S | 300 |
| MITCHELL R | 240 |
| ALONSO AD | 174 |
| ANONYMOUS | 133 |
| BROWN G | 119 |
| CARLSEN J | 118 |
| DODD T | 112 |
| Global citations = total citations – local citations | |

**Collaborations and country of authors**

Collaboration between countries has been presented as a percentage of single country publication (SCP) and as a percentage of multiple country publication (MCP). The SCP represents intra-country collaboration while MCP represents inter country collaboration (Sweileh, Sawalha, Al-Jabi, et al., 2016).

| **Table 4: countries and collaboration index** | | | | | |
|---|---|---|---|---|---|
| Country | Articles | Freq | SCP | MCP | MCP_Ratio |
| AUSTRALIA | 68 | 0.14815 | 43 | 25 | 0.3676 |
| SPAIN | 52 | 0.11329 | 47 | 5 | 0.0962 |
| USA | 49 | 0.10675 | 43 | 6 | 0.1224 |
| PORTUGAL | 35 | 0.07625 | 24 | 11 | 0.3143 |
| ITALY | 33 | 0.0719 | 25 | 8 | 0.2424 |
| CHINA | 20 | 0.04357 | 13 | 7 | 0.35 |
| BRAZIL | 18 | 0.03922 | 12 | 6 | 0.3333 |
| GERMANY | 15 | 0.03268 | 13 | 2 | 0.1333 |
| CROATIA | 14 | 0.0305 | 12 | 2 | 0.1429 |
| FRANCE | 14 | 0.0305 | 10 | 4 | 0.2857 |
| mcp- multiple country publication; scp- single country publication | | | | | |

Table 4 above draws many significant information hidden in it. Australia is with 1st rank, whereas, Spain has got highest papers as single country papers. Figure and table 4 combined indicates that Australia has got highest ratio of MCP/SCP.

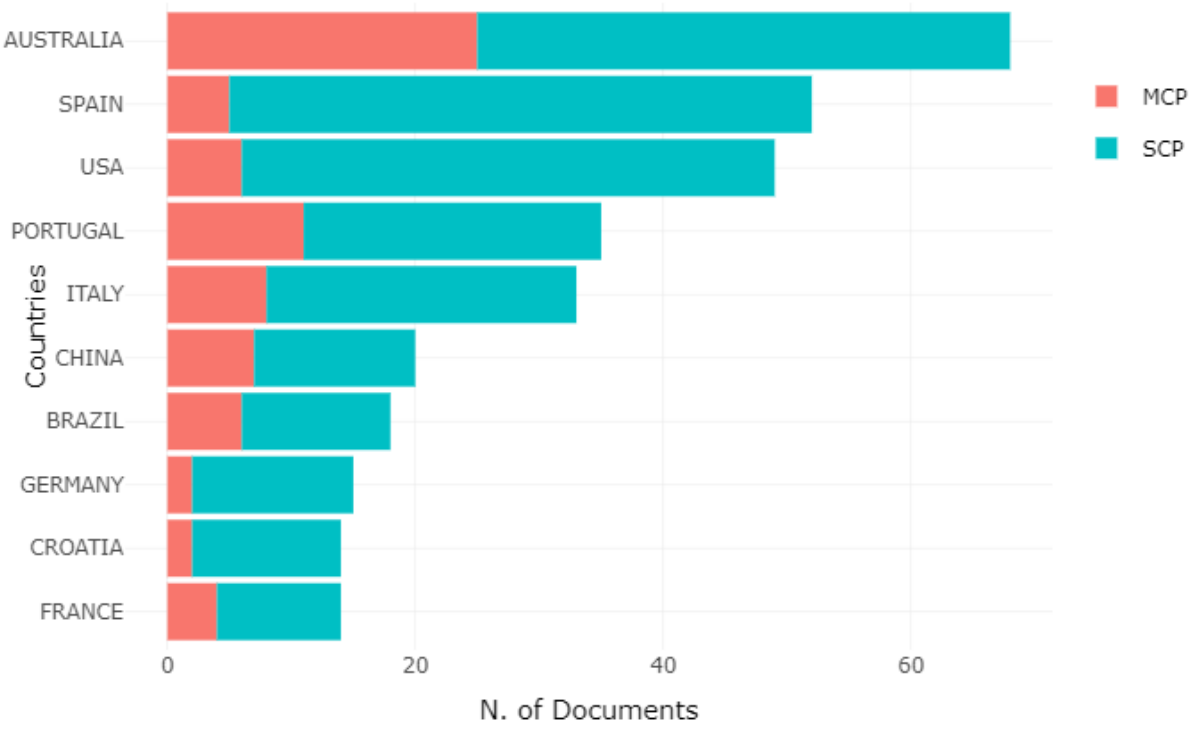


Figure 4: Visual representation of countries and collaboration index

In terms of frequency the countries have got the total number of papers in the following rank (see table 5 for details). It is interesting to note that Portugal, Italy, China, and Brazil have got a higher ratio of MCP. These countries work more collaboratively or maybe they have some good funding opportunities in order to attract the papers and other research activity in collaborations.

**Table 5: countries and total production**

| rank | region | Freq |
|---|---|---|
| 1 | AUSTRALIA | 118 |
| 2 | USA | 109 |
| 3 | SPAIN | 98 |
| 4 | PORTUGAL | 83 |
| 5 | ITALY | 58 |
| 6 | BRAZIL | 41 |
| 7 | CHINA | 38 |
| 8 | SERBIA | 29 |
| 9 | NEW ZEALAND | 27 |
| 10 | UK | 27 |

Figure 5 is representing the country wise analysis. The darkest means highly productive and lightest means least productive. The Western side of the map is more found productive on the theme "wine tourism". Western part seems to be more engaged in total production of research articles.

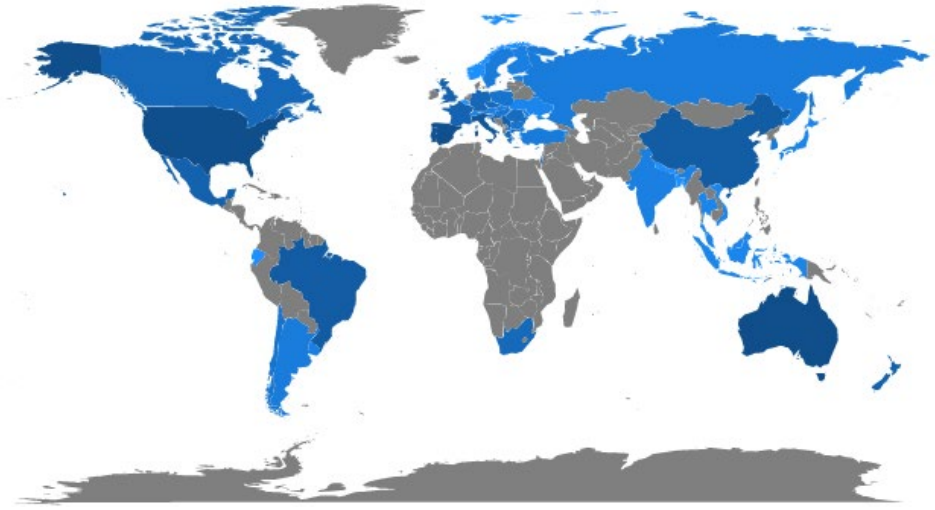

Figure 5: Country scientific production

**Keywords analysis**

The keywords used to identify previous works in our area of study are very useful information when searching for documents in any database. This information also leads to understand the future researchers – to identify the over researched topics, under researched keywords, and trending keywords also. This study employs the author's keywords for the analysis. In this sense, Wine Tourism is the most used term in the databases. Followed by far are tourism, tourism development and wine and others also. With the help of VOS Viewer, the keywords cluster analysis was done and seven clusters have been found (Figure 6).

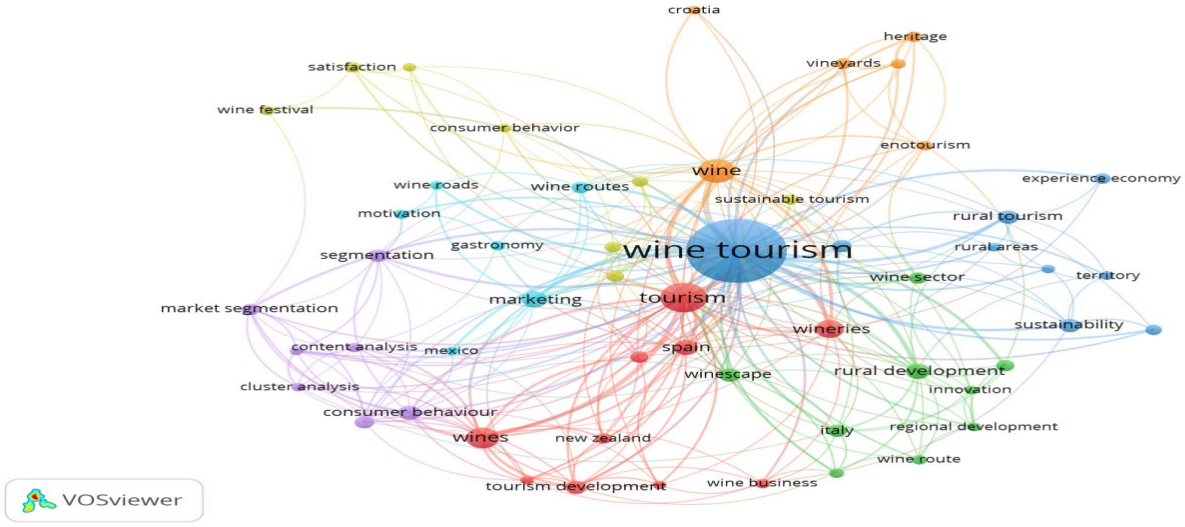


Figure 6: Visual display of clusters on keywords themed, Wine Tourism

These segments propose very important and significant information for the future researchers. The table 6 and figure 6, indicates that there are seven clusters in all the keywords. In all 1142 keywords have been identified through 472 papers. Minimum number of occurrence of keywords was set as five and top 55 keywords were considered eligible for analysis. The map has shown some name of courtiers as keywords, those were removed and finally a table was prepared for the help of future researchers.

In all the clusters - some ways "development" is the prominent word. Cluster 1 seeks to be related with market strategies. Cluster 2 is wine tourism specific; cluster 3 in inhabiting some sense of rurality and sustainability; Cluster 4 is including consumer behavior and their experience too.

**Table 6: Clusters of keywords on "Wine Tourism"**

| Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 | Cluster 6 | Cluster 7 |
|---|---|---|---|---|---|---|
| Marketing strategy<br>Tourism development<br>Wine business<br>Winemaking<br>Wines | Innovation<br>Regional development<br>Rural development<br>Wine industry<br>Wine route<br>Wine sector<br>Winery<br>Winescape | Culinary tourism<br>Development<br>Experience economy<br>Rural areas<br>Rural tourism<br>Sustainability<br>Sustainable development<br>Territory<br>Wine tourism | Consumer behavior<br>Destination image<br>Loyalty<br>Satisfaction<br>Sustainable tourism<br>Tourism experience<br>Wine festival<br>Wine tourist | Consumer perception<br>Content analysis<br>Market segmentation<br>Survey research<br>Tourism management | Gastronomy<br>Marketing<br>Motivations<br>Wine roads<br>Wine routes | Ecotourism<br>Heritage<br>Landscape<br>Vineyards<br>wine |

Cluster 5 is more inclined towards market and management; clutter 6 is indulged with gastronomy and motivations; cluster 7 is utilizing altogether different approach- based on ecotourism, heritage and vineyards.

## 4. Conclusions

The main objective of this work was to perform a bibliometric analysis of the scientific literature published on wine tourism. The paper is also having the aim of identifying which of the theme responds better to how much, who, what, where and how research in wine is carried out. In view of the results, and the extensive bibliography, the paper is in a position to present the main conclusions:

- The article published in scientific journals is the type of document most used by authors to present the results of their research. It has been in the last five years when more than 60% of the present papers have been published in the databases.
- A majority of authors have only written one article with a low average productivity. The Co-authorship analysis reveals that the articles are signed primarily by 2 or 3 authors, which makes the Co-authorship index 2.1.
- Almost 90% of the centers to which the authors are affiliated to the universities from Australia, USA, Spain, Italy and similar countries.

- The results comply with the Law of Bradford (1934), whereby a small number of journals publish most articles on a particular subject.
- The keywords that will most help us to locate previous existing papers in our research area in both WoS are Wine Tourism followed, but by far; by tourism, tourism development and wine.

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