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Barriers in entrepreneurship: a bibliometric study

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Abstract: Entrepreneurship has been one of the oldest activities among human beings. It forms the foundation for any economy. Due to the dynamic nature of the business environment, an entrepreneur faces numerous barriers in setting up a new venture. This study focuses on the analysis of research history and previous works in the field of barriers in entrepreneurship. The aim of this research is to provide a bibliometric overview of the field related to barriers in entrepreneurship using VOS viewer software and the Biblioshiny application. The objective is to organise the past research data and draw meaningful conclusions for future researchers. The bibliometric data was collected from the Scopus database. The bibliometric analysis involved both performance analysis and science mapping. Performance analysis is based on the annual scientific production; productivity of authors, countries, and sources; influence of the authors; and citations received by documents and sources. However, science mapping focuses on the analysis related to co-authorship of authors, organisations, and countries; co-occurrence of keywords, and bibliometric coupling of countries. The results show that the area has extensive research history, along with a few emerging fields having scope for further research. The present study will assist scholars and academicians working in the field of barriers in entrepreneurship to ponder the most important subjects and identifying gaps in the literature.

Keywords: entrepreneur; barrier; bibliometric analysis; performance analysis.

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1 Introduction

Entrepreneurship is defined as the identification and exploitation of business opportunities within the individual–opportunity nexus (Shane and Venkataraman, 2000). Entrepreneurship is a widely researched and discussed topic. Entrepreneurship is one of the oldest commercial activities known to humankind. Entrepreneurship has the potential to advance social and environmental sustainability in addition to economic sustainability (Rashid, 2019).

Entrepreneurship is a multifaceted phenomenon that cuts across many disciplinary boundaries (Low and Macmillan, 1988). There have been many studies considering the effect and challenges of entrepreneurship. Entrepreneurs are known for what they do: they create new products, processes, and services for the market. In general, entrepreneurs can be defined as individuals who bring about an improvement, both for other individuals and society as a whole (Gorji and Rahimian, 2011). Entrepreneurship has a strong relationship with the economic growth of a country. The literature on entrepreneurship claims that a substantial portion of this variation in economic growth rates can be explained by differing rates of entrepreneurship (Sobel et al., 2007).

Considering the importance and vast applicability of the subject, numerous studies have been conducted related to the barriers and challenges in entrepreneurship. The business environment acts as a major barrier to entrepreneurship. Two important aspects of the business environment that play a major role are regulations and access to resources; especially finance (Klapper et al., 2006). They both have the potential to become a barrier for the entrepreneur. Previous empirical research has identified several important barriers for start-ups. However, the majority of studies have used a comparison of perceived barriers to entrepreneurship with pre-existing lists of barriers, not allowing for the identification of country-specific barriers (Iakovleva et al., 2014).

According to the literature, there are many barriers to entrepreneurship that arise due to various distinct reasons. As per the study by Klapper et al. (2006) the regulations of the government can become a major barrier to entrepreneurship in any country and even if the regulations themselves may have no direct effect on entrepreneurship, there could be a negative correlation between regulatory restrictions and entrepreneurship. While Janssen (2004) states that the business environment is dynamic and complex which causes a high degree of instability and uncertainty in the market. This act as a barrier in the entrepreneurial journey of the entrepreneur. While Glancey (n.d.) pointed out the competition as one of the major obstacles faced by entrepreneurs mainly in the initial phase of business.

Additionally, hostility can arise from different sources including the declining demand or radically changing technology, which pushes the firm to change its technology or to seek other market opportunities, therefore, resulting in a barrier to entrepreneurship (Krasniqi, 2007). Also, the study conducted by Bartlett and Bukvič (2001) provides evidence from Slovenia and shows that entrepreneurs ranked high cost of finance and means of insurance of credit repayment as the most severe barriers to their growth. Apart from these, an entrepreneur has to deal with many other barriers on a day-to-day basis. From the very inception of the business, barriers trails at every stage. Therefore, in order to deal with such barriers, it is of prime importance to comprehend the literature on this topic. Studying this area is beneficial for both the entrepreneur and other stakeholders

(like the government). Accordingly, the government can frame policies to tackle the common barriers and encourage people to undertake entrepreneurship as a career.

Though there are numerous studies on this topic, past researchers adopted descriptive and empirical research designs. Literature review studies in the past were discipline focused, biased in terms of sample selection, and subjective. Hence, there is an emergent need for transparent and objective review-based studies. Bibliometric studies have been conducted in the broad domain of entrepreneurship specifically in the business and economic contexts (Deveci, 2022; Uribe-Toril, 2019). However, a specific topic like barriers in entrepreneurship has not been researched from the lens of bibliometric review. Despite the availability of large scientific data, there is no bibliometric study in this subject area. Bibliometric study in this area is needed because it is a one-stop solution for several needs of researchers such as identifying gaps, trends, emerging topics, etc. (Donthu et al., 2021).

A bibliometric review in the domain of barriers in entrepreneurship is critical because of several reasons. One, there is large scientific data available on the topic and hence it is impossible to review it manually. Two, a bibliometric analysis will help to find the strategic patterns, research themes, and future research opportunities. Three, new scholars will benefit from this study as it will provide the current performance of different research constituents like documents, authors, sources, etc. and intellectual structure of the domain.

Bibliometric studies started in library and information science, later expanded to different fields, and lately bibliometric analysis has become an important review technique (Bar-Ilan, 2008). Bibliometric analysis is a popular and rigorous method for exploring and analysing large volumes of scientific data (Donthu et al., 2021). Bibliometric analysis is effective for understanding and mapping the cumulative scientific information and developmental aspects of well-established areas by rigorously making sense of vast volumes of unstructured data (Salam and Senin, 2022). Thus, the main purpose is to provide useful indicators that show relevant aspects of topics, authors, journals, etc. (Alfaro-García et al., 2022).

The present study analyses various dimensions which will help in answering the following research questions (RQs):

- RQ1 What is the publication trend of the field and productivity of authors, organisations, and sources for barriers in entrepreneurship research?
- RQ2 Which are the most influential documents, sources, and authors in the field of barriers in entrepreneurship?
- RQ3 What is the co-authorship trend of authors, organisations, and countries?
- RQ4 What are the most co-occurring keywords in the entire literature of barriers in entrepreneurship?
- RQ5 What are the co-citations trends for the sources related to the barriers in entrepreneurship research?
- RQ6 What are the trends as per bibliographic coupling of countries for the barriers in entrepreneurship research?

The first RQ focuses on the number of documents that have been produced in the field and by different authors, organisations, and sources. The second RQ focuses on the influence of the author, documents, and sources in terms of citations received by them.

The third, fourth and fifth RQ highlights the social knowledge structure of the domain. While the sixth RQ sheds light on the emerging countries in the field of research. The findings of this study can be useful for future scholars and academicians. This study brings the performance analysis and science mapping for the entire literature on barriers to entrepreneurship. To the best of researchers' knowledge, the present study is the first attempt to explore the given topic using bibliometric methodology.

The rest of the paper is organised as follows. After the introduction, the paper states the research methodology used for the bibliometric analysis. Next, the paper discloses the findings of the analysis in two subsections, i.e., performance analysis and science mapping. It is followed by conclusion and references.

2 Research methodology

The present study adopted a quantitative review approach, i.e., bibliometric analysis. Analysing the bibliometric structure of a specific body of literature allows for increased objectivity (compared with other forms of literature review) and enables the researcher to sift through large amounts of data (Wallin, 2012). The bibliometric technique provides a representative overview of the state of research in various scientific disciplines (Aparisi-Torrijo and Ribes-Giner, 2022). The methodology focuses on analysing the research documents based on parameters like citation, co-authorship, etc.

The bibliometric analysis was conducted using the VOS viewer version 1.6.18 and Biblioshiny application. VOS viewer is freely available for download (<https://www.vosviewer.com/>) while Biblioshiny is a package in an open source software, i.e., R. VOS viewer software was chosen for its flexibility in selecting measures to obtain and visualise bibliometric networks and scientific knowledge maps, in addition to being able to conduct longitudinal analysis (Coronel-Pangol et al., 2022). It is one of the most widely used methods for the overall analysis of the research field and scope.

This bibliometric method allows a complete view of the knowledge structure to be depicted, enabling a full understanding of the scientific dynamic aspects of a specific area of literature (Ellegaard and Wallin, 2015). It involves the quantitative analysis of the data which gives reliable and usable outcomes.

As suggested by Donthu et al. (2021) following steps were followed to perform the bibliometric analysis (Figure 1).

3 Findings

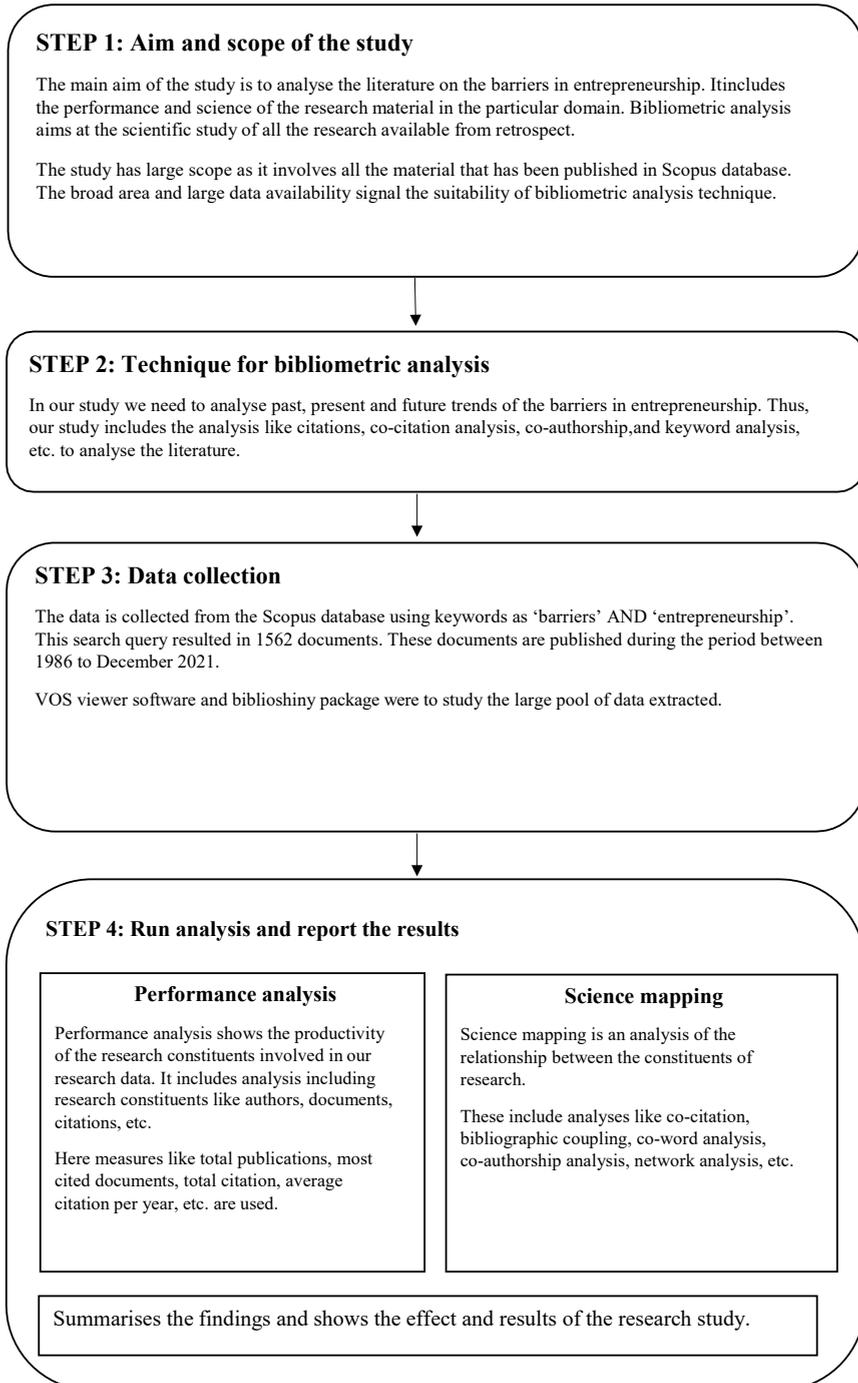
This section shows the results of the bibliometric analysis on the topic, barriers in entrepreneurship. It includes both performance analysis and science mapping. Thus, results majorly focus on the productivity and relationships between research constituents like authors, documents, sources, etc.

3.1 Performance analysis

The performance analysis is that portion of the bibliographic analysis that studies mostly the productivity and contribution of the particular unit in the entire field of the research.

Performance analysis is a bibliometric technique that describes the performance of a research domain (Donthu et al., 2021).

Figure 1 Steps followed in conducting bibliometric analysis



3.1.1 Annual scientific production (publication trend)

The annual scientific production of the documents is the average number of documents that are being published every year. The following graph shows the documents that have been published over the years.

Figure 2 Annual scientific production of the field (see online version for colours)

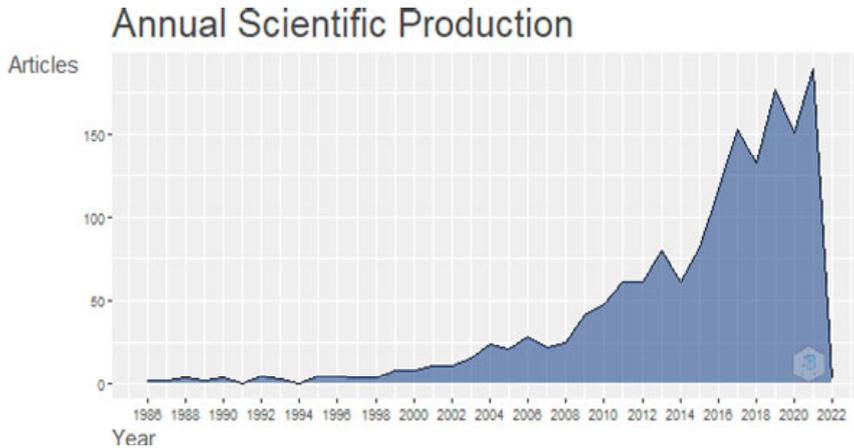


Figure 2 shows that there is an increase in the number of publications over the years. There are also some small falls in between like in the years 2014, 2018, etc. This shows that there are few years in which there is less production compared to the preceding year. Overall, it reflects the increasing trend of production over the years.

3.1.2 Productivity of authors

A total of 1,562 documents has been produced over the period. Total productivity analysis shows the number of documents that have been published over the years by different authors. Table 1 shows the top 10 authors who published their research in the field of barriers in entrepreneurship.

Table 1 Top 10 most productive authors in the field

<i>Author</i>	<i>Documents</i>
T. Bates	8
G. Mcelwee	8
N. Williams	6
A.V. Bogoviz	5
A. Gill	5
S.V. Lobova	5
M. Lofstrom	5
M. Pruet	5
N. Biger	4
K. Caldwell	4

3.1.3 Productivity of organisations

The total production by organisation refers to the number of documents that are produced by different organisations or institutes. It includes institutions from all around the world. There are total of 2,812 organisations that have published their work in the literature. Table 2 shows the top 10 organisations in terms of the number of published documents.

Table 2 Top 10 organisations in the field in terms of productivity

<i>Organisation</i>	<i>Documents</i>
Lincoln International Business School, University of Lincoln, Lincoln, UK	6
Altai State University, Barnaul, Russian federation	5
Lincoln Business School, University of Lincoln, Lincoln, UK	3
Financial University under the Government of the Russian Federation, Moscow, Russian federation	3
Northwest University, South Africa	3
RMIT University, Melbourne, Australia	3
Roskilde University, Denmark	3
Sheffield Business School, Sheffield Hallam University, Sheffield, UK	3
The World Bank, Washington, DC, USA	3
University of Nottingham, UK	3

According to Table 2, the Lincoln International Business School, University of Lincoln, Lincoln, UK, has the highest number of documents published, i.e., six documents. It is followed by Altai State University, Barnaul, Russian Federation, as it published five documents. While all the other organisations published three documents each.

3.1.4 Productivity of sources

This analysis shows the productivity of different sources in terms of the number of documents published. Higher the number of documents more is the productivity of that source. Figure 3 shows the top 20 sources in terms of the number of documents published during the period.

Figure 3 shows that the journal of small business and enterprise development has the highest number of publications, i.e., 29. It is followed by the *International journal of Entrepreneurship and Small Business* and the *International Journal of Entrepreneurial Behavior and Research* with 27 publications each. All the 20 sources have more the ten publications each which show significant productivity of the sources.

3.1.5 Productivity of countries

The study focuses on the number of documents that have been produced by different countries over a period. This analysis shows the productivity of the country. The analysis shows that 140 countries have published at least one document. Table 3 consists of the top 10 countries with the number of documents published by them.

The results show that the USA is the most productive country with 348 publications. It is followed by the UK with 228 publications, Germany with 78 publications, Spain with 70 publications and India with 68 publications

Figure 3 Top 20 most productive sources (see online version for colours)

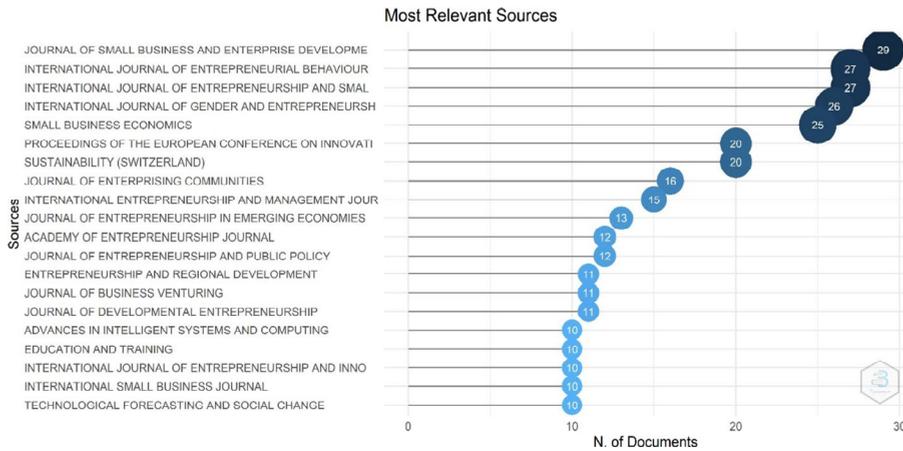


Table 3 Top 10 countries in terms of productivity (number of documents published)

Country	Documents
USA	348
UK	228
Germany	78
Spain	70
India	68
Australia	62
Russian Federation	61
Canada	60
Italy	51
Netherlands	48

3.1.6 Total citations of documents

Total citation is a citation-related matrix. This study shows the number of citations that have been given to various documents. The documents get cited when they are referred to in the work of other researchers. Thus, the higher the number of citations, the more is the relevance of the document in the concerned field of research.

Figure 4 clearly shows the most cited documents of the literature. The paper published by M. Frese in 2001 has the highest number of citations, i.e., 807. It is followed by a document published by Klapper et al. in 2006 having 626 citations. The document published by C. Luthje in 2003 has the third-highest citations, i.e., 526 citations. All the top 20 publications in terms of citations have more than 200 citations per document.

3.1.7 Total citations by sources

The study focuses on the number of citations of the sources using the citation as analysis and source as a unit. It indicates how many times the document source has been cited in the whole literature. Table 4 shows the top 10 sources from where the authors cite documents with their number of publications and total citations.

Figure 4 Number of citations of documents (see online version for colours)

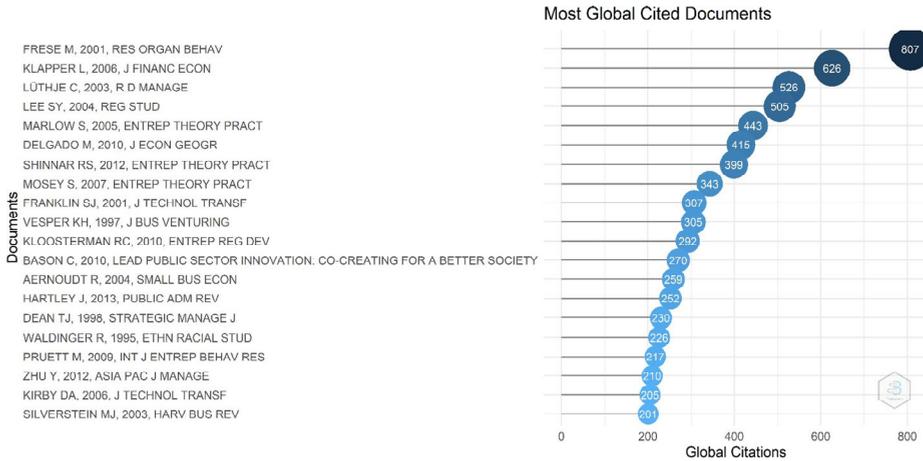


Table 4 Top 10 sources with highest number of citations

Source	Documents	Citations
<i>Journal of Small Business and Enterprise Development</i>	29	602
<i>International Journal of Entrepreneurial Behavior and Research</i>	27	959
<i>International Journal of Entrepreneurship and Small Business</i>	27	200
<i>International Journal of Gender and Entrepreneurship</i>	26	460
<i>Small Business Economics</i>	25	1,018
<i>Journal of Enterprising Communities</i>	16	157
<i>International Entrepreneurship and Management Journal</i>	15	585
<i>Entrepreneurship and Regional Development</i>	11	640
<i>Journal of Business Venturing</i>	11	1,109
<i>International Small Business Journal</i>	10	767

As per Table 4, the source with the highest number of citations is a journal of business venturing with 1,109 citations and 11 publications, which is followed by small business economics with 1,018 citations and 25 publications.

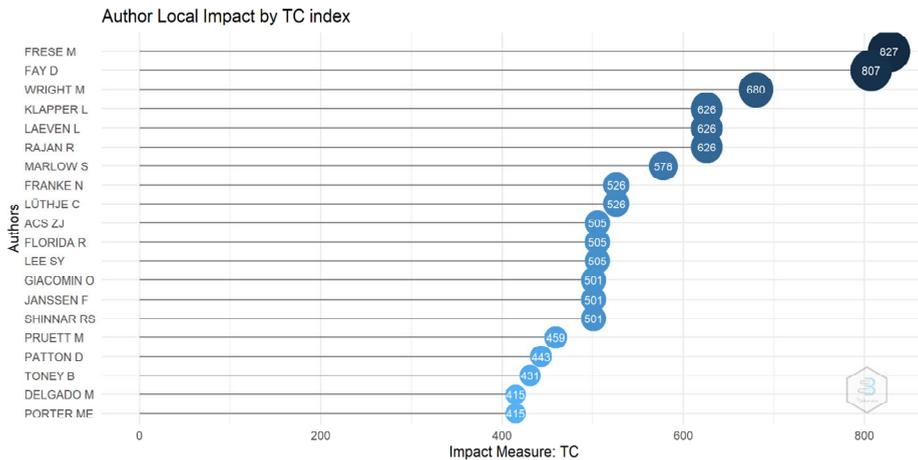
3.1.8 Most influential authors

The most influential authors are those authors whose studies have been cited maximum times and have a high H index.

3.1.8.1 Total citations

The higher the citation larger is the impact of the document. Thus, authors with more citations have a higher influence in that research field specifically. The top 20 authors who have the highest number of citations are mentioned in Figure 5.

Figure 5 Top 20 authors with highest number of citations (see online version for colours)



The graph shows the author who has the highest number of citations for his work is M. Frese with 827 citations. It is closely followed by D. Fay with 807 citations and M. Wright with 680 citations. Klapper et al. (2006) all have 626 citations each.

3.1.8.2 H index

H index shows the number of most cited documents of the author followed by the number of citations it received. The H index characterises the scientific output based on the number of published articles and the number of citations these papers have achieved (Hirsch, 2009). It helps in studying the overall productivity and impact of the author in the research domain.

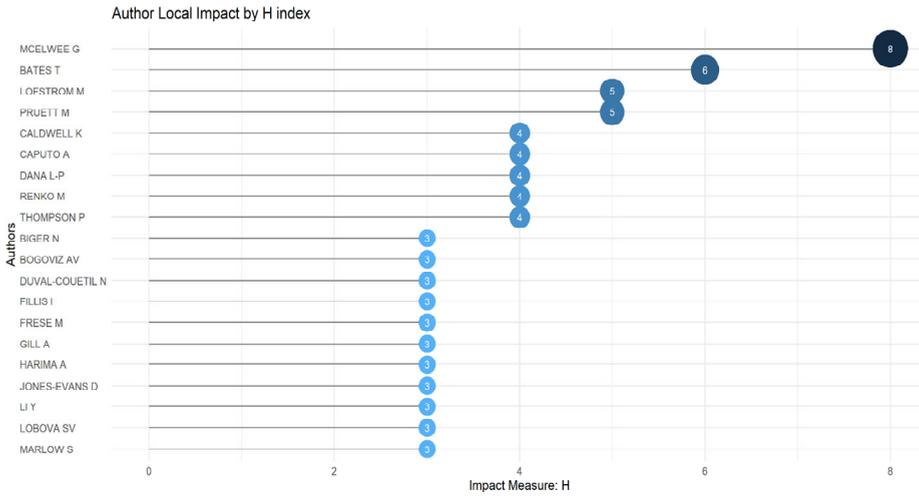
Figure 6 shows the h index of the top 20 authors in the study domain of barriers in entrepreneurship.

As per the h index, the most impactful author is G. McElwee with an H index of 8. This means that eight documents of McElwee have 8 or more citations each. Second place is held by T. Bates with an h index of 6.

3.2 Science mapping

The second approach provides a mapping of the science being investigated by representing the connections or structure of the network in a specific scientific field (Gaviria-Marín, n.d.). It focuses more on the relational aspect of the elements involved in research. These are research constituents. The strength, degree, and existence of these relationships are studied under science mapping.

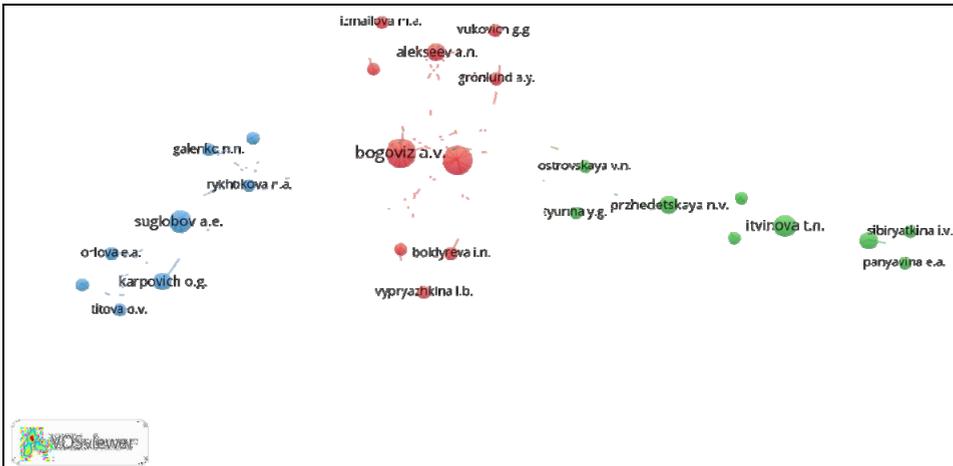
Figure 6 H index of top 20 authors (see online version for colours)



3.2.1 Co-authorship of authors

This subsection focuses on the author’s co-authorship. Here the aim is to analyse the relationship between the authors of the different documents. Not all authors have links with each other. But it came out that few of the authors do have links and relations with each other.

Figure 7 Co-authorship of authors (see online version for colours)



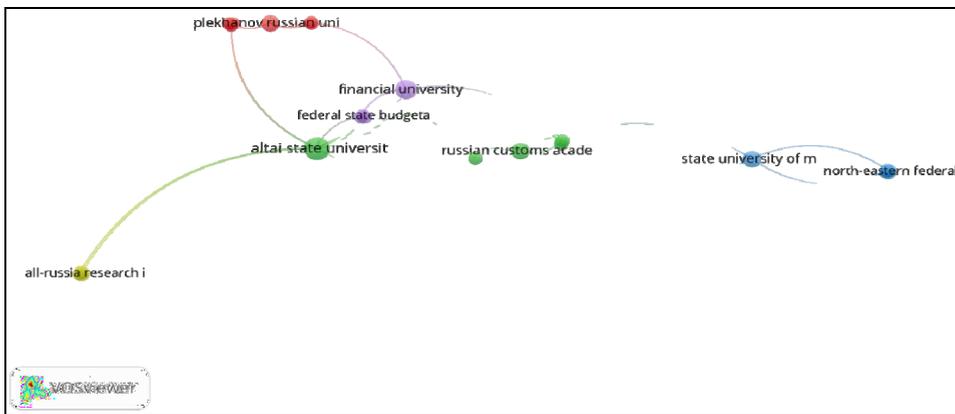
All the authors are not connected. Out of a total of 3,492 authors, only 27 form a network connection. The network diagram is divided into three major clusters which are blue, red, and green. A.V. Bogoviz has the highest number of links which is 16 and has a link strength of 20 with five publications. He is followed by S.V. Lobova with 14 links and 18 link strength with five publications.

3.2.2 Co-authorship of organisations

The study focuses on the co-authorship of an organisation where the co-authorship analysis is used with the organisation as a unit. The aim is to study and highlight the links between the organisations. We use the network diagram by VOS viewer to identify the number of citations and links between the organisations. We use bibliometric analysis on the papers in the Scopus database on barriers in entrepreneurship. We take the full counting method and take one organisation as one unit.

There is a total of 2,812 institutes that have published at minimum one document. But as we found out the majority of them are not linked. There is only a group of 24 institutes that have links that can be established. The Network diagram shows those institutes and their links.

Figure 8 Co-authorship of organisation (see online version for colours)



Altai state university, Barnaul, Russian Federation has the highest number of links which is 17 links with other organisations. It is followed by the financial university under the government of the Russian Federation, Moscow, Russian Federation with 11 links.

3.2.3 Co-authorship of countries

The study focuses on the country's co-authorship. The main aim is to find out the links between the countries. We use a network diagram to identify the citations and links of the countries. Thus, we use bibliometric analysis of co-authorship of countries.

The criterion of a minimum of five documents which is the default criteria in VOS viewer was used to filter the data. Out of a total of 140 countries, only 60 countries met the threshold.

Network map shows the 60 countries that have links with others in the literature of barriers in entrepreneurship. There are nine clusters formed in the figure with 283 links and 491 total link strength. Table 5 gives us the details of the number of links and the total link strength of various countries in the literature.

According to the number of links, the USA has the maximum number of links, i.e., 41, followed by the UK with 36 links, Germany with 27 links, Italy with 21 links, and France with 19 links.

Figure 9 Co-authorship of countries (see online version for colours)

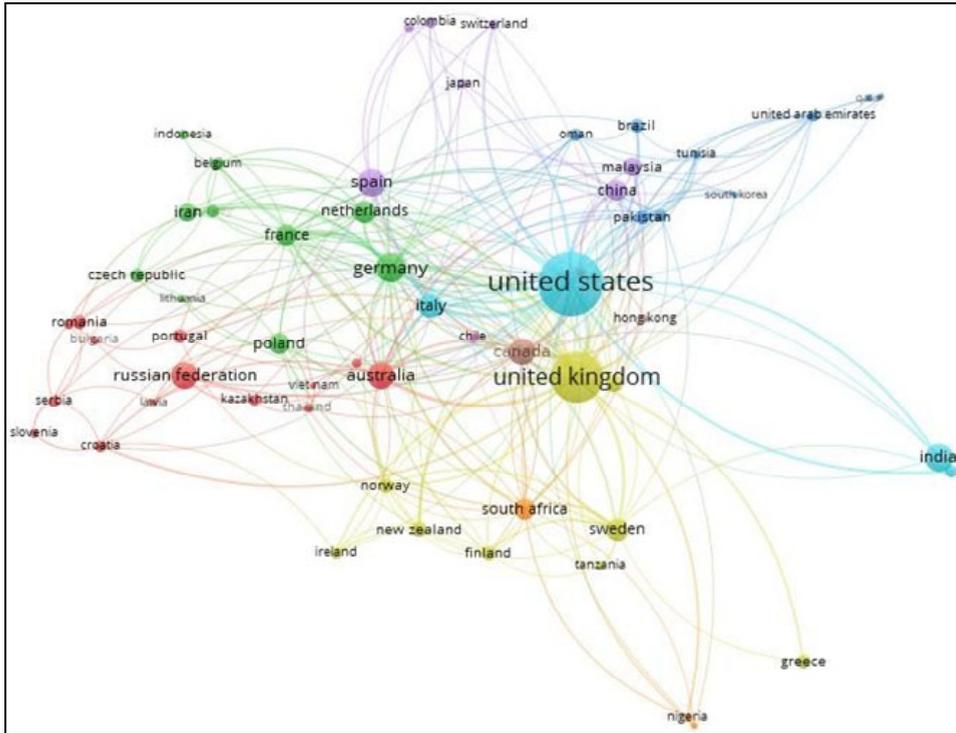


Table 5 Top 10 countries with highest number of links and link strength

Country	Links	Total link strength
USA	41	100
UK	36	112
Germany	27	53
Canada	21	47
Italy	21	43
South Africa	17	24
Spain	14	27
Denmark	14	20
France	19	37
Sweden	15	33

As per the link strength, the UK has maximum total link strength, i.e., 112, followed by the USA with 100 link strength, Germany with 53 link strength, Canada with 47 link strength, and Italy with 43 link strength.

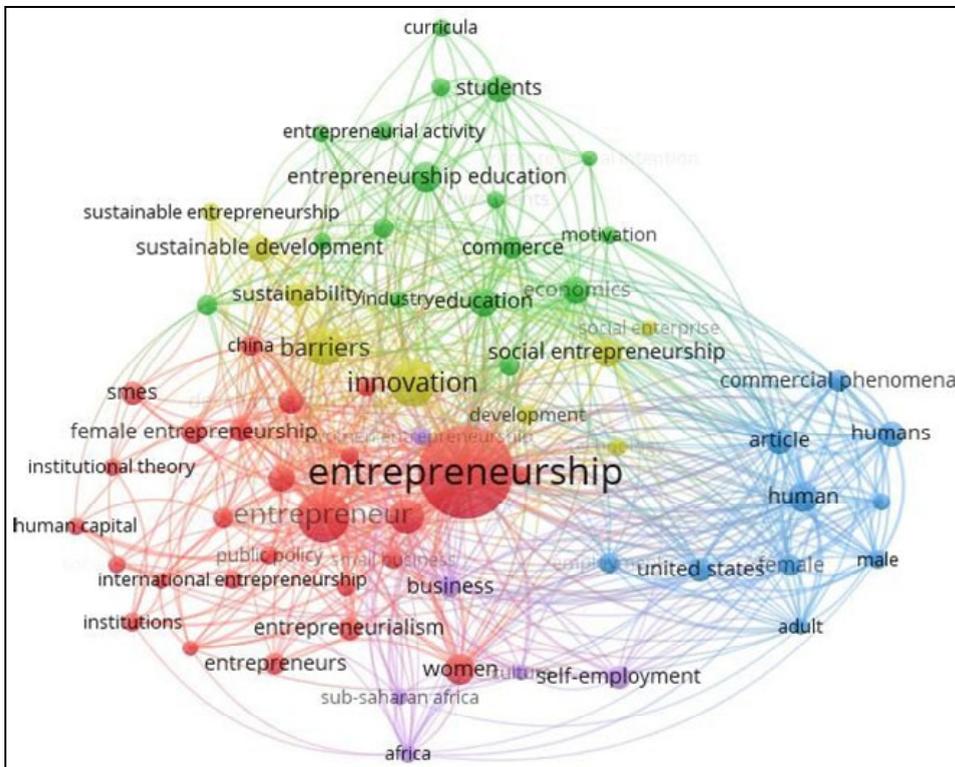
3.2.4 Co-occurrence of keywords

The study focuses on the co-occurrence of the keywords by using co-occurrences as analysis and keywords as a unit of analysis. The network diagram shows the link between the keywords and their strength.

The size of the nodes shows the number of times these words are being repeated. The larger the size more is the frequency of the word. We can also study the frequency of co-occurrence of two words with the link between two words.

It is very difficult to present all keywords on one map. So, keywords are filtered by setting criteria of a minimum of 15 repetitions. Out of the total of 5,528 words, only 68 meet the criteria.

Figure 10 Co-occurrence of keywords (see online version for colours)



The keywords are analysed using VOS viewer software. All the keywords resulted in five clusters and are represented by different colours. The red cluster has 26 items and is labelled as entrepreneurship. Similarly, cluster 2 is represented by green colour, with 17 items and titled entrepreneurship education, cluster 3 is in blue with ten items, cluster 4 is yellow with nine items, and cluster 5 is purple with six items.

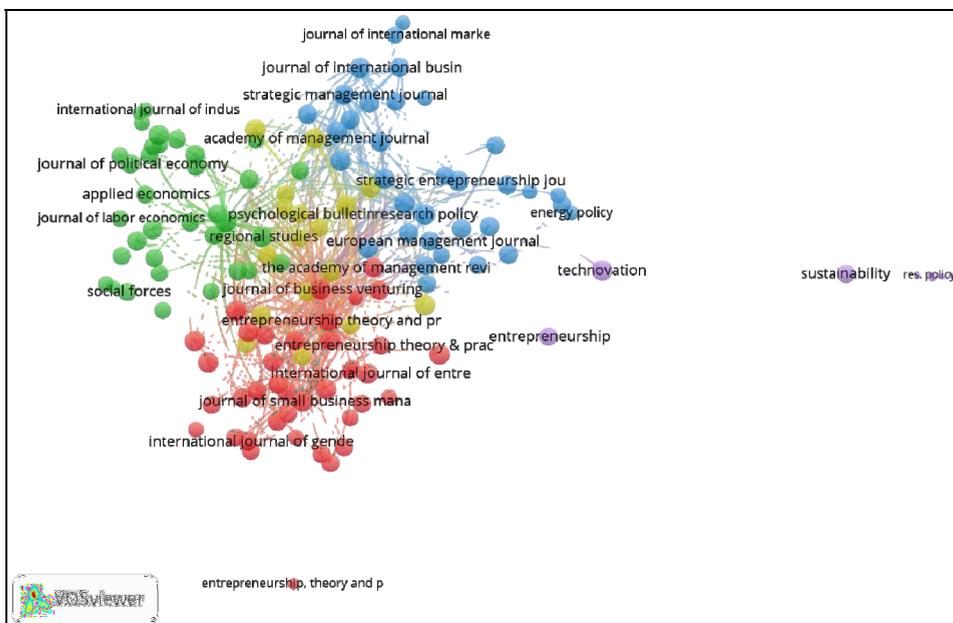
3.2.5 Co-citation of sources

Bibliometric co-citation analysis determines the relation among research articles, titles, keywords and abstracts and is a meta-analytical tool to measure or access the strength of any variable, does its effect exists and if then positive or negative (Gillani et al., 2022).

Co-citation is when two documents are cited together in other documents. It specifies the importance and relation between the documents. 31,976 sources have contributed to the research on barriers to entrepreneurship. This is huge data to analyse. So, to reduce the size we setup the threshold of a minimum of 50 citations. Only 135 documents clear the limit.

The network diagram in Figure 11 shows the relation between the citations of different sources.

Figure 11 Co-citation of sources (see online version for colours)



The size of the nodes is based on the number of links each source has. The diagram shows that all documents have links with each other. All the items have links with each other within a limit of 100 to 131 links. This shows that most of the documents have a similar level of connections.

3.2.6 Bibliometric coupling of countries

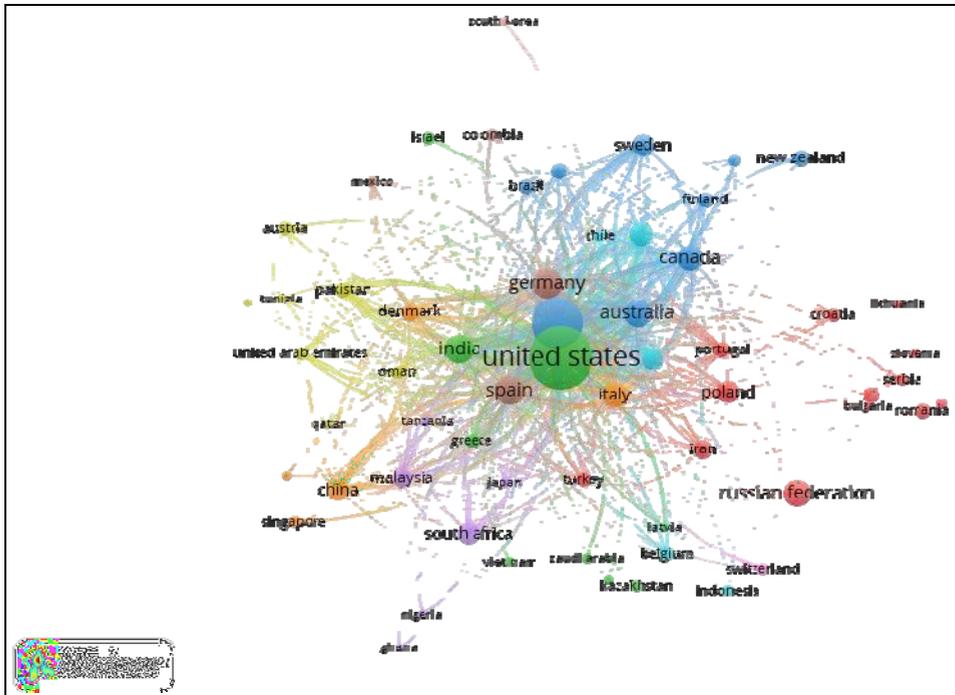
The bibliographic coupling is an analysis used to study the similarities between the units. The bibliographic coupling analysis facilitates examining the current research activities and distinguishing the latest knowledge trends, which are associated with earlier research streams or extend from pre-existing knowledge (Luis et al., 2022). Theoretically speaking, this indicates the possibility that the two contributions belong to the same research stream (Flamini et al., 2021).

In our study, we use bibliographic coupling analysis with the country as a unit. It is difficult to show all countries in one network diagram. We need to set a certain criterion. The threshold is set to 5 documents. Out of the total 140 countries only 60 countries clear the threshold limit.

The analysis led to the formation of 8 clusters within the network diagram. The largest circle in size is of the USA, which suggests that it has the largest network of 49 links with a link strength of 46,625. The second place is of the UK with 49 links but a slightly low link of 43,430. All the countries have around 45 to 49 links but they differ in several documents and link strengths.

The figure presents the bibliographic coupling of the countries

Figure 12 Bibliographic coupling of countries (see online version for colours)



4 Conclusions

This study identified the major research done in the past in the field of barriers in entrepreneurship. The study uses various tools of bibliometric analysis, which is a popular and effective method of doing a literature review. According to the results, research has seen an upward trend in this field. It is discovered that numerous nations are performing research into barriers to entrepreneurship. This research also looks at the most commonly used keywords in the literature.

The performance analysis result shows that there is an increasing trend in the annual scientific production of the research documents. The research throws light on the most contributing authors like T. Bates, G.A. Bogoviz, etc. It also shows that the research in

this field has been carried out in various countries. It includes the USA, UK, Germany, Spain, and India. While in the case of sources, the journal of small business and enterprise development turns out to be the most productive source. In the terms of total citation, the journal of business venturing and small business economics has the highest citations respectively.

On the other hand, the influence of authors is judged using H index and total citations. The results show M. Frese to be the most influential author as per total citations while using the H index G. McElwee will be considered the most influential author in the entire research literature. The science mapping analysis shows that ‘entrepreneurship’, ‘innovations’ and ‘entrepreneurs’ are the most used and linked keywords.

This study makes a substantial contribution by identifying which journals and authors have had the greatest impact on the barriers in the entrepreneurship domain. It also makes a contribution by highlighting the most referenced sources in the field. It will allow academic scholars and marketers to identify research gaps that may be filled by future studies.

5 Limitations of the study

Like any other research study, the present study also has a few limitations which might act as future scope for other scholars. Firstly, the present study used Scopus database for extracting the bibliometric data. Future scholars may use Web of Science, Google Scholar, or a combination of databases for generalising the results. Secondly, the thresholds considered in the bibliometric techniques (such as minimum number of documents, citations, etc.) were based on authors’ discretion and may have presented some sort of biases in the results.

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