

LITERATURE REVIEW

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Tracing Farmers' Entrepreneurship and Communication Skills Using a Bibliometric Approach

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ABSTRACT

Farmers' entrepreneurship and communication skills have been widely discussed in the literature. However, mapping the linkages and comparisons between the two needs to be addressed more. Therefore, this study attempts to map the literature on the two topics. The literature documents were collected from the Scopus database from 2012 to 2022. A bibliometric approach was employed. The findings revealed that literature documents on farmers' entrepreneurship outnumbered those on farmers' communication skills. The Journal of Sustainability and Journal of Rural Studies published the highest number of literature documents on the two topics. The highest number of literatures on farmers' entrepreneurship was elaborated in developing countries, while that of farmers' communication skills was studied in developed countries. Therefore, scholars and policymakers in developing and developed countries faced challenges in raising the number of literature documents on farmers' entrepreneurship and communication skills to enhance agricultural business for both old and young generations.

Keywords: A bibliometric approach; Communication skills; Entrepreneurship;
Farmer

INTRODUCTION

The agricultural business encourages farmers to improve their ability to manage agricultural products, including anticipating the impact of climate change and the utilization of Industry 4.0. Seuneke, Lans, and Wiskerke (2013) and Dias, Rodrigues, and Ferreira (2019a) mentioned that entrepreneurship plays a crucial role in farmers' efforts to build sustainable businesses. In addition, farmers not only contribute to the provision of food sources for the global market. However, they also face relatively strict regulations, encompassing quality assurance of products, health standards of food, and quality of environment in the agricultural sector production. Farmers must meet these requirements to enhance their entrepreneurship skills. According to Bao and Peng (2016), entrepreneurship is one of the sustainable approaches to overcome losing cultivated land. It can be traced from

the increasing number of literature documents published by scholars. The growing body of literature also features an exploration of the transition of entrepreneurship from informal to formal markets with an emphasis on institutional contributions (Sutter, Webb, Kistruck, Ketchen, & Ireland, 2017).

Entrepreneurship in agricultural businesses evolved along with changes in production conditions and agricultural sector development patterns (Graskemper, Yu, & Feil, 2021). Khoshmaram, Shiri, Shinnar, and Savari (2020) argued that entrepreneurship is often identified as a driver of development, job creation, and economic growth, all of which have beneficial effects on society and the economy. Unqualified farmers are risk-averse and uninterested in expanding their businesses. There could be a relationship between farmers' age and patterns of entrepreneurialism in the agricultural sector since older farmers might have more experience and wisdom to draw upon when determining business strategies. It could be assumed that older farmers have more experience and better business skills. Ranjan (2015) and Kimmitt, Muñoz, and Newbery (2020) discovered that entrepreneurship by farmers resulted in the ability to accumulate human capital in the agricultural sector for better future generations. Entrepreneurial skills could be expressed by (1) recognizing and realizing business opportunities, (2) developing and evaluating business strategies, and (3) building networks and utilizing relationships (Niska, Vesala, & Vesala, 2012; Seuneke et al., 2013).

This study aims to map the literature on farmers' entrepreneurship and communication skills published in the Scopus Database from 2012 to 2022. Furthermore, this study contributes to literature in several ways. To begin with, the development of unexplored literature on farmers' entrepreneurship and communication skills was mapped. In addition, a bibliometric approach was applied to reveal several aspects of literature documents, encompassing time analysis, journal, co-authorship, keyword, citation, and country. Moreover, the study's findings could be utilized as a basis for developing future literature on farmers' entrepreneurship and communication skills. Finally, policymakers should prioritize helping farmers, particularly younger ones, develop their entrepreneurial spirit and communication skills. Jun (2020) and Widiyanti, Karsidi, Wijaya, and Utari, (2023) argued that improving and utilizing information and communication technology have become significant factors for farmers in running their farms.

Furthermore, Morris, Henley, and Dowell (2017) asserted that agricultural businesses have faced challenges in local economic development through the provision of food sources, improved environmental protection, and social equity. Consequently, this state encourages farmers to be responsive to the environment and implement entrepreneurship and efficient business processes that are adaptive to new technologies. In addition, Pindado and Sánchez, (2017) and Barakat, Boddington, and Vyakarnam (2014) claimed that agricultural activities also provide entrepreneurial opportunities, such as the development of new products (e.g., organic farming and functional foods) and innovation in business processes, distribution, and marketing. Morris et al. (2017) explained that entrepreneurship is part of diversification and intensification in agriculture. In particular, Uduji, Okolo-Obasi, and Asongu (2019) discovered that mobile phone-based technology in the form of the e-wallet program has

become a driving factor for entrepreneurship practices in Nigeria. Kangogo, Dentoni, and Bijman (2020) proposed several suggestions to elevate entrepreneurship practices, encourage agricultural organizations or institutions, and strengthen farmer-buyer relationships.

Literature has portrayed the development of farmers' communication skills at an insignificant level, signaling that scholars have yet to reveal the topic better and more widely. Ritter, Adams, Kelton, and Barkema (2018) noted that effective communication is an essential skill for farmers to provide maximum service to partners and buyers. Moyo and Salawu (2018) and Nyareza and Dick (2012) asserted that effective communication is the main source through which farmers' sustainable development can be planned and realized. Male farmers are more likely to communicate effectively than their female counterparts. However, there is no significant difference between farmers whose communication skills have been enhanced through training and those who have not (Svensson et al., 2020).

Furthermore, Svensson et al. (2019) argued that traditional communication patterns by farmers emphasize past habits and identification of physical environmental conditions and agricultural products. Farmers have yet to be able to estimate and predict the needs of partners and buyers more broadly. Farmers' communication delivers beneficial impacts on agricultural product development (Shahbaz et al., 2023; Svensson et al., 2020). Improving communication skills could be encouraged through training despite the non-optimal results. Therefore, training could be maintained to raise the knowledge and education levels of farmers. Antwi-Agyei & Stringer (2021) asserted that communication skills are essential not only for farmers but also for agricultural extension workers. They are required to communicate effectively because currently, there are still many extension workers who lack skills in using communication technology, such as social media, to reach farmers. The expected end result is an increase in the quality of agricultural business and the satisfaction of partner buyers of agricultural products. Bard, Main, Haase, Whay, & Reyher (2022a) also reported that training to improve communication skills could impact information transfer and better decision-making.

This study comprises several sections to present better the development and mapping of literature documents on farmers' entrepreneurship and communication skills. The first section outlines the contribution of farmers' entrepreneurship and communication skills in the literature. The second section describes a bibliometric approach. The third section displays the findings. The last one elaborates on the conclusion and recommendation.

RESEARCH METHOD

Data

This study established two keyword pairs used in the bibliometric approach: "farmers' entrepreneurship" and "farmers' communication skills." Figure 1 (A and B) presents a detailed description of the sample selection stage.

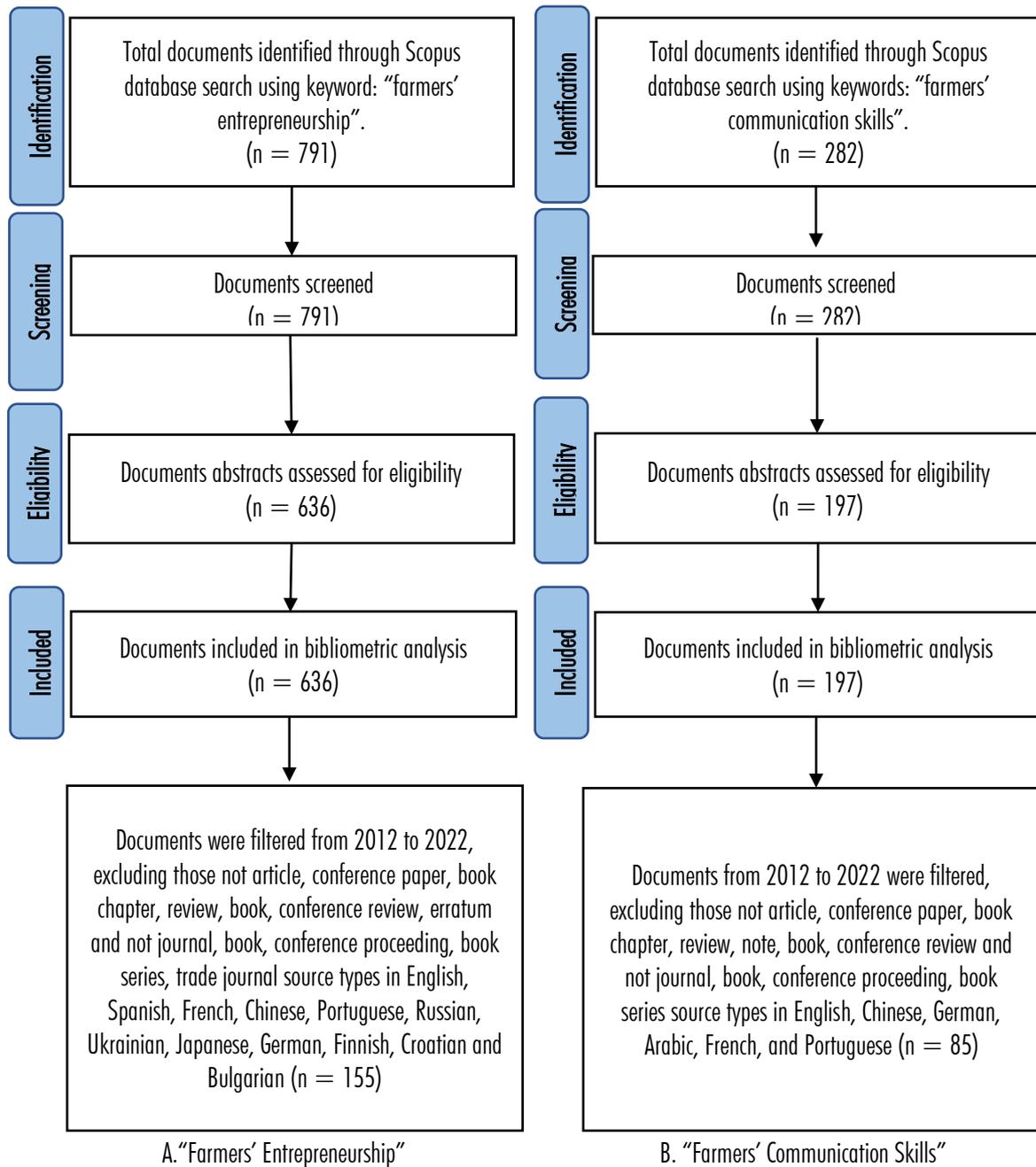


FIGURE 1. PRISMA FLOW CHART SAMPLE

The keyword "farmers' entrepreneurship" was searched in published literature documents in the Scopus database and analyzed using bibliometric analysis with Vosviewer version 1.6.17. Figure 1 describes the procedure for determining the sample of literature documents using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The analysis disclosed 791 literature documents, which were then filtered into 636 eligible documents. The final samples totaled 155 documents of literature from 2012 to 2022. The types of literature documents included articles, conference papers, book chapters, reviews, books, conference reviews, and erratum. Meanwhile, the source types of literature documents consisted of journals, books, conference proceedings, book series, and trade journals. The literature documents utilized several languages, covering English, Spanish, French, Chinese,

Portuguese, Russian, Ukrainian, Japanese, German, Finnish, Croatian, and Bulgarian. Furthermore, the keyword search “farmers’ communication” resulted in 282 literature documents, which were then sorted into 197 eligible documents. The final samples numbered 85 documents of literature. Therefore, the final total samples were 240 documents of literature. These documents were categorized into two: farmers’ entrepreneurship (155 documents) and farmers’ communication skills (85 documents).

The Bibliometric Approach

Literature can be classified and mapped into several aspects. This classification requires a suitable approach to reveal the distribution pattern of literature documents and the contribution of scholars in the development of literature. The bibliometric approach can reveal scholars’ trends, distribution, and contribution to the development of literature documents on a large scale. This approach can provide a better study outcome in the systematic literature review (Baker, Kumar, & Pattnaik, 2019; Donthu, Kumar, Pattnaik, & Lim, 2021; Hess, 1997; Nerur, Rasheed, & Natarajan, 2008). In addition, this approach presents data analysis and visualization techniques from literature documents published in a database by assigning particular keywords (Mahajan & Bandyopadhyay, 2021; Raman, Singh, Singh, Vinuesa, & Nedungadi, 2022; Raman, Subramaniam, et al., 2022; Valtakoski, 2019).

The bibliometric approach provides a space for deepening and tracing literature documents on a particular subject of study and source of literature. This approach benefits scholars by contributing significantly to the development of literature on a particular subject of study more broadly and deeply in the long run. In addition, this approach can describe the internal linkage of literature documents following bibliographic data (Bouyssou & Marchant, 2011; Feng, Zhu, & Lai, 2017; Zupic & Čater, 2015). Furthermore, the findings of literature document mapping based on the bibliometric approach were described into several aspects, encompassing time analysis, journal, co-authorship, keyword, citation, and country.

RESULTS AND DISCUSSION

Time Analysis

Figure 2A exhibits the time analysis results, depicting the movement of the number of literature documents on farmers’ entrepreneurship from 2012 to 2022, experiencing an over-time rise with a fluctuating pattern. The peak occurred in 2022, with 117 documents, while the highest increase took place in 2021, with 109 documents. These findings positively signaled scholars’ concern about studying farmers’ entrepreneurship and efforts to enhance their contribution to literature.

Meanwhile, Figure 2B describes the movement of the number of literature documents on farmers’ communication skills during the observation period. The number of literature documents rose with a fluctuating trend throughout the years. The highest number of publication documents occurred in 2022, with 34 documents. It was relatively lower than the literature documents on farmers’ entrepreneurship, implying that scholars tended to

emphasize the development of literature on farmers' entrepreneurship rather than farmers' communication skills.

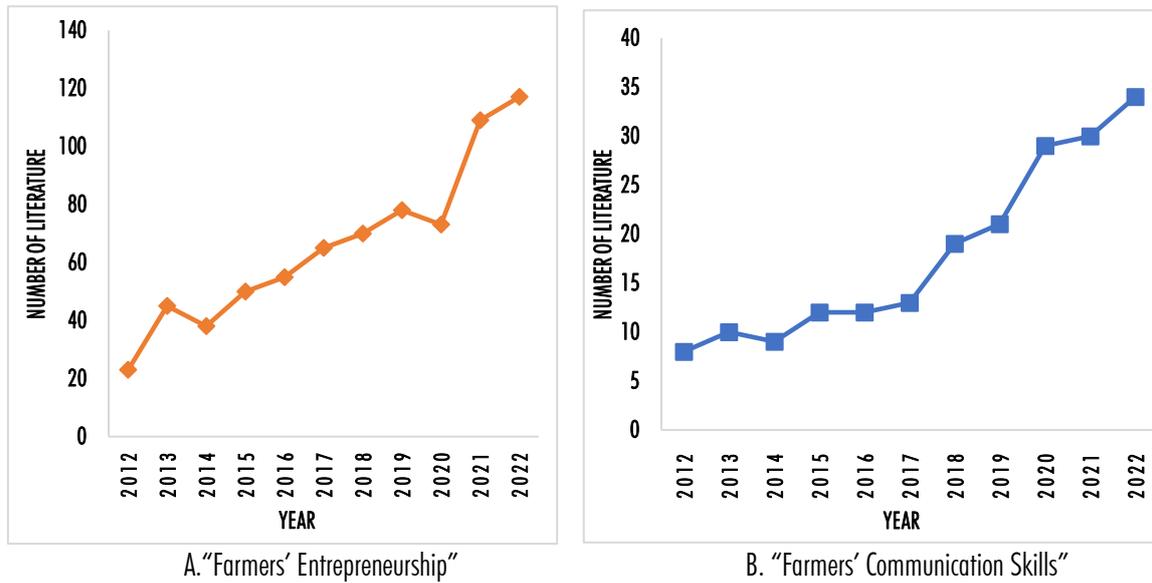


FIGURE 2. NUMBER OF SELECTED RESEARCH DOCUMENTS

Journal Analysis

Journal analysis outlined the journals contributing to the literature documents on farmer's entrepreneurship, as listed in Table 1(A).

TABLE 1. NUMBER OF SELECTED JOURNALS

Journal's title	Number of articles
A. Farmers' Entrepreneurship	
Sustainability Switzerland	23
Journal of Rural Studies	21
Emerald Emerging Markets Case Studies	20
IOP Conference Series Earth and Environmental Science; and Journal of Enterprising Communities	11
E3s Web of Conferences	9
Frontiers in Psychology	8
International Journal of Entrepreneurship and Small Business; Journal of Agribusiness in Developing and Emerging Economies; Acta Horticulture; and Journal of Agricultural Extension	5
B. Farmers' Communication Skills	
Journal of Rural Studies	7
Sustainability Switzerland	6
Journal of Agricultural Education and Extension	5

Notes: The journals and number of papers were selected using a bibliometric approach. The authors set the journals that have published more than or equal to five papers. Conversely, journals that have published less than five papers were excluded. It aimed to simplify Table 1.

The total number of journals and literature documents during the observation period was 126 documents. Specifically, those that contributed significantly were (a) Sustainability

Switzerland (23 documents), (b) Journal of Rural Studies (21 documents), (c) Emerald Emerging Markets Case Studies (20 documents), (d) IOP Conference Series Earth and Environmental Science (11 documents), and (e) Journal of Enterprising Communities (11 documents).

Furthermore, Table 1(B) lists a few journals that made substantial contributions to the literature documents on farmers' communication skills, comprising (a) Journal of Rural Studies (seven documents), (b) Sustainability Switzerland (six documents), (c) Journal of Agricultural Education and Extension (five documents), (d) Journal of Dairy Science (four documents), and (e) IOP Conference Series Earth and Environmental Science (four documents).

Authorship Analysis

Authorship analysis discussed the mapping of authors who contributed significantly to the literature documents on farmers' entrepreneurship. The findings revealed 310 authors during the observation period, who were divided into 27 clusters. Most contributed one document, while a small number contributed two documents.

The authors who contributed significantly to the literature on farmers' entrepreneurship were (1) Graskemper et al. (2021) with the article entitled *Analyzing Strategic Entrepreneurial Choices in Agriculture – Empirical Evidence from Germany*; (2) Alessa, Zaabi, and Diab (2018) with the article entitled *Impact of Environmental Factors in Financing Agriculture Entrepreneurs*; (3) Dias, Rodrigues, and Ferreira (2019b) with the article entitled *What's New in The Research on Agricultural Entrepreneurship?*; (4) Uduji et al. (2019) with the article entitled *The Impact of E-wallet on Informal Farm Entrepreneurship Development in Rural Nigeria*; (5) Kangogo et al. (2020) with the article entitled *Determinants of Farm Resilience to Climate Change: The Role of Farmer Entrepreneurship and Value Chain Collaborations*; (6) (McElwee and Smith, (2014) with the article entitled *Researching Rural Enterprise*; (7) Hassink, Grin, and Hulsink (2013) with the article entitled *Multifunctional Agriculture Meets Health Care: Applying the Multi – Level Transition Sciences Perspective to Care Farming in the Netherlands*; (8) Ohe (2022) with the article entitled *Investigating Farmer's Identity and Efficiency of Tourism – Oriented Farm Diversification*; (9) Ratten (2023) with the article entitled *Digital Platforms and Transformational Entrepreneurship during the COVID-19 Crisis*; and (10) Ranjan (2015) with the article entitled *Rural Entrepreneurism and Developmental Outcomes Under Climate Change Threats*.

Meanwhile, as exhibited in Figure 3, seven authors significantly contributed to the literature on farmers' communication skills during the observation period. Svensson emerged as one of the authors publishing five literature documents. One of Svensson's publications was *Training in Motivational Interviewing Improves Cattle Veterinarians' Communication Skills for Herd Health Management* (Svensson et al., 2020). Furthermore, Reyher and Bard published four literature documents. Bard et al. (2022) published an article entitled *Veterinary Communication Can Influence Farmer Change Talk and Can Be Modified Following Brief Motivational Interviewing Training*. Svensson, Reyher, and Bard published literature documents

in 2019 and 2020. Meanwhile, during the previous period, Svensson et al. (2019) published an article entitled *Communication Styles of Swedish Veterinarians Involved in Dairy Herd Health Management: A Motivational Interviewing Perspective*.

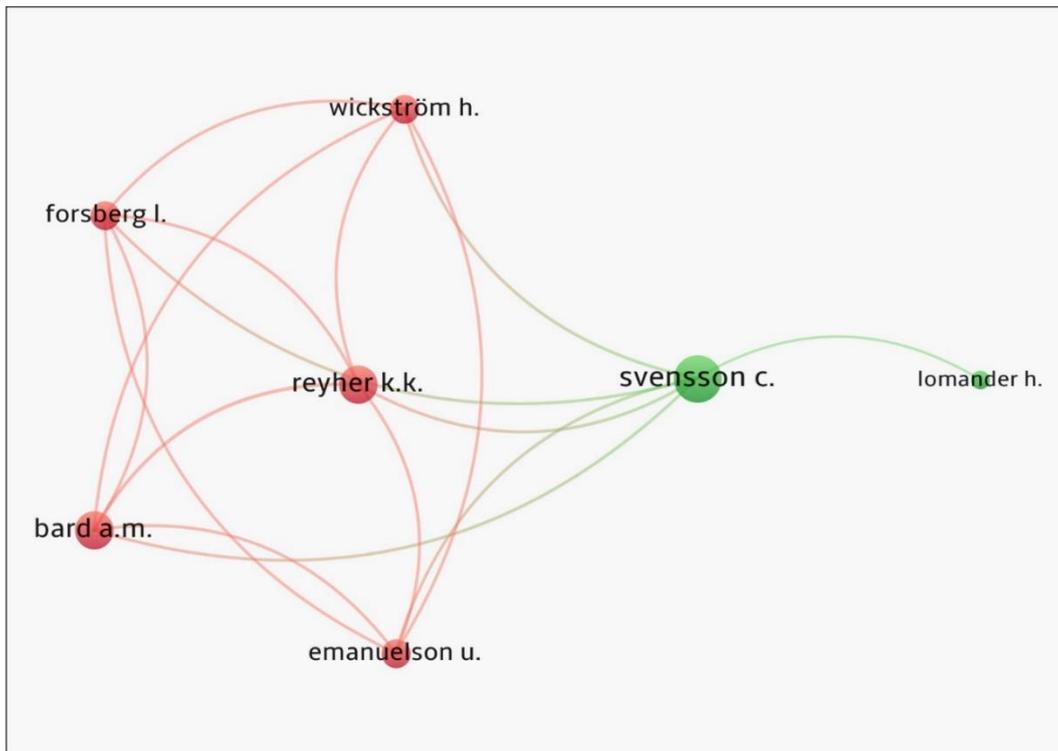


FIGURE 3. AUTHORSHIP NETWORK VISUALIZATION ON FARMERS' COMMUNICATION SKILLS

Keyword Analysis

Figure 4 exhibits the keyword analysis results exploring various terms related to farmers' entrepreneurship from 2012 to 2022. In all, 597 keywords were acquired and categorized into 17 clusters. Five keywords with the highest frequency encompassed entrepreneurship (164 occurrences), agriculture (92 occurrences), entrepreneur (74 occurrences), innovation (37 occurrences), and agricultural worker (34 occurrences).

The keywords entrepreneurship and innovation belonged to cluster 6. Meanwhile, agricultural workers, farmers, and entrepreneurs came from three clusters: cluster 5, cluster 8, and cluster 11. While the keyword entrepreneur was prominent in the literature documents in 2017, 2018 had a disproportionately large contribution from the keywords entrepreneurship, agriculture, and innovation. Besides, the keyword agriculture workers made a considerable contribution in 2019.

Entrepreneurship, entrepreneurship, and innovation contributed as leading factors to the success of agricultural businesses for farmers. These three keywords supported the passing of knowledge from one generation of farmers to the next. In this case, the older farmers have established the basic landscape of entrepreneurship and innovation to guarantee sustainable agricultural business for young farmers in an appropriate way. In the long term, agricultural businesses could benefit from the communication skills prepared and enhanced by these two generations.

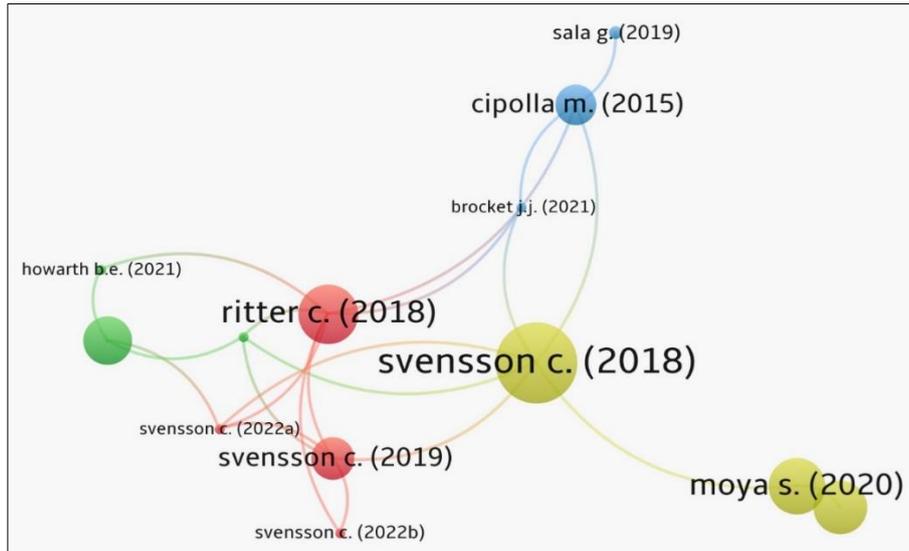


FIGURE 7. CITATION NETWORK VISUALIZATION ON FARMERS' COMMUNICATION SKILLS

Country Analysis

Figure 8 displays the country analysis results, outlining all countries publishing literature on farmers' entrepreneurship from 2012 to 2022. Eighty-two countries were identified, forming 15 clusters. Of the 82 countries, five provided substantial contributions: India (93 documents), China (64 documents), Indonesia (60 documents), the United States (50 documents), and the Netherlands (49 documents). In 2017, the United States and the Netherlands contributed significantly to the literature. Finally, 2018 was a peak year for India's contribution. Meanwhile, Indonesia was a major contributor in 2019. Moreover, China made a significant contribution in 2020.

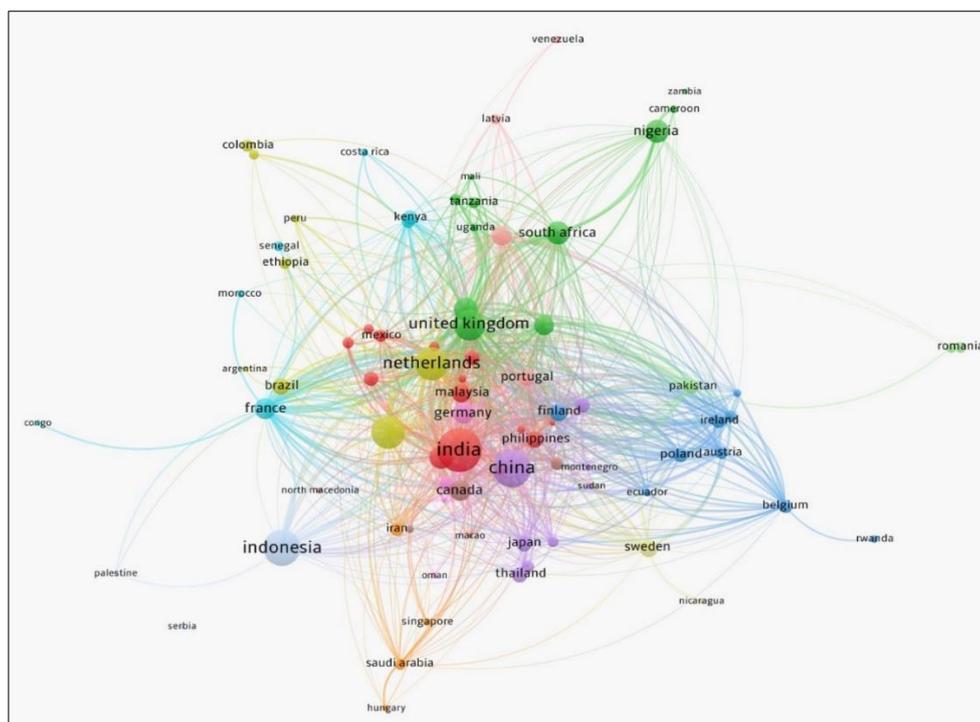


FIGURE 8. COUNTRIES' NETWORK VISUALIZATION ON FARMERS' ENTREPRENEURSHIP

Furthermore, as depicted in Figure 9, the country analysis also revealed several countries with significant contributions to the literature on farmers' communication skills. The analysis yielded 63 countries with 11 clusters. The findings highlighted five significant contributing countries consisting of the United States (31 documents), the United Kingdom (19 documents), India (14 documents), Nigeria (13 documents), and South Africa (12 documents). All of them made significant contributions in 2018.

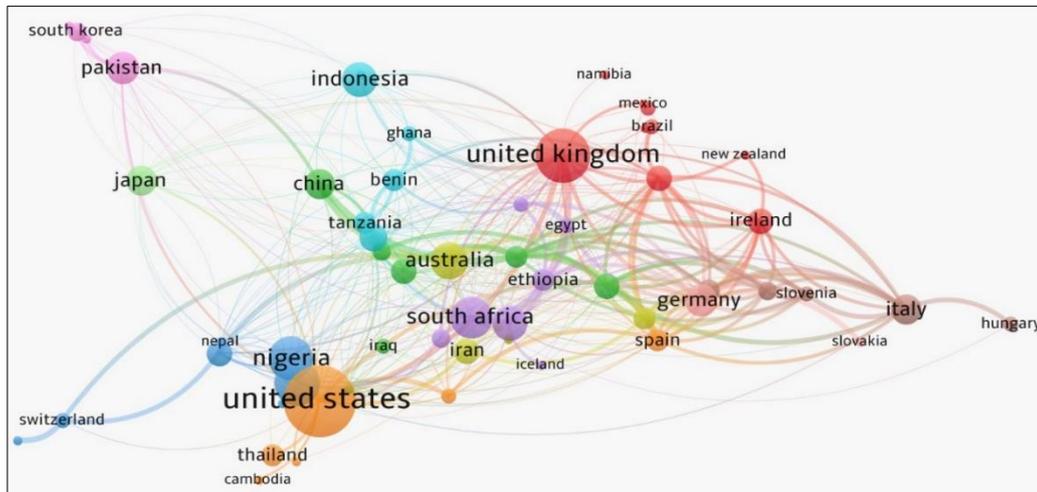


FIGURE 9. COUNTRIES' NETWORK VISUALIZATION ON FARMERS' COMMUNICATION SKILLS

Discussion

This study investigated the literature on farmers' entrepreneurship and communication skills published by the Scopus database from 2012 to 2022 using a bibliometric approach. The main findings were revealed in several ways. To begin with, the scholars paid more attention to elaborating on the contribution of entrepreneurship to agricultural business. There was more literature on farmers' entrepreneurship than there was on farmers' communication skills. Moreover, the Journal of Sustainability published the highest amount of literature on farmers' entrepreneurship, while the Journal of Rural Studies mostly published literature on farmers' communication skills. In addition, entrepreneurship, agriculture, and communication were the primary keywords in literature. Finally, India and China contributed significantly to farmers' entrepreneurship exploration in the literature, while the United States and the United Kingdom illustrated the farmers' communication skills.

The results highlighted those developing countries focused on studying farmers' entrepreneurship, while developed countries revolved around farmers' communication skills. The literature mostly disregarded agricultural entrepreneurship during the observation period. Two arguments could determine the condition. To start with, increasing income levels and business efficiency remained primary concerns for developing countries (Otsuka, Nakano, & Takahashi, 2016). Additionally, farmers in developed countries emphasized the adoption of new technology to enhance food productivity (Arendonk, 2015; Hailu, Tolossa, Girma, & Kassa, 2022). In other empirical studies, Bowen and Morris (2019) and Roy and Acharya (2021) described that better learning of technology would enhance entrepreneurial learning, benefiting farmers. Moreover, digitizing agricultural technology could deliver a positive

contribution to supporting farmers' entrepreneurship (Fielke et al., 2021; Spykman, Gabriel, Ptacek, & Gandorfer, 2021).

In the agricultural sector, entrepreneurship is primarily defined by three factors: entrepreneurial skills and behavior, entrepreneurial strategies, and community and entrepreneurial activity (Dias et al., 2019a; Elert & Henrekson, 2016). Farmers in developing countries tended to employ entrepreneurial skills and behavior. Hassink, Hulsink, and Grin (2016) and Tudisca, Trapani, Sgroi, Testa, and Giamporcaro (2014) argued that farmers in developing countries could successfully utilize entrepreneurial skills opportunities. Conversely, entrepreneurial strategies, communities, and activities were deployed by farmers in developed countries. Concerning agricultural entrepreneurship, men were far more influential than women. However, the women paid more attention to family farms. Therefore, entrepreneurial programs (education and training) could be conducted for women and younger farmers.

The discussion of agricultural business has emphasized entrepreneurial culture. Therefore, Mcelwee (2006) investigated the literature on farmers' skills and entrepreneurial capacity. The findings uncovered by those scholars gave considerable attention to the issues of farm diversification and farmers' enterprise skills. Nevertheless, strict regulation of the agricultural sector and environment provided a barrier to entrepreneurial activity. Some strategies for agricultural business included doing nothing, growth by expansion of land use or animal production, enlarging capacity under value added of production, cooperation and diversification, and specialization. Hence, the government and industries could stimulate and contribute to improving the higher quality of farmers' entrepreneurial skills (Marshall, Dezuanni, Burgess, Thomas, & Wilson, 2020; Migliore, Schifani, Romeo, Hashem, & Cembalo, 2015).

Furthermore, Bukenya (2015) and Nie, Ma, and Sousa-Poza (2021) noted that mobile phones could stimulate the communication skills of farmers. Thus, the availability and accessibility of information and communication technology led to a higher level of communication skills. Pivoto et al. (2018) and Bukchin and Kerret (2020) illustrated those technological developments, such as the use of electronic devices and data transmission, have brought radical changes to the agricultural work environment in recent years. According to Gharehgozli, Iakovou, Chang, and Swaney (2017) and Muzayyanah, Triatmojo, and Qui (2023), the development of communication technology has impacted managerial and decision-making from the production level to the market orientation level of the agricultural sector. More than two decades, the scholars have formulated and applied agricultural communication curriculum for their students (Corder & Irlbeck, 2018). The scholars have also shared the curriculum to farmers under business empowerment activities, encompassing three communication skills: written, visual, and oral.

Additionally, Arshad et al. (2022) and Prause (2021) explained that communication could create a digital farm capable of encouraging ideal entrepreneurship. There was an influence and a relationship between information and communication systems on farmers' entrepreneurship (Khoshnodifar, Ghonji, Mazlounzadeh, & Abdollahi, 2016).

Communication skills have provided a better way and tool for developing the agricultural sector in Ethiopia (Asai, Langer, Frederiksen, & Jacobsen, 2014; Tegene, Wims, Gebeyehu, & Abo, 2023). There are two communication approaches for farmers: the one-way (top-down) approach, which the government and research institutions conduct, and the two-way approach, which non-government organizations (NGOs) apply. However, the two-way communication approach is considered more appropriate. Obiero et al. (2019) and Klocker, Dun, Head, and Gopal (2020) mentioned that people tended to select interaction and communication with groups having the same beliefs, education, and social status. Various relationships between farmers and other parties could be built using communication through joint projects. Direct communication and contact with partners from previous cooperative ventures were preferred to offer higher levels of mutual trust (Busse et al., 2015; Cortés-Rodríguez, Martínez-Gómez, Romo-Lozano, & Arvizu-Barrón, 2023; Nugusse, Huylenbroeck, & Buysse, 2013).

Subsequently, Yulida, Rosnita, Andriani, and Ikhwan (2019) emphasized effective communication for rubber farmers. There are two effective forms of communication: interpersonal and group communication. Effective communication should be conducted in a two-way approach. Besides, the government could facilitate and stimulate effective group communication to enhance agricultural institutions. Group communications are effective when they provide a platform and serve as a catalyst in their groups (Cooper & Wheeler, 2015; Tata & McNamara, 2018).

CONCLUSION

Farmers' entrepreneurship and communication skills bring constructive academic discussions and provide a better understanding of agribusiness literature. Therefore, it would be highly beneficial to utilize a bibliometric approach to trace and map literature documents on those two topics from 2012 to 2022.

The study findings revealed that the number of literature documents on farmers' entrepreneurship and communication skills escalated over time, with literature documents on farmers' entrepreneurship outnumbered those of farmers' communication skills. Sustainability Switzerland Journal made a significant contribution to the literature on farmers' entrepreneurship, while the Journal of Rural Studies was the one contributing significantly to research publications on farmers' communication skills. In their study entitled *Analyzing Strategic Entrepreneurial Choices in Agriculture – Empirical Evidence from Germany*, Graskemper et al. (2021) were among the authors who made substantial contributions to the literature on farmers' entrepreneurship. However, Svensson et al. (2020), through their article entitled *Training in Motivational Interviewing Improves Cattle Veterinarians Communication Skills for Herd Health Management*, highly contributed to the literature on farmers' communication skills. Concerning literature on farmers' entrepreneurship, India produced a great deal of documents. However, when it comes to literature on farmers' communication skills, the

United States contributed significantly. Nevertheless, Das (2023) emerged as one of the few researchers on farmers' communication skills that specifically targeted farm women.

Various points could be made to highlight the significance of the study's findings. To begin with, scholars' attention to the study of farmers' entrepreneurship could be developed by linking the impact of communication skills for young farmers (millennials). Moreover, future research could develop the contribution of farmers' communication skills to entrepreneurship within the framework of Industry 4.0 and the Sustainable Development Goals (SDGs) or research on farmers' skills from a gender perspective. Additionally, policymakers could encourage and facilitate young farmers to improve their entrepreneurship and communication skills to ensure the sustainability of agricultural businesses. For example, the central and local governments could facilitate young (millennial) farmer communities to strengthen farmer institutions and skills under community empowerment programs. Besides, young farmer communities could collaborate with universities and NGOs to enhance their entrepreneurship and communication skills.

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