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Community-Based Approaches to Fisheries Management in MSMEs: A Bibliometric Exploration

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ABSTRACT

This study conducts a bibliometric exploration of community-based approaches to fisheries management within the context of Micro, Small, and Medium Enterprises (MSMEs). By analyzing scholarly publications from multiple databases, the research highlights key themes, challenges, and emerging trends in sustainable fisheries management. The study identifies significant clusters of research themes through network visualizations and discusses the socio-economic impacts of community-based strategies on local fisheries management. It underscores the necessity of integrating local knowledge and practices in MSMEs to enhance sustainability and resilience against global challenges like climate change and market fluctuations. Through this exploration, the paper aims to contribute to policy development and practical interventions that promote sustainable fisheries practices and bolster MSME resilience.

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1. INTRODUCTION

Community-based approaches to fisheries management have garnered attention as effective strategies for promoting sustainable practices and empowering local stakeholders [1]. Within the context of Micro, Small, and Medium Enterprises (MSMEs), these approaches play a crucial role in balancing economic viability with environmental conservation [2]. Despite their potential, the implementation of such approaches faces various challenges, ranging from limited resources to complex governance structures [3]. Understanding the dynamics of community-based fisheries management in MSMEs is essential for devising tailored solutions to enhance their resilience and contribution to sustainable development [4], [5].

Firstly, MSMEs constitute a significant portion of the global fisheries sector, contributing to employment, income generation, and food security in many coastal communities [6].

However, their operations often intersect with environmental concerns, including overfishing, habitat degradation, and bycatch issues [7]. Secondly, traditional top-down

management approaches have shown limitations in addressing these challenges effectively [8]. Hence, there has been a growing emphasis on community-based approaches that integrate local knowledge, values, and institutions into decision-making processes [9]. Thirdly, bibliometric analyses provide valuable insights into the existing research landscape, highlighting key themes, gaps, and emerging trends in the literature on community-based fisheries management in MSMEs.

Moreover, the evolving nature of fisheries governance, coupled with the increasing pressures of globalization and climate change, underscores the need for innovative solutions that promote sustainability while supporting the socio-economic well-being of local communities [10]. Harnessing the potential of community-based approaches requires a comprehensive understanding of the factors influencing their effectiveness, scalability, and long-term viability [11], [12]. Therefore, a bibliometric exploration offers a systematic method to identify the intellectual structure and knowledge gaps within this research domain, guiding future inquiry and policy development [13], [14].

However, despite the growing interest in community-based fisheries management in MSMEs, there remains a lack of synthesized understanding regarding the prevailing research themes, influential authors, and knowledge networks in this field. Existing studies often focus on specific case studies or theoretical frameworks, limiting the broader comprehension of trends and patterns across diverse contexts. Addressing this knowledge gap is crucial for advancing both theoretical insights and practical interventions aimed at promoting sustainable fisheries practices and enhancing the resilience of MSMEs.

Therefore, this research aims to conduct a bibliometric exploration of the literature on community-based approaches to fisheries management in MSMEs. By systematically analyzing relevant publications, the study seeks to identify key research themes, influential authors, and knowledge networks within this interdisciplinary field. Through this exploration, the research aims to contribute to a deeper understanding of the dynamics shaping community-based fisheries management and inform evidence-based policies and practices.

2. LITERATURE REVIEW

Community-based approaches to fisheries management in Micro, Small, and Medium Enterprises (MSMEs) have gained prominence as a strategy to govern small-scale fisheries effectively. These approaches involve local communities in managing resources, decision-making processes, and specific management activities [3], [15]. Despite the significant contributions of small-scale fisheries to food security and employment, challenges like overfishing and unsustainable exploitation persist due to weak governance and poor management practices [16]. In Melanesia, where Community-Based Fisheries Management (CBFM) is common, there is a growing recognition of the need to address gender inclusivity in decision-making processes to ensure equitable participation, especially among marginalized groups like women [17]. The European Fisheries Fund (EFF) emphasizes sustainable development in fisheries areas through community-led strategies, such as Fisheries Local Action Groups (FLAGs), to drive local development and address challenges effectively [18].

3. METHODS

3.1 Data Collection

The data collection process for this bibliometric exploration involves retrieving relevant scholarly publications from reputable academic databases. Specifically, electronic databases such as Web of Science, Scopus, and Google Scholar will be utilized to identify articles, conference papers, and other documents related to community-based approaches to fisheries management in MSMEs. The search strategy will involve a

combination of keywords and Boolean operators tailored to capture the multidisciplinary nature of the research topic. Additionally, manual searches of key journals, conference proceedings, and institutional repositories will complement the electronic search to ensure comprehensive coverage of relevant literature.

3.2 Inclusion Criteria

To ensure the relevance and quality of the retrieved documents, specific inclusion criteria will be applied during the screening process. Firstly, publications must address topics related to community-based fisheries management within the context of Micro, Small, and Medium Enterprises (MSMEs). Secondly, only peer-reviewed articles, conference papers, and research reports published in English will be considered for inclusion. Thirdly, there will be no restrictions on publication year to encompass both historical and contemporary perspectives on the research topic. Lastly, duplicates and irrelevant documents will be removed to maintain the integrity of the dataset.

3.3 Data Analysis

The bibliometric analysis will be conducted using specialized software such as VOSviewer to visualize and analyze the retrieved dataset. Firstly, bibliographic information including authorship, publication year, affiliations, and citation counts will be extracted from the selected publications. Secondly, co-authorship networks, citation networks, and keyword co-occurrence networks will be constructed to identify patterns, relationships, and clusters within the literature.

4. RESULTS AND DISCUSSION

4.1 Research Data Metrics

Table 1. Data Citation Metrics

Publication years	2000-2024
Citation years	24 (2000-2024)
Paper	994
Citations	6462
Cites/year	269.25
Cites/paper	6.50
Cites/author	3299.27
Papers/author	515.09
Author/paper	2.54
h-index	35
g-index	69
hI,norm	25
hI,annual	1.04
hA-index	16
Papers with ACC	: 1,2,5,10,20:318,196,83,35,10

Source: Publish or Perish Output, 2024

Table 1 provides an overview of the citation metrics for the dataset analyzed in the study. The dataset spans from 2000 to 2024, encompassing a total of 994 papers and 6,462 citations. On average, each paper received approximately 6.50 citations, with an impressive annual citation rate of 269.25. The data also reveals a high level of author productivity, with an average of 515.09 papers per author and 2.54 authors per paper. The h-index, a commonly used metric to assess the impact of scholarly output, stands at 35, indicating that 35 papers have each received at least 35 citations. Additionally, the g-index, a variation of the h-index that considers the distribution of citations among papers, is reported as 69. The hI,norm and hI,annual values provide normalized and annualized

versions of the h-index, respectively, offering insights into the impact of publications over time. Furthermore, the hA-index, which accounts for both the number of papers and their respective citation counts, is calculated as 16. The table also lists the number of papers with specific citation counts, providing granularity regarding the distribution of citations across the dataset. These citation metrics offer valuable insights into the impact, productivity, and citation patterns within the analyzed literature on community-based approaches to fisheries management in MSMEs.

Table 2. Top Cited Research

Citations	Authors and year	Title
967	[19]	Impact of COVID-19 pandemic on micro, small, and medium-sized Enterprises operating in Pakistan
373	[20]	Micro, small and medium enterprises' activities, income level and poverty reduction in ghana-A synthesis of related literature
278	[21]	COVID-19 and Indian economy: Impact on growth, manufacturing, trade and MSME sector
154	[22]	Comparative analyses of competitive advantage using Porter diamond model (the case of MSMEs in Himachal Pradesh)
151	[23]	Analysis of credit ratings for small and medium-sized enterprises: Evidence from Asia
140	[24]	An appraisal of Nigeria's micro, small and medium enterprises (MSMEs): Growth, challenges and prospects
129	[25]	Impact of microfinance on sustainable entrepreneurship development
122	[26]	A comparative study of the financial problems faced by micro, small and medium enterprises in the manufacturing sector of Fiji and Tonga
102	[27]	Model financial dan teknologi (fintech) membantu permasalahan modal wirausaha UMKM Di Indonesia
97	[28]	Promoting micro, small and medium Enterprises (MSMEs) for sustainable rural Livelihood

Source: Publish or Perish Output, 2024

Table 2 presents the top-cited research articles within the analyzed dataset, showcasing the most influential contributions in the field of community-based approaches to fisheries management in MSMEs. The highest-cited paper, with 967 citations, is authored by M Shafi, J Liu, and W Ren (2020), focusing on the impact of the COVID-19 pandemic on micro, small, and medium-sized enterprises operating in Pakistan. This study underscores the significant ramifications of external shocks on MSMEs and highlights the need for resilience-building strategies. Following closely is the work of D Agyapong (2010), with 373 citations, which synthesizes the literature on MSMEs' activities, income levels, and their role in poverty reduction in Ghana. Other notable contributions include analyses of the economic impacts of COVID-19 on the Indian economy (P Sahoo, Ashwani, 2020), comparative studies on competitive advantage in MSMEs (M Kharub, R Sharma, 2017), and evaluations of financial challenges faced by MSMEs in various regions (S Naidu, A Chand, 2019; ET Ebitu, B Glory, UJ Alfred, 2016). Collectively, these top-cited papers provide valuable insights into the dynamics, challenges, and opportunities for promoting sustainable development and resilience in MSMEs engaged in fisheries management.

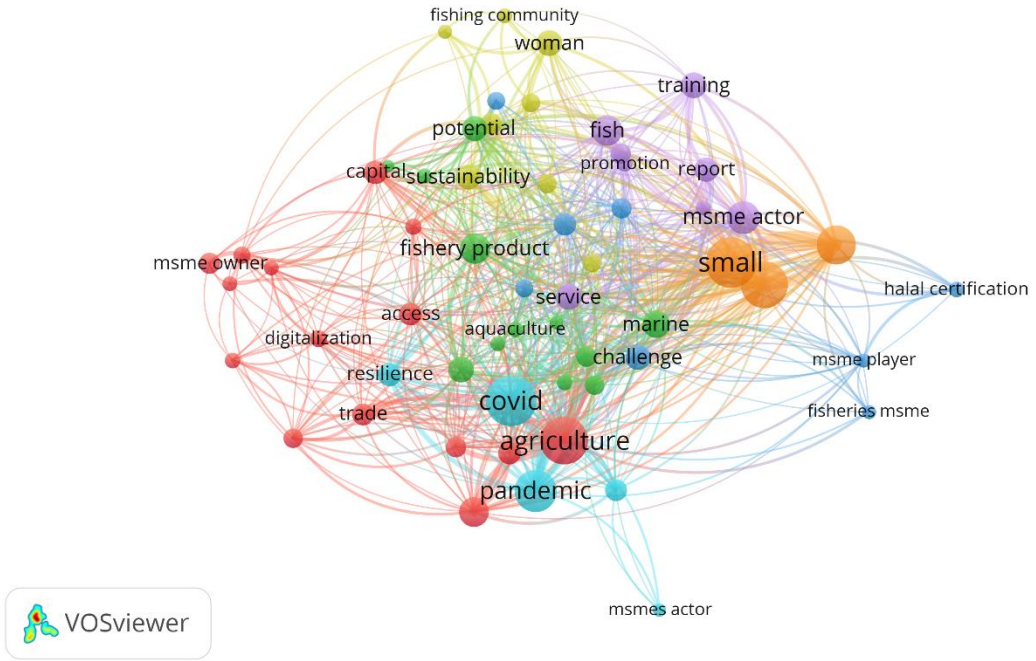

Figure 1. Network Visualization
Source: Data Analysis Result, 2024

This first visualization named network visualization is one of the main visualizations created by VOSviewer. This type of visualization helps in identifying clusters of related terms or themes based on their co-occurrence or relationships within a certain context. In this visualization, we can identify several clusterization of themes. Each cluster represented by different colors.

1. Red cluster, focuses on resilience, trade, digitalization, and the role of MSMEs (Micro, Small, and Medium Enterprises) owners within the fishery sector. This cluster suggests a discussion on the impact of digital tools and market access on small-scale fishery businesses.
2. Blue cluster, involves terms like marine, aquaculture, and service, indicating themes related to marine life and aquaculture industries. This cluster likely explores the challenges and opportunities within marine-based MSMEs.
3. Green cluster, contains terms like training, fish, and fishing community. This cluster may discuss human resources, skill development, and community engagement in fisheries.
4. Yellow cluster, halal certification, fisheries MSME, MSME player. This suggests a focus on the business aspects and certification processes within the fisheries sector, particularly in contexts where halal certification is significant.
5. Orange cluster, this cluster emphasizes the actors within the MSME ecosystem, indicating discussions on the roles various stakeholders play within the fisheries and marine sectors.

The connections between different clusters indicate thematic overlaps. For instance, the red and blue clusters are heavily interconnected, suggesting significant overlap in discussions about digitalization, trade, and marine resources. The term "COVID" in the central part of the diagram, overlapping with several clusters, highlights

the pandemic's central role and impact across all themes discussed
.

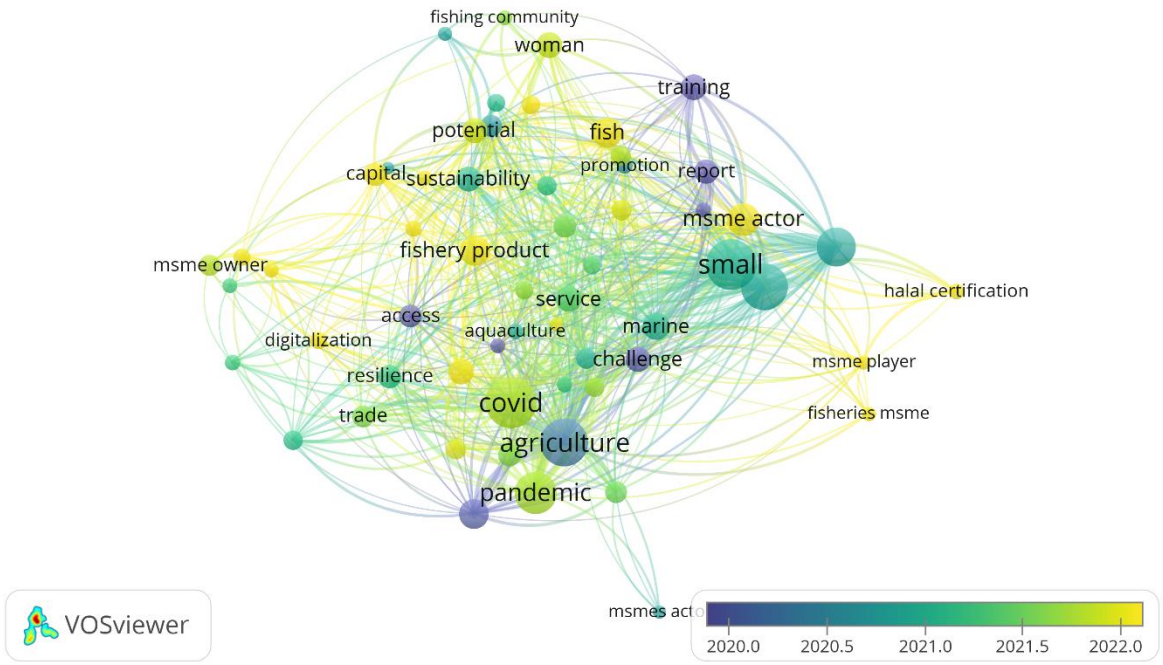

Figure 2. Overlay Visualization
Source: Data Analysis Result, 2024

This visualization reflects the impact of certain events (like the COVID-19 pandemic) and developing trends in research and discussion points within the context of fisheries and marine-based MSMEs (Micro, Small, and Medium Enterprises). We can observe how themes have evolved or been emphasized over the period from 2020 to 2022.

1. Early 2020 (Darker Nodes), themes like "pandemic" and "COVID" are more prominent, reflecting the immediate impact and research focus on the COVID-19 outbreak's effects on fisheries and agriculture sectors. The early emphasis on resilience and digitalization also suggests a focus on adapting to disruptions caused by the pandemic.
2. Mid-2020 to early 2021 (Greenish Nodes), there is an expansion in themes related to "trade," "access," and "marine," indicating a broadening of research to explore the economic and operational challenges and how these sectors adapted or transformed during the pandemic.
3. Late 2021 to 2022 (Yellowish Nodes), emerging prominence of terms like "halal certification" and increased focus on "small" and "MSME actor" suggest a shift towards more specialized topics, perhaps indicating a recovery phase where specific market opportunities and certification processes gain attention.

Initially, the focus was likely on immediate responses to the pandemic, including sustainability and resilience. As time progressed, the focus seems to have shifted towards exploring new opportunities, efficiencies. The ongoing interconnectivity between terms like "marine," "aquaculture," and "trade" across all time phases also suggests a continuous focus on integrating

these sectors more effectively, possibly influenced by global trade dynamics and sustainability practices.

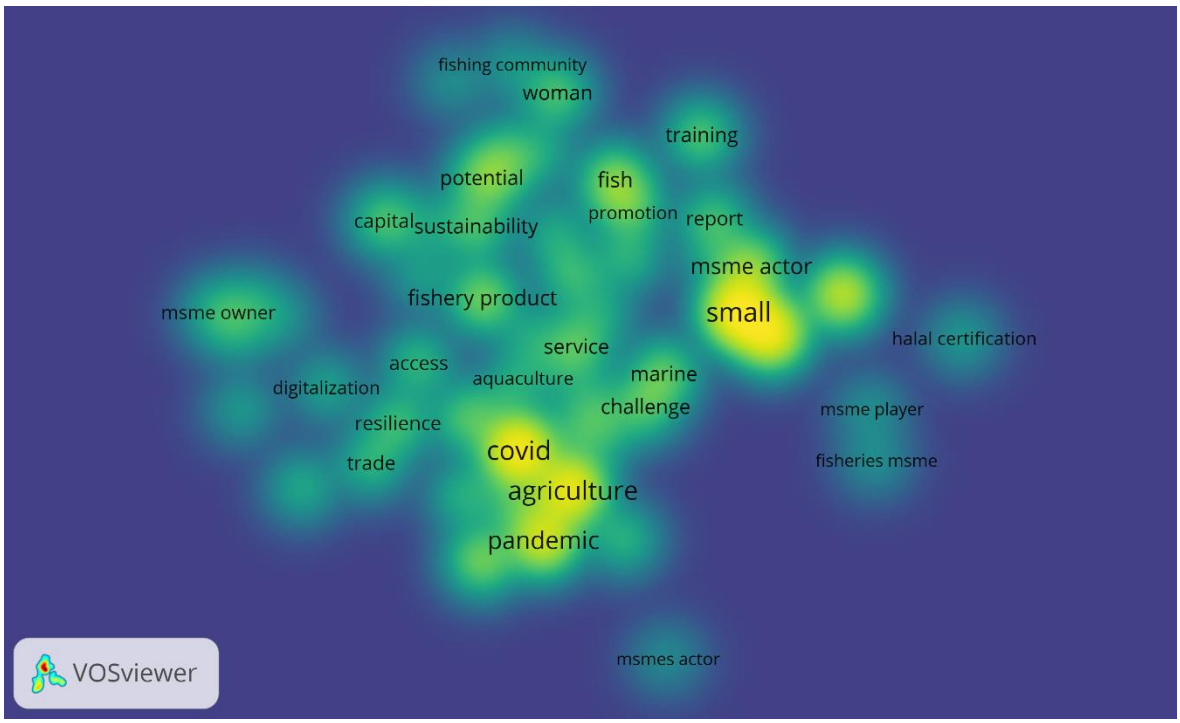

Figure 3. Density Visualization
Source: Data Analysis, 2024

This visualization uses color intensity to highlight the concentration or dominance of certain themes in research or discussions. The brighter areas represent themes that are possibly more extensively covered or researched, while the less bright or darker areas could indicate underexplored themes or those with potential for further investigation. Two less bright area we can explore such as:

1. Halal certification, this term appears in a relatively darker shade compared to others like "COVID" and "marine", suggesting that while there is some focus on this topic within the context of fisheries and MSMEs, it might not be as extensively researched or discussed as other areas. This could indicate a research opportunity to explore the specific needs, benefits, and challenges of halal certification in the fisheries sector, particularly in regions where such certification can open up new market opportunities or where there is a significant demand for halal products. Investigating how fisheries can adapt to halal certification requirements and the economic impact of accessing halal markets. This includes exploring the potential for growth in domestic and international markets through halal certification.
2. Fisheries MSME and MSME Player, these terms are also in darker shades, suggesting that the specific roles, challenges, and dynamics of MSMEs in the fisheries sector might be less explored. Research could focus on the operational, economic, and social impacts of small and

medium enterprises in fisheries, including their resilience to economic shifts and global disruptions like the pandemic. Focusing on the sustainability and scalability of small to
3. changes.

medium-sized enterprises within the fisheries sector, including how they cope with challenges such as environmental regulations, market fluctuations, and technological

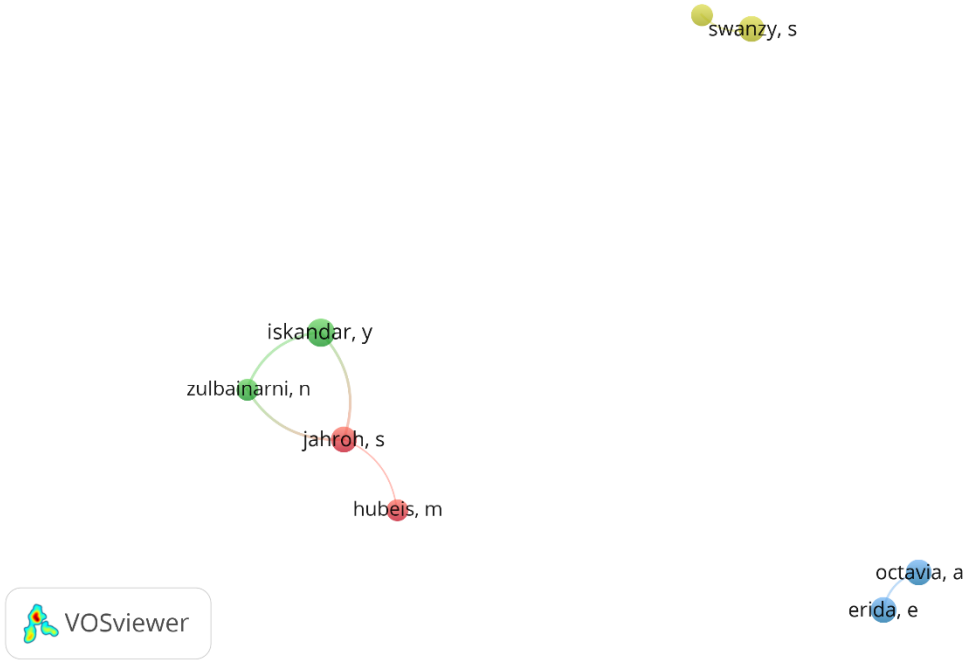

Figure 4. Author Collaboration Visualization
Source: Data Analysis, 2024

The last figure represents a co-authorship network of researchers, with each node representing an author and the lines between them (edges) indicating collaboration on research papers. This type of visualization helps identify clusters of researchers who frequently collaborate and can illustrate the structure of research communities within a specific field or across multiple disciplines.

Each node is labeled with an author's surname and an initial, allowing identification of individual researchers within the network. The lines connecting the nodes represent collaborations between the authors. The thickness of these lines can sometimes indicate the frequency of collaboration, though this specific visualization doesn't clearly specify that. Different colors of the lines may represent different types of collaboration or collaborations over different time periods or topics, depending on the data input to VOSviewer.

1. Central cluster, includes authors like Iskandar, Y., Zulbainarni, N., Jahroh, S., and Hubeis, M. This group appears to be closely interconnected, suggesting frequent or significant collaborations among these researchers.
2. Peripheral authors, swanzy, S., and another cluster featuring Octavia, A., and Erida, E. These authors are somewhat isolated from the central cluster, indicating fewer or no direct collaborations with the central

group. Their placement suggests they either collaborate within their smaller subgroup or possibly work in a related but distinct research area.

5. CONCLUSION

The series of VOSviewer visualizations offer a comprehensive overview of thematic clusters, research trends over time, potential future research topics, and author collaboration networks within a specific academic field. Initially, the thematic clusterization identified distinct topics such as digitalization, marine sustainability, and MSME challenges in fisheries, highlighting the diverse and interconnected issues facing this sector. Subsequent analysis of research trends over 2020 to 2022 revealed a dynamic shift from immediate COVID-19 pandemic responses towards exploring new opportunities like halal certification and enhancing the role of MSMEs, suggesting a recovery and adaptation phase in the research topics. The identification of less-explored areas such as halal certification in fisheries presented opportunities for new and focused studies, indicating areas ripe for further academic exploration and practical application. Lastly, the author collaboration network illustrated both dense and sparse connections between researchers, reflecting established partnerships and potential areas for new collaborative efforts, especially between more isolated groups. Collectively, these analyses not only reflect the current state of research but also guide future academic inquiries and collaborations that can address emerging challenges and opportunities within the sector.

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