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Systematic Review and Bibliometric Analysis of Sustainable Agricultural Partnership Models

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ABSTRACT

Agricultural partnerships establish important sustainability principles that can deepen environmental and social responsibility in agricultural systems and improve the performance of compliant organizations. However, the performance of partnerships in developing countries cannot compete in international markets due to non-compliance with sustainability schemes in economic, social and environmental aspects. Meanwhile, there is little coherent review of the knowledge landscape related to partnership models and business perceptions in driving partnership performance. Therefore, this study conducted a comprehensive systematic review and bibliometric analysis of the existing literature to provide insights into publication trends, critical articles and contributing research sponsors. It was revealed that, partnership models and partner performance are underrepresented, with Indonesia being the most influential contributor in studies related to agricultural partnership compliance. Although the influence of most factors in the existing literature is mixed, this study recommends increased international research partnerships to foster the development of the knowledge field of partnership digitalization, which appears to be experiencing maturation challenges, plus progressive research on sustainable models in underrepresented contexts. Policy responses to improve the organizational performance of businesses through digitization and rule regulation are also suggested.

Keywords: Partnership Performance, Partnership Model, Bibliometric Analysis, Farmer Partners

INTRODUCTION

The concept of partnership refers to the concept of cooperation between small businesses and medium or large businesses accompanied by guidance, taking into account the principle of mutual benefit and strengthening (Sjaf *et al.*, 2022) . Partnership patterns are forms of cooperation between small businesses and medium or large businesses. Partnership pattern as an innovation implies that there has been a process of renewal of the partnership pattern in many ways (Krell, Fisher and Steffey, 2016). This means that the partnership pattern is not something new at all in the world of farmers, but has undergone a process of change from time to time until now (Van Tassell *et al.*, 2023).

The process of partnership between farmers and intermediary traders and between farmers and input kiosks has been going on for a long time (Wan Abbas Zakaria *et al.*, 2019). The process of cooperation is then referred to as the process of partnering. As science and technology progresses, the number of vegetable business actors increases and the Cooperation area expands, the Cooperation process also develops (Mayor, Khalid and Ahmed, 2021). The development of innovative partnership patterns varies according to the conditions of the community or according to the culture and structure of the community (Krell, Fisher and Steffey, 2016; Alotaibi and Kassem, 2022). When viewed in terms of organizing activities in the vegetable business, the partnership pattern can be grouped in informal ways of organizing.

There are currently 15 internationally recognized model partnership certification schemes and a number of regionally or nationally recognized models that can be applied as local versions of the standard (Hillis, Lubell and Hoffman, 2018). While these schemes have different focuses and apply specific criteria and indicators, there is significant overlap in terms of environmental, economic and social sustainability demands. Businesses entering into partnerships must voluntarily commit to adopting sustainable agricultural practices in compliance with certain Cooperation principles and criteria before being assured of sustainability (Geza *et al.*, 2022). There are concerns that agricultural partnerships may widen the gap between farmers and the organizations that support them in developing countries (Feuillet and Eversole, 2023). However, there is growing evidence to support the successful integration of agricultural partnerships through sustainable schemes.

Recently, developing countries have dominated the certified agricultural partnership process, indicating the adoption of sustainable partnership standards. However, this is not the case in developed countries, as the agricultural partnership model adopted is related to the sustainable quality of agricultural products (Zuhri *et al.*, 2024). There is a compliance gap that requires immediate attention. Compliance has been an important topic in the domain of sustainability research and certification processes, as governments in their policy-making capacity have not been thorough in addressing the challenge (Tricarico *et al.*, 2019). As a result, factors found to drive farmers' compliance behavior have been explored in many studies focusing on different models of agricultural partnerships (Raheem *et al.*, 2022).

A comprehensive review of sustainable farmer partnership models is lacking. Given the lack of coherent information and the generally fragmented literature on farmer compliance with partnership standards, it is necessary to evaluate the current state of the science in the field and consolidate the driving forces behind best partnership practices (Tricarico *et al.*, 2019). Therefore, this contribution provides insights into the evolution of the literature on compliance with partnership standards and further explores the factors behind sustainable agricultural partnership decisions.

Specifically, this study explored three main objectives through bibliometric analysis and systematic content review: (1) to examine the structure of agricultural partnerships, (2) to determine the factors that influence farmers' perceptions of agricultural partnerships, and (3) to ascertain existing research gaps and propose future directions.

LITERATURE REVIEW

Agricultural development is a process that aims to improve the welfare of farmers and advance the agricultural sector as a whole. It involves various aspects, including increased productivity, efficiency, and environmental sustainability. One of the key points in agricultural development is farmer empowerment. This includes capacity building, access to resources, and the active role of farmers in decision-making regarding their agricultural businesses (Krell, Fisher and Steffey, 2016; Feuillet and Eversole, 2023).

Agricultural development is inseparable from the application of technology and innovation. Adoption of modern technology, sustainable farming methods, and innovative research are key to improving the productivity and quality of agricultural products. are key in improving the productivity and quality of agricultural products. Agricultural development often involves partnerships between farmers, companies and the government. These partnerships create a mutually beneficial relationship that can improve market access, capital provision and technology transfer (Wan Abbas Zakaria *et al.*, 2019; Safiteri, Titaley and Matakena, 2023).

The role of agricultural policy is very significant in the development of the sector. Price policies, incentives, subsidies, and regulations have a direct effect on farmers' welfare and agricultural development (Van Tassell *et al.*, 2023). A thriving agriculture cannot be separated from the dynamics of the global market. International trade, foreign market access, and trade policies are important factors in agricultural development at the global level. Agricultural development must consider the sustainability of natural resources. Sustainable agricultural practices, water management, and soil conservation are important elements in maintaining ecosystem balance. Cooperation with the private sector can be an important driver of agricultural development (Hariance, 2019; Geza *et al.*, 2022).

RESEARCH METHOD

Selection of relevant studies

Literature reviews and bibliometric analyses report in-depth on research patterns, new insights, and potential research gaps based on a thorough assessment of knowledge from existing literature with scientific quality. This analysis involves literature retrieval, assessment of research quality, and creation of protocols for evidence collection through a selection process that is robust, transparent, replicable, and can lead to evidence-based conclusions. Therefore, this paper follows the widely used PRISMA framework to identify and analyze empirical studies focusing on sustainable agricultural partnership models and visualize the interconnectedness of research domain collaboration networks. Specifically, the data collection and selection procedure was based on the following steps; (1) identification of potentially relevant records, (2) screening of relevant articles (3) eligibility assessment, and (4) data coding and extraction of relevant information.

The first step involved identifying scientific material through database searches. To systematically select potentially peer-reviewed articles for screening, this review used the Scopus database, one of the largest abstract and citation repositories that provides enriched bibliographic data from thousands of reputable journals. The selection of the Scopus database was based on its offering of high-quality scientific papers from

reputable publishers. The search strategy was developed around five blocks of keywords, namely; (1) agricultural partnership models; (2) sustainable partnerships; (3) farmer-related (e.g. smallholders, producers, farmers, horticulture, etc.); (4) crop-related (e.g. cocoa, coffee, cotton, oil palm, tea, shea, sugarcane, soybean, etc.). Using Boolean operators and wildcards (e.g. 'OR', 'AND', '∗'", etc.), a comprehensive search technique was applied to create a final search to retrieve articles investigating the concept under review. The search involved keyword combinations structured under four keyword blocks and was conducted across title, abstract and keyword fields. With no restrictions on publication period and number of included articles, the final article retrieval process was conducted on February 9, 2024. The final query was a recall of 3,193 publication records which were then reduced to 2.049 peer-reviewed English-language articles, potentially related to the topic of interest.

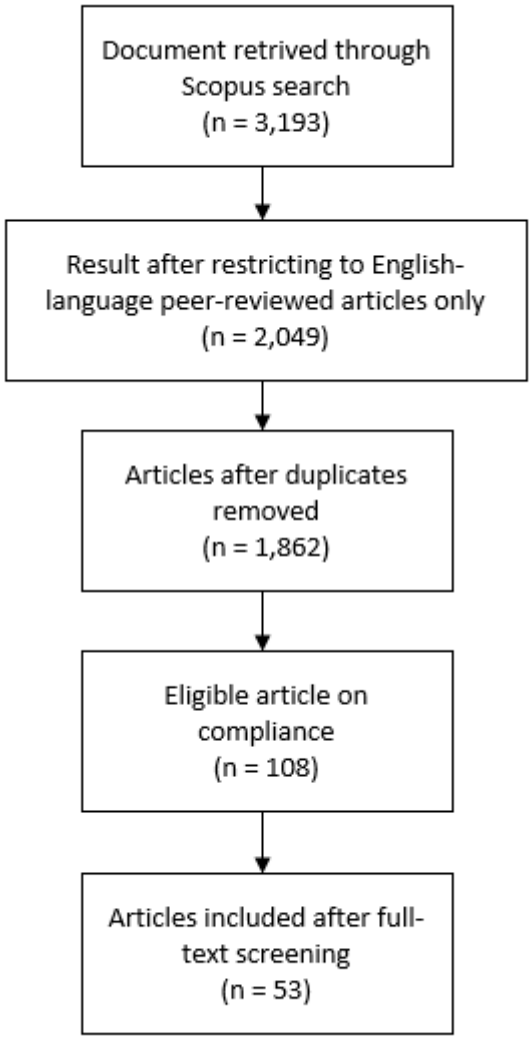

Figure 1. PRISMA framework for article inclusion

In the second stage, the remaining dataset was imported into Mendeley citation management software, followed by manual evaluation of titles and abstracts resulting in a sample of 1.862 records related to the domain of agricultural partnerships.

In the third stage, a full-text assessment was conducted for eligibility and to eliminate publications that did not refer to determinants, facilitators or barriers to partnership. After this screening, this left a final sample of 743 studies that were included in the literature review and bibliometric analysis. In addition, four other publications were also included

after snowball screening of the reference lists of the included articles as provided. In the end, 414 articles were selected, which form the basis of the current contribution (Figure 1).

Methods for bibliometric analysis and content analysis for literature reviews

In bibliometric studies, researchers rely on detailed visualizations of citation information to gain insight into certain aspects of a research field. VOSviewer software is then used to create visualizations of bibliometric networks such as authors, journals, countries, institutions, and funders based on citation and co-authorship information. Some authors have adopted VOSviewer software to identify emerging trends in scientific research. In this paper, bibliometric indicators are presented only for active collaborations drawn from a dataset of 38 studies identified as determinants of compliance with certification standards. The methodological approach to bibliometric analysis includes statistics and visualization of publication year, author, journal, country, and citation analysis.

To determine the factors driving compliance with certification standards, a content analysis of each of the 38 included articles was conducted to provide the basis for the literature review. Information was extracted from the quantitative and non-significant relationships established between the dependent variable and the factors under study, coupled with a qualitative synthesis of the facilitators and barriers to compliance.

RESULTS

Yearly distribution of publication output

The number of articles published from year to year shows trends in a particular research domain. Trend analysis can also provide clues about future trends. Noticeably, researchers started to pay attention to the factor of agricultural partnerships in developing countries starting from 2015. Although the volume of available publications has increased from just one at the start to 53 by the end of 2023 (see Figure 2), academic interest in the topic has remained relatively low over the past few years as publications have stagnated. Between 2015 and 2021, there was generally a slight increase in the average rate of article publication although there were some fluctuations in the numbers in 2021 and 2022. During this period, a minimum of 20 articles were published annually. This trend suggests that in the future, more academics will join and contribute to the advancement of the research domain, which is slowly gaining attention from the scientific community. However, it should be noted that, the 10-year aggregate of 414 publications and the recent fluctuations in the number of articles published annually seem to signal maturation issues in the field of research related to agricultural partnerships.

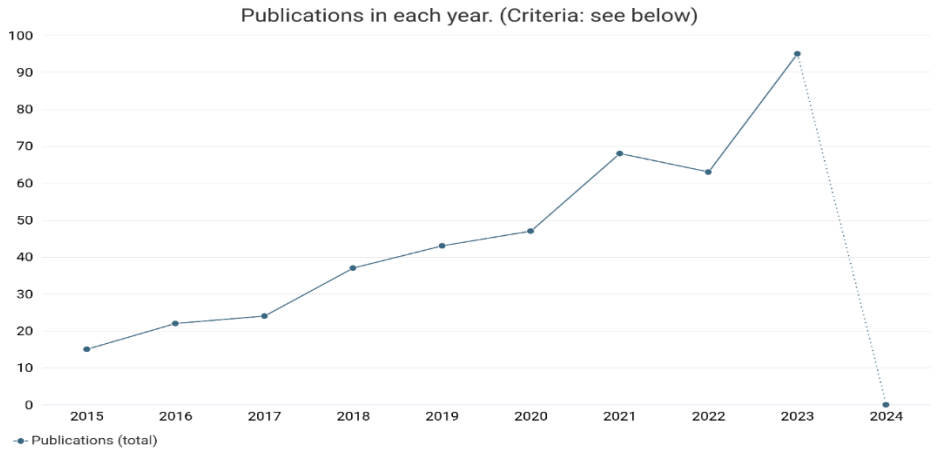

Figure 2. Publication volume from 2015 to 2023

Influential journals that contribute to agricultural partnership research

The 414 articles included in the dataset for this study were published in 33 different source journals. Overall, 29 journals (86.39%) had published at least 15 articles on agricultural partnerships; 4 journals (13.61%) published at least 5 articles. Table 1 lists the top 5 publication sources and the number of articles published by each journal in the research areas reviewed. The wide distribution of articles across journals in agriculture, environment, business, economics, policy, technology and behavior seems to indicate the multidisciplinary nature of the partnership and sustainability research domain, which mainly focuses on perceptions and models of new technology sustainable partnerships. It is also indicative of the interest shown by various research communities to play a role in advancing the research domain. While not surprising, it is worth noting that journals with a focus on the agriculture and rural development discipline have paid greater attention to this subject compared to other disciplines. This explains why the IOP Conference Series Earth and Environment Sciene, Crops & Soils, Sustainability, Agronomy and jenvironment, Development and Sustainability are the most significant sources of scholarly articles on sustainable agricultural partnerships.

Table 1. Sources of Publications Related to Sustainable Agricultural Partnerships

Name Journal	Publications	Citations
IOP Conference Series Earth and Environment Sciene	20	30
Crops & Soils	15	1
Sustainability	13	143
Agronomy	5	31
Environment, Development and Sustainability	5	29

Active Author in Certification Standard Compliance Research

The advancement of any research domain depends on the interest shown by the researchers and their contribution to the body of knowledge. Overall, 158 researchers contributed to 414 articles on agricultural partnerships. Among these, the 10 most prolific researchers authored or co-authored at least two articles accounting for 21.47% of all articles, while each of the other authors contributed to the publication of an article. Although not very active, Sunday Ekesi (328 citations per article) received more recognition for his work than the others, while Kelly Murray Young ranks first as the most prolific author with 8 articles. Six of the top ten active writers have gained considerable attention for their work. They are Nguya Kalemba Maniania (315 citations per article), followed by Francisco Javier Herraiz, who together rank as the second most influential with 163 citations per article, while Michael Halewood, Federico Maria Pulselli, and Yoshinori Utsumi rank next with 114 citations per article. Table 6 lists the top 5 active authors followed by the top 10 influential authors.

Tabel 2. 10 Penulis Teratas Berdasarkan Produktivitas Dan Pengaruh

Rank	Active Authors	Publications	Citations
1	Kelly Murray Young	8	1
2	Allison Thomson	7	1
3	Sara Manuelli	3	9
4	Emi Widiyanti	2	4
5	Sergii Stepanenko	2	1
Rank	Influential Authors	Publications	Citations
1	Sunday Ekesi	2	328
2	Nguya Kalemba Maniania	2	315
3	Francisco Javier Herraiz	2	163
4	Michael Halewood	1	114
5	Federico Maria Pulselli	1	114

Journal Analysis

The journal analysis outlines the journals that contribute to the sustainable agricultural partnerships literature, as shown in Figure 3.

During the observation period, 414 journals and library materials were collected. 1. Human Society (164 documents), 2. Agricultural, Veterinary and Food Sciences (103 documents), 3. Environmental Sciences (88 documents), 4. Development Studies (49 documents), and 5. Human Geography (47 documents) contributed significantly to make the top list.

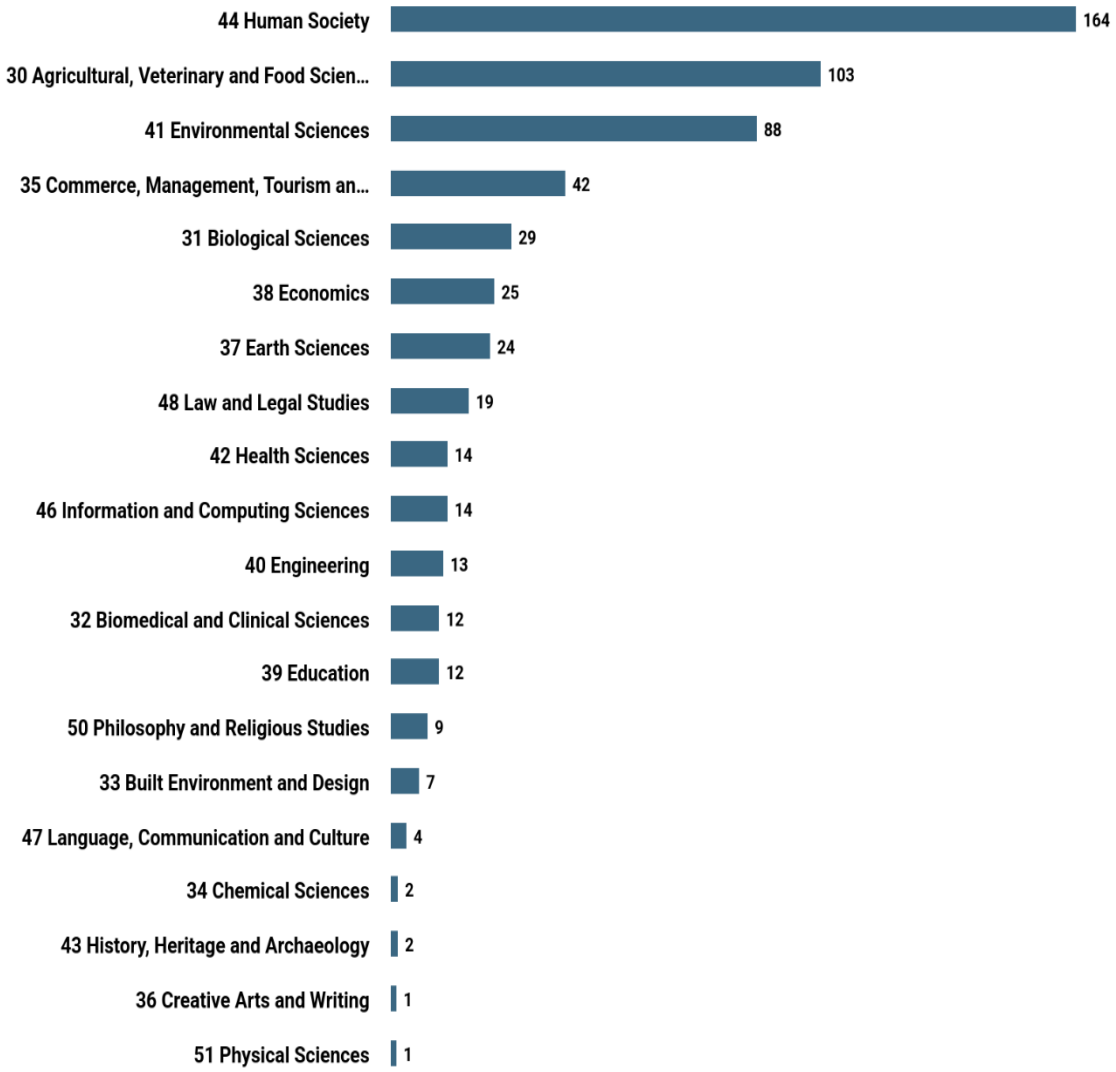

Figure 3. Title Source

Network Visualisation Keyword Analysis

Findings from a keyword analysis that examined phrases related to sustainable agricultural partnerships from 2015 to 2023 are shown in Figure 4. A total of 361 keywords were obtained and grouped into five clusters. Organization (82 occurrences), Environment (75 occurrences), Collaboration (51 occurrences), Product (44 occurrences), and Sustainability (13 occurrences) were the five most frequently occurring terms.

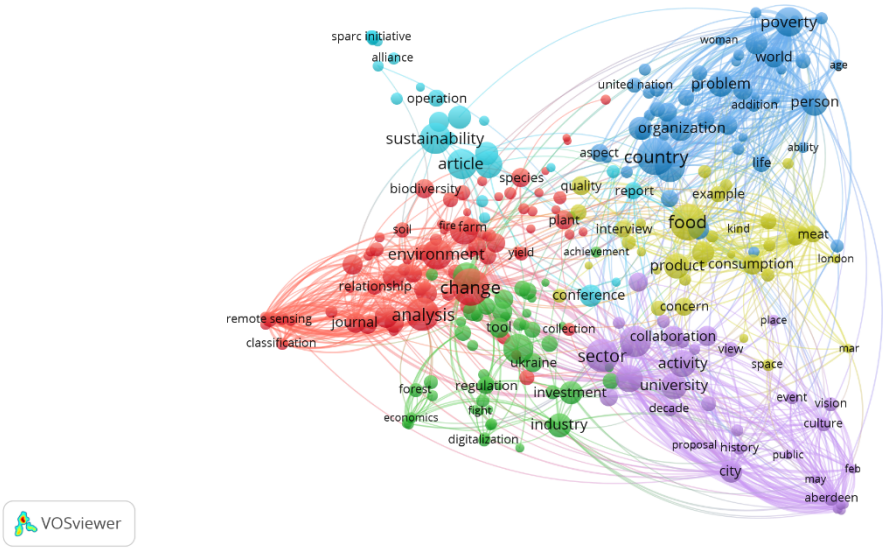

Figure 4. Keyword Network Visualization on Sustainable Agricultural Partnerships

Organizations belonging to cluster 2 are shown in Figure 5. Meanwhile, three clusters - Cluster 1, Cluster 3, and Cluster - are responsible for digitization, regulation, investment, and industry. While the term "organization" was frequently used in literature texts in 2021, the terms "digitalization," "regulation," and "investment" made considerable contributions in 2022. The use of keywords will also play an important role in 2022.

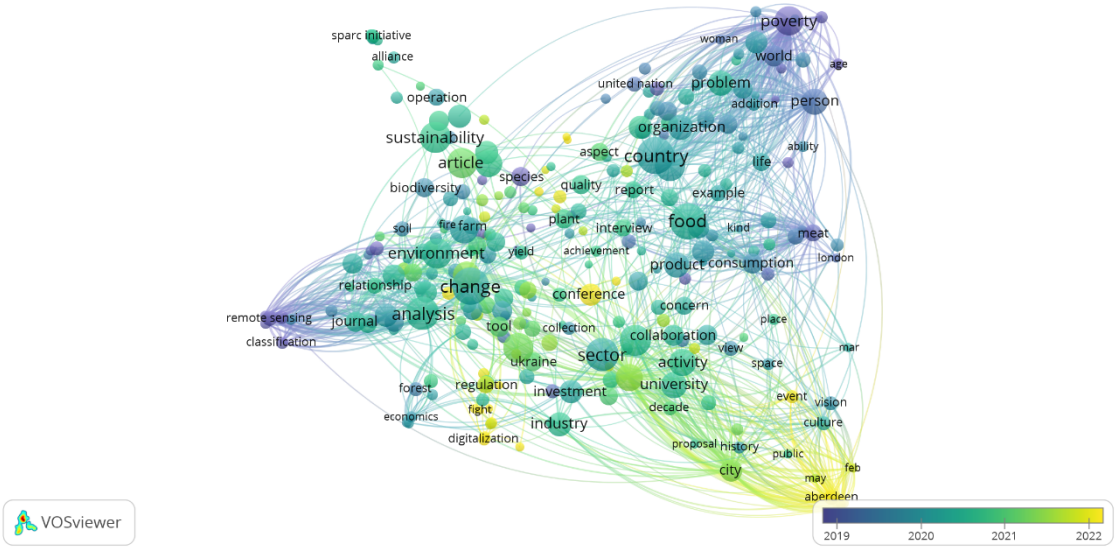

Figure 5. Keywords Overlay Visualization on Sustainable Agriculture Partnership

Figure 8 illustrates how the three main elements that influence agricultural organizations' progress in sustainable partnerships are igitalization, regulation, investment. These three support the transfer of information from one subject to another. In this case, farmers, traders, and the government have appropriately built a basic framework for innovation and adoption to guarantee sustainable agricultural partnerships for business actors.

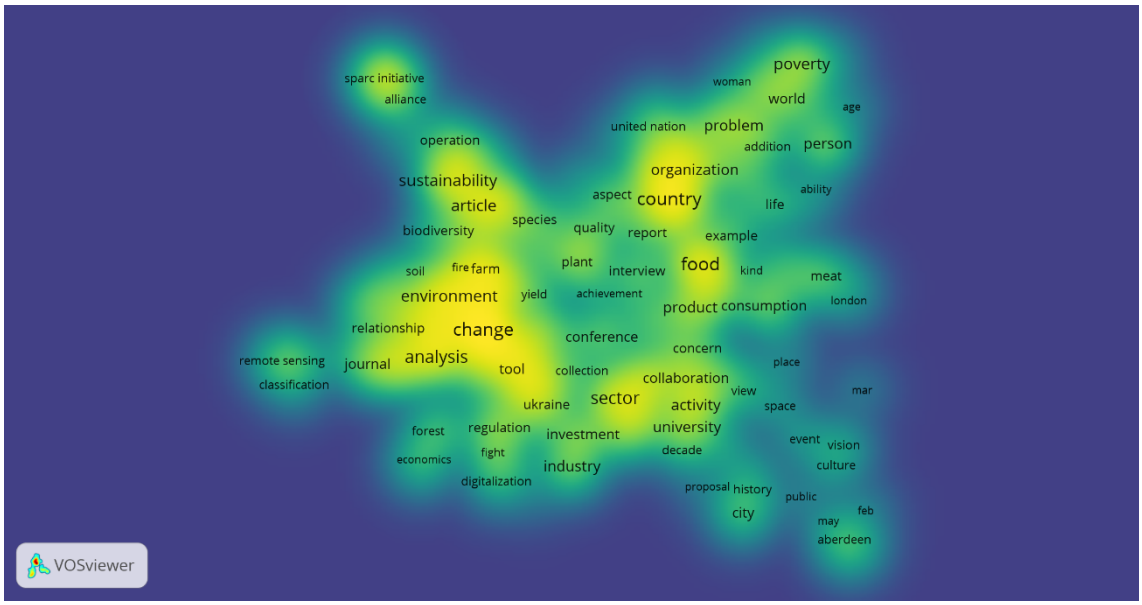

Figure 6. Keyword Density Visualization on Sustainable Agricultural Partnerships

DISCUSSION

This study examined research on sustainable agricultural partnerships published by the Scopus database between 2015 and 2023 using bibliometric methodology. Several techniques were available to reveal key findings. First, scholars devoted more time to explaining how sustainable partnerships benefit agricultural businesses. In addition, most of the literature on sustainable agricultural partnerships was published by IOP Conference Series Earth and Environment Sciene. Indonesia and Vietnam significantly influenced the investigation of literature on sustainable agricultural partnerships.

These findings are of interest to developing countries that are researching sustainable agricultural partnerships. Further, improving the level of perception and organizational performance remains a significant issue for developing countries (Hillis, Lubell and Hoffman, 2018). In addition, businesses in developed countries prioritize the application of digitalization in considering social, economic and environmental implications to improve partnership performance (Hillis, Lubell and Hoffman, 2018). In other empirical studies, Wan Abbas Zakaria *et al.* (2019) show that the use of digitalization will improve partnership performance, benefiting all businesses. In addition, sustainable partnerships can benefit.

The defining characteristics of sustainable sustainable partnerships are environmental, social and economic aspects. In developing countries, farmers often prioritize economics. According to Rizki *et al.* (2023), Prima Sani Nasution, Mulatsih and Rahma (2023) and Syabrinildi (2024), farmers in developing countries can profitably utilize partnerships. On the other hand, farmers in developed countries prioritize the quality of produce.

Sustainability has applied organizing, especially agricultural partnerships. As a result, Raheem *et al.* (2022) examined the literature on partnerships for sustainable agriculture. The issue of partnership regulation is an important consideration in various existing problems. However, the rules that should be made by policy makers do not always support farmers and other business actors in establishing good partnerships. Furthermore, Sjaf *et al.* (2022), Wan Abbas Zakaria *et al.* (2019), and Safiteri, Titaley and Matakena (2023) have shown that the role of digilatization can improve partnership

performance. Therefore, the transparency and flexibility of business actors driven by technological advances need to consider social, economic and environmental aspects.

CONCLUSION

There are several ways to emphasize the importance of the conclusions of this study. First, researchers can focus more on the study of supply chain sustainable agricultural partnerships by linking the role of digitalization with improved performance and perceptions of businesses. In addition, future research could explore the role of digitalization in agricultural industry partnerships. In addition, to maintain the sustainability of agricultural businesses, the government should support and encourage farmers to improve their commercial acumen and performance. For example, farmers can improve their knowledge and proficiency in building relationships that aim to assist in the marketing and capitalization process. In addition, partnerships between academic institutions, non-governmental organizations (NGOs), and farmers can improve the efficiency of commodity distribution.

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DECLARATION OF CONFLICTING INTERESTS

I declare that this article is free from conflicts of interest and take responsibility for anything that happens in the future.

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