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Research Trend in Veterinary Medicine in Indonesia with Vos Viewer Bibliometric Analysis

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Abstract

The publication of articles in veterinary medicine in Indonesia has increased. Many people have not studied the analysis of articles yet to bee been published. This study aimed to determine the development of publications in the field of veterinary medicine contained in the Scopus Database and to determine the current research trends. The research method was bibliometric analysis using Vos Viewer with SCOPUS-based data retrieval. The search used the keywords "veterinary" and "Indonesia" without being limited by the year of publication. This study will display data related to the number of publications by year, the level of author productivity, the most productive institutions, the source of publication, the type of publication, mapping, and research trends. The results of the analysis of this study are that publications in the field of veterinary medicine in the Scopus database from year to year until 2020 have increased significantly. However, in 2021 there was a decrease. The most productive author is Agung Priyono, IPB University, is the most productive institution, the most publications are in journals, and visualization with Vos Viewer shows 8 clusters. With this bibliometric analysis, researchers can find out the current research trends. They can determine studies that have yet to be studied by many other researchers in the field of veterinary medicine with various variables shown in the Vos Viewer.

Keywords: Bibliometric analysis; Indonesia; Veterinary medicine; Vos Viewer.

Introduction

According to Indonesian Law No. 18/2009, later updated to Law No. 41/2014 on Animal Husbandry and Animal Health, Veterinary is all matters related to animals, animal products, and animal diseases. Veterinary medicine in Indonesia has significantly progressed, along with the variety of animal products and animal diseases that have emerged in recent years. The benefits of the veterinary field are considered necessary for human life as an effort to support and realize the concept of one health (references need to be added). According to (Barrett and Osofsky, 2013), one health is a collaborative effort of various disciplines working at local, national, and global levels to achieve optimal health for humans, animals and the environment.

The concept of one health aims to reduce the risk of high-impact diseases at the animal-human ecosystem interface (Southeast Asia One Health Network, 2014). American Veterinary Medical Association (2008) said one health is an integrative effort of various disciplines working at the local, national, and global levels to achieve optimal health for humans, animals, and the environment.

There have been many cases of emerging zoonotic infectious diseases originating from animals, especially wildlife, which are the main drivers of their emergence associated with human activities, including changes in ecosystems and land use, agricultural intensification, urbanization, and international travel and trade. A collaborative and multi-disciplinary approach, encompassing animal; human and environmental health, is required to understand the ecology of each emerging zoonotic disease to enable risk assessment and the development of response and control plans.

The term 'One Health' was first used in 2003-2004, and associated with the emergence of severe acute respiratory disease (SARS) in early 2003 and the spread of highly pathogenic H5N1 avian influenza, through a set of strategic objectives known as the 'Manhattan Principles' produced at a Wildlife Conservation Society meeting in 2004, clearly recognizing the link between human and animal health and the threat posed by disease to food supplies and economies. These principles were an essential step in recognizing the importance of collaborative, interdisciplinary approaches to respond to emerging and re-emerging diseases, and in particular, to include wildlife health as a critical component in global disease prevention, surveillance, control, and mitigation (Garcia et al., 2019). references need to be added

The outbreak of SARS a severe and contagious new disease that first emerged in the 21st century. This pathogen has previously unknown characteristics and can emerge from the wild at any time and place without warning. They threaten the health, well-being, and economy of all societies. Countries worldwide are responding to protect their citizens and maintain an effective response to detect and react quickly to outbreaks of international concern. All countries felt that it was necessary to share information about the outbreak quickly and transparently, so they initiated global cooperation and global participation using the basic principles listed in One Health to overcome the outbreak.

The emergence and spread of H5N1 influenza have been an excellent example of the importance of global cooperation and the One Health approach driven by widespread concerns that it could become the next pandemic influenza strain. It also served as a stimulus for the United Nations Secretary-General to establish the UN System Coordinator for Avian and Animal Influenza (UNSIC), forming a significant collaboration with several international and national organizations, including the World Health Organization (WHO), Food and Agriculture Organization (FAO), World Organization for Animal Health (OIE), United Nations Children's Fund (UNICEF), and the World Bank as well as various national ministries of health, to develop the International Ministerial Conference on Avian and Pandemic Influenza (IMCAPI). IMCAPI was a crucial driver in the surveillance and response to H5N1 influenza and subsequently developed a strategic framework built around a One Health approach focused on reducing the risk and minimizing the global impact of epidemics and pandemics due to emerging infectious diseases (Ceric et al., 2019). references need to be added

Veterinary medicine is the defining field of zoonotic disease prevention. The definition of Zoonosis, according to Law number 41 of 2014, is a disease that can be transmitted from animals to humans or vice versa. The veterinary field is a sector that guarantees veterinary public health or all matters related to animals and animal products that directly or indirectly affect human health. Based on Government Regulation of the Republic of Indonesia number 95 of 2012, Veterinary Public Health includes hygiene and sanitation assurance, animal product assurance, and zoonotic control and management.

Many veterinary studies have been conducted to realize one health, especially in zoonotic animal diseases such as Anthrax, Leptospirosis, Avian Influenza, Rabies, and PES, which have recently had quite several cases, especially in Indonesia. The trend of research and publication in veterinary medicine has increased along with the emergence of various animal diseases in Indonesia. The four most significant domains of discussion in veterinary science are animal anatomy and histology, veterinary and animal husbandry extension, veterinary biochemistry, and animal physiology.

Materials and Methods

Based on data retrieved on December 22, 2021, on the Scopus database, there are 395 documents. The document is in RIS format, then processed using Vos Viewer software. The data processing results are in the form of mapping visualization images, and then the data is analyzed descriptively.

Results and Discussion

Publications by Year

Based on data taken on December 22, 2021, in the SCOPUS database with the search engine TITLE-ABS-KEY (veterinary) AND (LIMIT-TO (AFFILCOUNTRY, "Indonesia"), there are 395 documents showing the development of publications in the field of veterinary medicine in Indonesia, that until 2020 it has increased (Table 1). However, in 2021 there was a significant decrease from 82 to 53 articles. Many things can reduce work productivity. Including a lack of work planning, lots of potential disturbances, and to a lack of evaluation and innovation to increase productivity.

Table 1. Publications by Year

Year	Total
2021	53
2020	82
2019	54
2018	43
2017	32
2016	26
2015	29
2014	22
2013	7

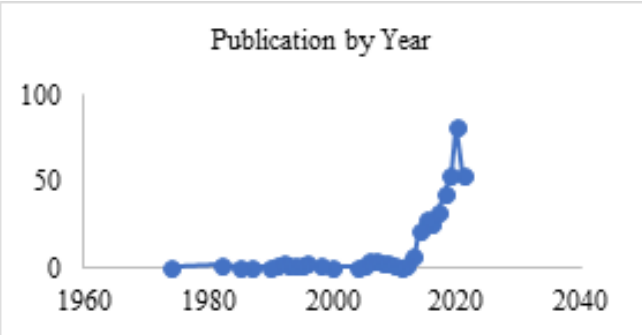

Figure 1. Publications by Year

Author Productivity

The most productive author in medicine is Trott, D.J. with 11 documents, followed by Agungpriyono, S. with 9 documents, and Dedi, T.B., Pertiwi, H. and Setiyono, A each with 7 documents (Table 2).

Table 2. Publications by Author Productivity

Author	Total
Trott, D.J.	11
Agung Priyono, S	9
Dadi, T.B.	7
Pertiwi, H.	7
Setiyono, A.	7
Abraham, S.	6
Aditya, S.	6
Hondo, E.	6
Humer, E.	6
Saputra, S.	6
Zebeli, Q.	6
Allamanda, P.	5

Figure 2. Publications by Author Productivity

Source of Publication

The most publish sources are IOP Conference Series Earth and Environmental Science with 34 documents, Journal; of Veterinary Medical Science with 19 documents; Tropical Animal Health and Production with 14 documents; Veterinary World with11 documents and Indian Veterinary Journal with 9 documents (Table 3).

Affiliated of Publication

The top five most productive affiliations are IPB University with 61 documents, Airlangga University with 41 documents, Gadjah Mada University with 38 documents, Udayana University

Table 3. Publications by Source of Publication

Source	Total
IOP Conference Series Earth And Environmental Science	34
Journal Of Veterinary Medical Science	19
Tropical Animal Health And Production	14
Veterinary World	11
Indian Veterinary Journal	9
Journal Of Dairy Science	8
Veterinary Practitioner	8
Veterinary Microbiology	7
F1000research	6

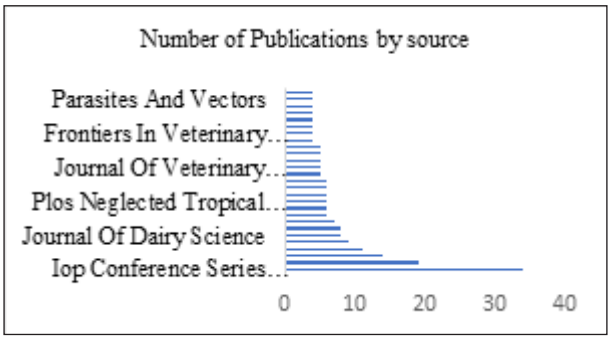

Fig 3. Publications by Source of Publication

with 28 documents, and the Indonesian Institute of Sciences with 23 documents (Table 4).

Table 4. Publications by Affiliated of Publication

Affiliated	Total
IPB University	61
Universitas Airlangga	41
Universitas Gadjah Mada	38
Universitas Udayana	28
Lembaga Ilmu Pengetahuan Indonesia	23
Hasanuddin University	19
Brawijaya University	19
Universitas Syiah Kuala	17
Ministry of Agriculture, Indonesia	15
Universitas Indonesia	1

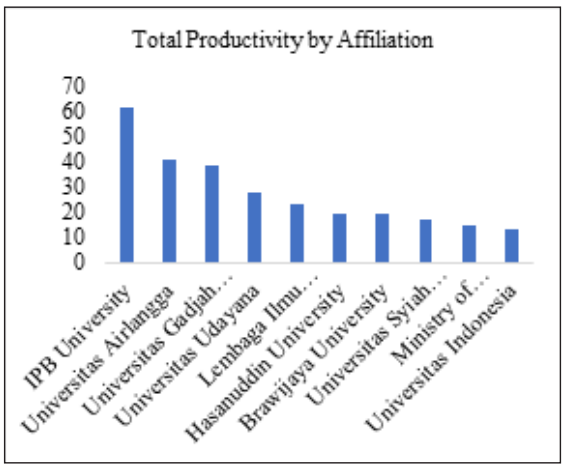

Figure 4. Affiliate productivity

Type of Publication

The type or types of publications are primarily found in journals with 341 documents, Conference Proceedings with 48 documents, Books with 3 documents, and Serial Books with 3 (Table 5).

Table 5. Types of Publication Sources

Type	Total
Journal	341
Conference Proceeding	48
Book	3
Book Series	3

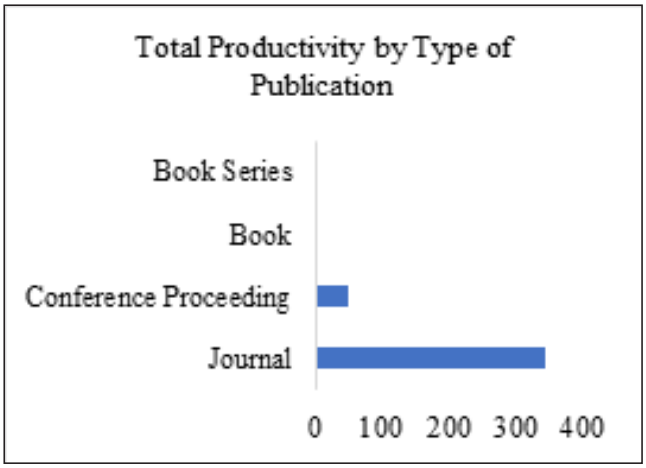

Figure 5. Types of Publication Sources

Journals are collections of articles (like magazines) published regularly throughout the year. Journals present the latest research, and experts write journal articles for experts. Journals can be published in print or online format, or both. The article is the most common type of journal manuscript used to publish complete reports of data from research. Journal articles are shorter than books and are written about specific topics.

We need to understand that the field of research requires diligence, and most researchers devote much sleepless time to research and document the results. In the competitive world of academia, it is expected to start publishing early in your career. Many early career researchers face the looming concern of how to publish a journal article. Although original research can sometimes take years to complete (Johnson, 2013).

There are different types of scientific literature, some of which require original research (categorized as primary literature) and some based on other published works (secondary literature).

Having a clear picture of the different types of articles that can be published in journals is crucial. This will help understand ways to disseminate the work and identify the types of articles suitable for research.

The types of publications differ in different fields. For example, clinical trials are only possible in medicine, while empirical studies are more common in social sciences. It is important to remember that not all journals publish all types of articles. Therefore, most journal publishers provide accurate and specific guidelines to prospective authors for the different types of articles they publish. Specifics on the types of articles published can be found in the guidelines for authors section of the journal's website. When planning to write for a journal, it is essensial to check whether the journal has been published to avoid plagiarism and other undesirable things as a journal author does.

Bibliometric Analysis with Vos Viewer
Network Visualization

Based on data taken on December 22, 2021, on the Scopus database, there are 395 documents. The document is in RIS format, then processed using VosViewer software. The data is then analyzed descriptively. The data processing results with Vos Viewer show that there are 8 clusters. Figure 6 shows that large spheres marked with navy blue, orange, red, and others indicate that the research has been widely studied, and small dots/spheres indicate that the theme has yet to be studied by many people.

The interconnected nets indicate that research has been done on each other. For example, veterinary related to animals has been done by many people, and veterinary related to genetics has also been done by many people. However, veterinary related to influenza birds have not been studied much, and those related to anti-bacterial agents have also not been studied much. This is where the novelty of veterinary research can be recognized. Animals related to the development of publications veterinary medicine in Indonesia based on the Scopus Database has increased (Table 1). There are 395 documents showing the development of publications in the field of veterinary medicine in Indonesia. However, in 2021 there was a significant decrease from 82 to 53 articles.

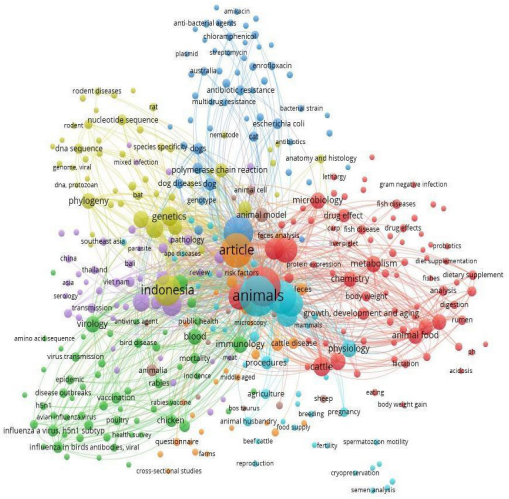

Figure 6. Network Visualization

Overlay Visualization
Publications by year

The overlay shows the most recent year and the oldest year of research. In the most recent year, many studies related to fish, treatment, administration, etc. In the old years, there were studies on poultry, vaccines, antibodies, viruses, chicken, etc. In Figure 7 the yellow color shows the latest year; the darker the research is done the longer it has been submitted.

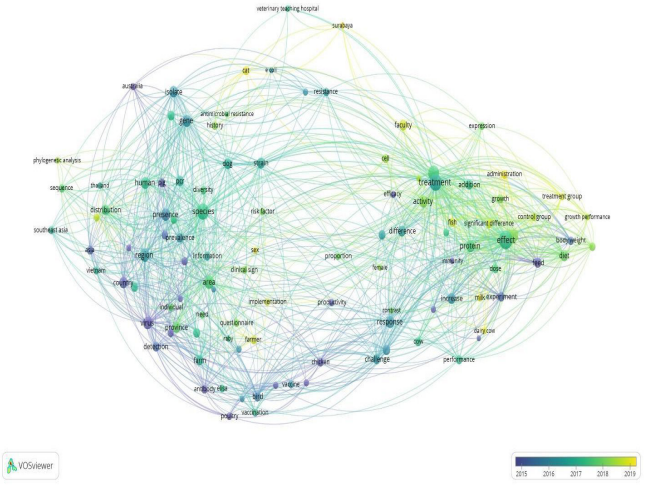

Figure 7. Overlay Visualization

Density Visualization

The yellower the density, the redder it is, indicating many people has done the research. However, the darker it is, the less research has been done.

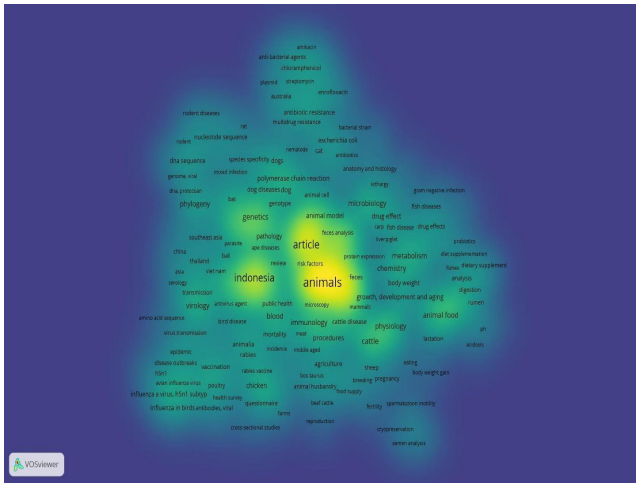

Figure 8. Density Visualization

Conclusions

There have been many studies in the field of veterinary medicine with various study themes. Vos Viewer can be use to find out research variables that have been studied by many people. Analysis of this study are that publications in the field of veterinary medicine in the Scopus database from year to year until 2020 have increased significantly. There are 395 documents showing the development of publications in the field of veterinary medicine in Indonesia. This indicating many people has done the research. However, in 2021 there was a decrease. In the most recent year, many studies related to fish, treatment, and administration. The most productive author is Agung Priyono, IPB University, is the most productive institution, the most publications are in journals, and visualization with Vos Viewer shows 8 clusters. Vos viewer can be used to find out the research variables that have been studied by many people. Vos viewer to the variables that have not been studied by many people to determine the novelty of the research we will study. With this bibliometric analysis researchers can find out the research trends that are happening and can determine the studies that have not been has been studied by other researchers in the field of veterinary medicine with various variables shown in the Vos Viewer.

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