Research Article OPEN ACCESS

Check for updates

Agricultural Entrepreneurship – A Bibliometric Analysis and Concept Mapping

Anusree P[1*] iD , Swarupa R[2]

[1]Research Scholar, Department of Commerce, Sree Narayana College, Kannur

[2]Associate Professor, Department of Commerce, Mahatma Gandhi College, Iritty

Orcid Id: 0009-0006-1377-9684

Corresponding Author Email: anusreepblathur@gmail.com

ABSTRACT: Agricultural entrepreneurship plays a vital role in job creation, economic income, and competitiveness of the agriculture sector. Considering the importance and relevance of this topic, it is important to explore the recent literature in this area of the study. This work aims to showcase the bibliometric analysis of scientific production and to reveal the importance of agricultural entrepreneurship. The information search was carried out in the Scopus database from 2013 to 2023. This work helps in the identification of key research topics, the co-occurrence of keywords in this field of study, and collaboration patterns and other research areas related to similar concepts. 476 research papers were assessed after being carefully examined and having several checkpoints to eliminate studies that weren't relevant. Platforms such as Visualization Of Similarities (VOS) Viewer and R Studio are used for the bibliometric analysis of the 476 articles collected from the Scopus database by applying relevant filters, including performance analysis and keyword occurrence analysis. The graphical mapping exemplified the author's and countries' contributions, and their collaborations in this area of research over the period. In the analysis of the author's keyword, the researcher noticed that "entrepreneurship" and "agriculture" were the most frequently occurring among other keywords. The researcher found that "entrepreneurship" has the greatest occurrence with 67 times 35 links and 82 total link strength. Mostly entrepreneurship links with some variables such as agriculture, agripreneurship, rural development, sustainability, agribusiness, agritourism, and entrepreneurial orientation.

KEYWORDS: Agricultural entrepreneurship, Agriculture business, Agropreneurship, Agropreneurs, Bibliometric analysis

1. INTRODUCTION

Agricultural entrepreneurship, also known as agropreneurship, refers to the application of entrepreneurial principles and practices in the agricultural sector. It involves individuals or groups who engage in agricultural activities with a focus on innovation, business insight, and sustainable practices. The ability of farmers to adapt, get rid of outdated practices, and engage in a new phase in agriculture is known as agricultural entrepreneurship (Condor, 2020). The concept of agropreneurship aims to transform traditional farming practices into a more dynamic and business-oriented approach in the agricultural industry. Through agropreneurship, farmers can create and sustain profitable ventures while contributing to the growth and development of the agriculture sector. Rural areas should focus on agro-processing and marketing to create connections with industry and trade and boost rural employment opportunities. Animal husbandry, horticulture, and floriculture can be advantageous for rainfed or dryland

regions, and diversification of agriculture can benefit impoverished areas (Rao & Gulati, 1994). To elevate the agricultural sector from a predominantly peasant level to a commercial status in developing nations, it is important to enhance the entrepreneurial and organizational skills of the vast majority of smallholder farmers (Opolot et al., 2018). In the domain of agriculture and entrepreneurship, the idea of agropreneurship is relatively new. It's still growing. Consequently, there is a paucity of literature concerning agribusiness and its advancement (Otache, 2017).

There has been an evident upward trend in agricultural entrepreneurship research during the last few years. This displays the growing interest and awareness regarding agricultural entrepreneurship. Consequently, it has become important to conduct a systematic analysis and mapping of agricultural entrepreneurship research conducted over the last decade. Numerous studies have been conducted under different backdrops, including youth agripreneurship (Akrong et al., 2020), sustainable entrepreneurship (Terán-Yépez et al., 2020), and education in agricultural entrepreneurship (Pliakoura et al., 2020). However little attention has been received on toward bibliometric analysis of agricultural entrepreneurship. Hence, this study tries to address the above-stated research gap by answering the following research questions: (1) What is the overall trend in the number of publications on agricultural entrepreneurship over the past decade? (2) Who are the most prolific authors in the field of agricultural entrepreneurship? (3) What are the most frequently used keywords in agricultural entrepreneurship publications? (4) what are the emerging topics in agricultural entrepreneurship research? and (5) Which articles or authors in the field of agricultural entrepreneurship receive the highest number of citations? The present study includes performance analysis and science mapping. Performance analysis was conducted to understand the evolution of the topic and to identify the keywords, contributors, and collaboration to the current research theme. Science mapping is outlined as the mapping of sciences about citation analysis, co-citation analysis, co-word analysis, and co-authorship analysis regarding agricultural entrepreneurship. This study aims to contribute to the literature through the concept mapping of agricultural entrepreneurship using bibliometric analysis. For this study, the researcher included 476 academic research papers that meld the ideas of agricultural entrepreneurship.

The article is organized into five sections. In the first section an introduction to the study was presented, in the second section the literature of the study was exposed, in the third section materials and methods used for the study were presented. The fourth section displays the findings and discussion, while the fifth section includes the conclusion of the study.

2. MATERIALS AND METHODS

Bibliometric analysis can offer various ways to conduct a methodical and clear review of the existing literature and present the summary by topic to the reader(Broadus, 1987). Bibliometric techniques play a crucial role as they enable analysts to transform abstract concepts into seemingly tangible forms(Lievrouw, 1989). The data for the research were collected from the Scopus database. In the bibliometric analysis the researcher use the search string as, (ALL ("agriculture business*") OR ALL ("agripreneurship*") OR TITLE-ABS-KEY ("agricultural entrepreneurship*")) AND PUBYEAR > 2012 AND PUBYEAR < 2024 AND (LIMIT-TO (SUBJAREA , "SOCI") OR LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j")), which exported 476 articles from Scopus database in Bibtex format. Table 1 displays the research process for extracting research articles relating to agricultural entrepreneurship from the Scopus database for bibliometric analysis.
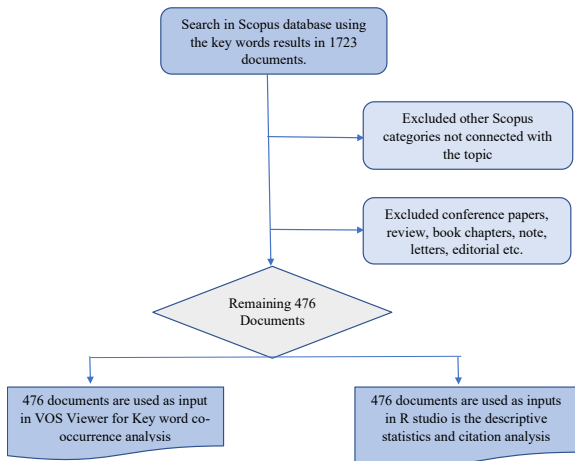
Table 1 Research process

Process	Step	Description	Papers in Scopus
Search for information	1	Search words: "Agriculture business*" or "Agripreneurship*" or "Agricultural entrepreneurship*"	1723
Bibliometric Map Creation	2	Subject area: Social Science, Economics, Econometrics, and Finance and Business, Management and Accounting Document Type: Article Source type: Journal	931 716 714 687 619 476
	3	Language: English	
	4	Year: 2013-2023	
	5	Records after deleting duplicates and unrelated topic	
	6		
	7	Creation of bibliometric Maps using Biblioshiny and VOS Viewer Software	

Data from Scopus database (2023)

The researcher used some inclusion-exclusion criteria for the screening and final selection of 476 research papers for the bibliometric analysis presented in Fig. 1. The approach used to conduct bibliometric analysis and concept mapping of agricultural entrepreneurship involved the use of two different tools - Biblioshiny application and bibliometrix 4.1.2 package within R studio, as well as the Visualization Of Similarities (VOS) Viewer.

Figure 1: Representation of the design followed in this study

Author's Keywords (DE)	1633
AUTHORS	
Authors	1406
Authors of single-authored docs	42
AUTHORS COLLABORATION	
Single-authored docs	46
Co-Authors per Doc	3.4
International co-authorships %	26.68
DOCUMENT TYPES	
article	476

3. ANALYSIS AND DISCUSSION

The research utilized two software programs, namely VOS Viewer and Bibliometric, to gain insights from previous literature by exploring keywords linking agriculture and entrepreneurship. VOS Viewer played a role in keyword clustering, keyword co-occurrence, and author co-author analysis. On the other hand, R Studio was employed to assess citation frequencies, publication counts, and collaborative patterns, providing valuable insights into the impact of the analyzed documents.

Performance Analysis

Table 2 displays a summary of the performance of the selected publications. It shows that the selected papers have been published between 2013 and 2023 and referenced in 234 sources. The average age of a paper is 2.3 years, with an average citation rate of almost 10 per paper. The number of references included in the 234 sources is approximately 29,549. A total of 1406 contributed to these publications, which included 1633 keywords. 46 publications are compiled by a single author. There is 26.68% international co-authorship in the area of agricultural entrepreneurship.

Table 2: Data Overview

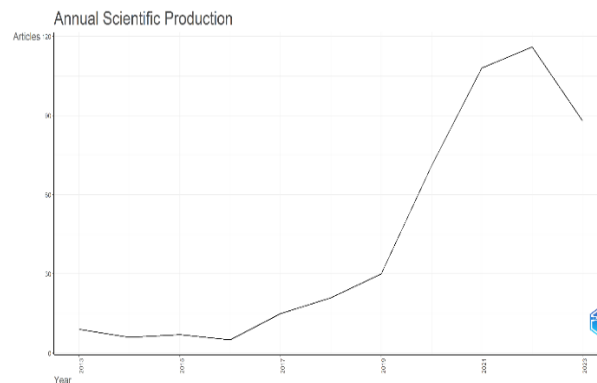| Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2013:2023
Sources (Journals, Books, etc)	234
Documents	476
Annual Growth Rate %	25.61
Document Average Age	2.3
Average citations per doc	9.565
References	29549
DOCUMENT CONTENTS	
Keywords Plus (ID)	834

Figure 2: Annual Scientific production of the documents

Figure 2 illustrates that, over the last few years, there has been a noticeable increase in the number of articles published every year. The data indicates a consistent rise from publishing 9 articles in 2013 to a significant surge of 116 articles in 2022. The most significant rise occurred between 2019 and 2020, when the publication count more than doubled, reaching 71 in 2020 and further escalating to 108 in 2021. Despite a slight decrease to 88 articles in 2023, the overall trend shows significant growth in research output over the past decade.
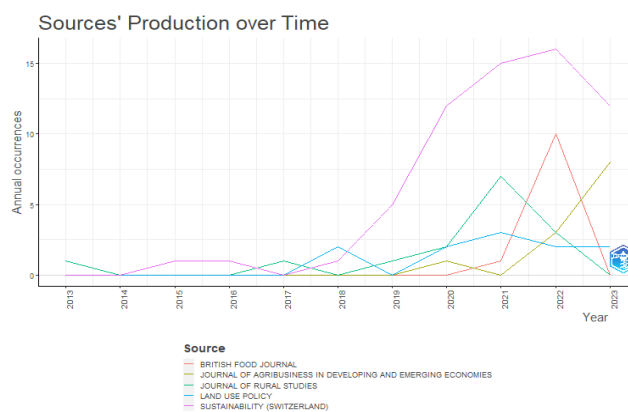

Figure 3: Production evolution of the 5 most productive sources

Figure 3 reveals over the years, there has been a notable increase in the number of sustainability-related publications in Switzerland, reaching a peak of 16 in 2022.

The Journal of Rural Studies consistently contributed to rural-focused research, while the British Food Journal has shown occasional interest. The Land Use Policy journal has seen a notable increase in publications in 2020, indicating a growing emphasis on land use issues, particularly in 2020 and 2021. The Journal of Agribusiness in Developing and Emerging Economies has shown intermittent involvement, with significant contributions in 2013 and 2018.

Table 3: Average Citation per year

SL No.	Year	Mean TC per Year
1	2013	1.82
2	2014	0.55
3	2015	2.07
4	2016	0.67
5	2017	2.98
6	2018	2.69
7	2019	1.98
8	2020	3.35
9	2021	2.78
10	2022	1.55
11	2023	0.60

Source: Biblioshiny

Table 3 illustrates the average total citations (TC) per year from 2013 to 2023. Citation figures exhibit notable variations annually, reaching a peak in 2020 at 3.35 and a nadir in 2014 at 0.55. This suggests overall fluctuations in citation patterns, potentially reflecting shifts in research impact or emphasis during this timeframe.

Table 4: Most relevant sources

SL. No	Sources	Articles
1	Sustainability (Switzerland)	63
2	Journal of Rural Studies	15
3	British Food Journal	12
4	Journal of Agribusiness In Developing And Emerging Economies	12
5	Land Use Policy	11
6	Journal of Agricultural Education And Extension	8
7	Journal of Enterprising Communities	8
8	Journal of Agricultural Extension	7
9	Journal of Cleaner Production	6
10	South African Journal of Agricultural Extension	6

Source: Biblioshiny

According to the data shown in Table 4, "Sustainability (Switzerland)" is the main source, comprising 63 articles, which suggests a significant emphasis on sustainability-related subjects. The next fifteen articles in the "Journal of

Rural Studies" emphasize the journal's contribution to research with a rural focus. The twelve articles published in the "Journal of Agribusiness in Developing and Emerging Economies" and the "British Food Journal" indicate a fair interest in agricultural concerns related to developing economies and food. Additionally, the dataset shows a broad but noteworthy engagement with agricultural and environmental subjects through the 11 articles in the journal "Land Use Policy" and other journals with smaller article counts.

Conceptual mapping

Conceptual mapping includes the analysis of the keyword analysis, citation analysis, co-citation analysis, co-word analysis, co-authorship analysis, and bibliographic coupling (Donthu et al., 2021). When used alongside network analysis, these methods are crucial in illustrating the bibliometric framework of the research area (Kent Baker et al., 2020).

Figure 3: Keyword Cloud

Figure 4: Tree Map of Keyword

The word cloud (figure 3) and the tree map of keywords (figure 4) reveal a notable emphasis on entrepreneurship within the context of agriculture, as evidenced by the highest frequency term being "entrepreneurship" with 55 occurrences. Additionally, the close association of terms such as "agribusiness" and "agricultural entrepreneurship" highlights a focus on business ventures within the agricultural sector. Sustainability emerges as another significant theme, suggesting a growing awareness of environmentally conscious practices in agricultural and entrepreneurial contexts. The inclusion of terms like "youth" and "entrepreneurial intention" suggests a particular interest in

engaging young individuals and fostering entrepreneurial ambitions in the agricultural domain.

Figure 5 illustrates the network of keywords among 476 documents analyzed in this study. The minimum number of occurrences of keywords is five. Out of 1633 keywords, 45 meet the threshold. The diagram shows 7 clusters differentiated by colors where the size of the bubble represents the degree of association between the keywords.

Cluster 1: Agriculture (represented in red)

The first theme in the keyword network is agriculture where the most common keywords, located in the middle of the cluster, are food security, agripreneurs, youth and smallholder farmers, and Africa among others.

Cluster 2: Agricultural entrepreneurship (represented in green)

The second cluster is agricultural entrepreneurship with a total link strength of 31. Here the most relevant keywords connected with this cluster were agricultural education, rural development, innovation, entrepreneurial learning, and rural entrepreneurship among others. It clearly states that there should be a progressive relationship between agriculture and entrepreneurship in the research field.

Cluster 3: Entrepreneurship (represented in blue)

The third cluster is identified as the most occurred keywords with 55 times occurrence and with 65 total link strength. The most common keywords connected with entrepreneurship were financial inclusion, gender, rural, and sustainability.

Cluster 4: Agribusiness (represented in yellow)

The fourth cluster is dominated by the topic of agribusiness which conveys themes related to agritourism, sustainable development, agricultural policy, and education.

Cluster 5: Entrepreneurial intention (represented in purple)

The fifth cluster is the smallest cluster with the least occurrence of 13 times only. Entrepreneurial orientation, performance, sustainable entrepreneurship, and India were the most connected keywords in cluster 5.

Cluster 6: Sustainable agriculture (represented in turquoise blue)

The sixth cluster is related to sustainable agriculture. It is also the smallest cluster with 12 times occurrences of keywords. Social entrepreneurship, theory of planned behaviour, and structural equation modeling were the most connected keywords in this cluster.

Cluster 7: Agripreneurship (represented in orange)

The seventh cluster in orange links agriculture to entrepreneurship through agribusiness and agripreneurship.
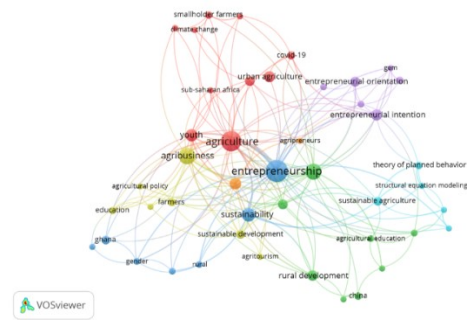

Figure 5: Co-occurrence of Author's keyword

Figure 6 displays the co-authorship of documents with different countries. Here the minimum number of documents is five. Out of 89 countries, 35 meet the thresholds. For each of the 35 countries, the total strength of the co-authorship links with other countries will be calculated. The countries with the greatest total link strength will be selected. The diagram consists of 7 clusters. In the first cluster represented in red, the United Kingdom and the Netherlands had more links with other countries. The United States and China had more co-authorship connections with other countries in the second cluster. The remaining clusters consist of less than five countries with the smallest linkage.
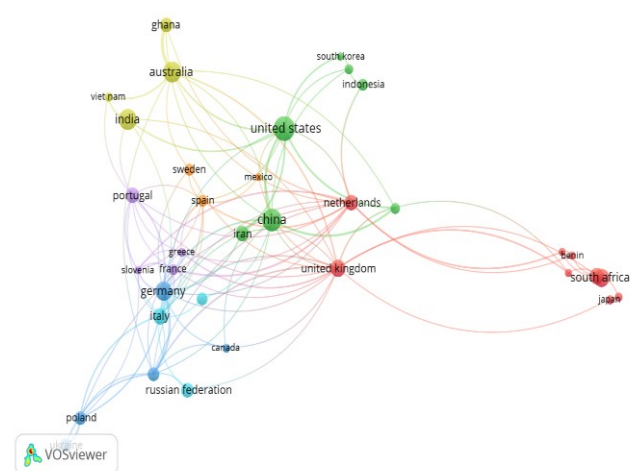

Figure 6: Co-authorship with countries

4. CONCLUSION

This paper presents a thorough review of the research conducted on agricultural entrepreneurship through bibliometric analysis. By studying a variety of academic publications, the authors have identified significant patterns, major topics, and the development of research in this area. The analysis underscores the growing significance of agricultural entrepreneurship in tackling global issues such as food security, sustainable development, and economic growth in rural areas.

Our research shows that interdisciplinary studies that combine elements of innovation, business, and agriculture

are becoming more and more popular. Researchers are investigating a variety of subjects, such as how governmental frameworks, technology, and socioeconomic variables influence the agricultural entrepreneurship sector. Moreover, the clusters of highly referenced publications and prominent authors indicate the presence of central ideas and thought leaders driving the topic of discussion.

Looking ahead, it is clear that ongoing collaboration among academia, industry, and policymakers is essential to encourage innovation and establish a supportive atmosphere for agricultural entrepreneurship. The insights derived from this bibliometric analysis not only offer a valuable reference for researchers aiming to comprehend the present status of the field but also offer guidance that can shape future research paths and policy initiatives within the domain of agricultural entrepreneurship.

REFERENCES

Akrong, R., Mbogoh, S. G., & Irungu, P. (2020). Youth agripreneurship in the horticultural value-chain: The case of small-scale mango farmers in Southern Ghana. African Development Review, 32(S1), S68 – S77. https://doi.org/10.1111/1467-8268.12483

Broadus, R. (1987). TOWARD A DEFINITION OF "BIBLIOMETRICS." In Scientometrics (Vol. 12).

Condor, R. (2020). Entrepreneurship in agriculture: a literature review. In Int. J. Entrepreneurship and Small Business (Vol. 40, Issue 4).

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070

Kent Baker, H., Pandey, N., Kumar, S., & Haldar, A. (2020). A bibliometric analysis of board diversity: Current status, development, and future research directions. Journal of Business Research, 108, 232–246. https://doi.org/10.1016/j.jbusres.2019.11.025

Lievrouw, L. A. (1989). The Invisible College Reconsidered: Bibliometrics and the Development of Scientific Communication Theory. Communication Research, 16(5), 615–628. https://doi.org/10.1177/009365089016005004

Opolot, H. N., Isubikalu, P., Obaa, B. B., & Ebanyat, P. (2018). Influence of university entrepreneurship training on farmers' competencies for improved productivity and market access in Uganda. Cogent Food and Agriculture, 4(1). https://doi.org/10.1080/2331 1932.2018.1469211

Otache, I. (2017). Agripreneurship development: a strategy for revamping Nigeria's economy from recession. African Journal of Economic and Management Studies, 8(4), 474 – 483. https://doi.org/10.1108/AJEMS-05-2017-0091

Pliakoura, A., Beligiannis, G., & Kontogeorgos, A. (2020). Education in agricultural entrepreneurship: training needs and learning practices. Education and Training, 62(7–8), 723 – 739. https://doi.org/10.1108/ET-04-2020-0095

Rao, C. H. H., & Gulati, A. (1994). Indian Agriculture: Emerging Perspectives and Policy Issues (Vol. 29, Issue 53).

Terán-Yépez, E., Marín-Carrillo, G. M., Casado-Belmonte, M. del P., & Capobianco-Uriarte, M. de las M. (2020). Sustainable entrepreneurship: Review of its evolution and new trends. Journal of Cleaner Production, 252. https://doi.org/10.1016/j.jclepro.2019.119742