

Bibliometric Analysis of BiFeO₃ Nanoparticle Research Development Using VOSviewer Application

Ranggaweny Al-Ghani^{1*}

Universitas Pendidikan Indonesia, Jawa Barat, Indonesia^{1*}

ranggaweny23@upi.edu^{1*}



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Abstract

Purpose: This research aimed to conduct analysis in the research of BiFeO₃ nanoparticles through bibliometric analysis techniques with computational mapping used VOSviewer application.

Methodology/approach: By using the publish or perish reference management tool and the Google Scholar database's collection of research article data to obtain research data article. The search was focused on the article's title and abstract with "BiFeO₃ nanoparticles" was used as the search term, and literature review method was used according to related topics. This study's research era covers the most recent 10 years (2012 to 2022) from publications in both national and international journals that Google Scholar has indexed.

Results/findings: From the search result, there were 996 journal articles related to keywords. The range of journal articles searched from the Google Scholar database is the last decade (from 2012 to 2022).

Conclusions: Bibliometric analysis using VOSviewer shows that research on BiFeO₃ nanoparticles (2012–2022) formed 8 clusters with 996 articles. After rising until 2018, publication trends declined, indicating significant opportunities for further development and broader research connections.

Limitations: This limitations of this research was focused on the development trend of BiFeO₃ nanoparticle research in the last decade shows a slight fluctuation but still an uptrend from time to time.

Contribution: This research is expected to provide information on research development trends during the last decade for researchers who want to conduct research, especially related to the topic of BiFeO₃ nanoparticle.

Keywords: *Bibliometric, BiFeO₃ nanoparticle, Publish or Perish, Vosviewer.*

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1. Introduction

Bismuth ferrite (BiFeO₃, BFO) has been intensively studied over the last decade to have ferroelectric and antiferromagnetic properties. By using BifeO₃ nanoparticles as nanofillers with magnetic moments as a magnetic source in composites for future uses in medicine, environmental protection, the electronic industry, electromagnetic interference shielding, etc (Bangruwa, Kumar, Chauhan, Kumar, & Verma, 2019). Particularly, composites made of polymers electronic devices with the benefits of miniaturization, lightweight, and low cost can be created using materials having both dielectric and magnetic capabilities, which has become a hot topic in business and academia (Junistia, Nearti, & Jayanti, 2025; Marhaen, Kusmiadi, & Ropalia, 2023). Therefore, it has become an exciting area of research to create relevant preparatory technologies and unique processing techniques.

Given the promising potential of these nanoparticle materials, it would be excellent if academics could do a variety of studies employing BiFeO₃ nanoparticles on a laboratory scale so that they could serve as a sustainable reference. According to the pertinent issue, a literature evaluation is required prior to doing the research; thus, the bibliometric technique is employed. Bibliometric analysis can be used as an analytical technique to find out the developing trends in research in the field of nanoparticles. In addition, the technique is a statistical evaluation of scientific articles published in the Google Scholar database and can be used as an effective way to measure the effect of publications in the scientific community (Iftikhar et al., 2019; Priyadi, A'yun, Navianti, & Sukarjo, 2024).

There are several research using material BiFeO₃ nanoparticle conducted by many researchers, research conducted by Irfan et al. in Band-Gap Engineering and Enhanced Photocatalytic Activity of Sm and Mn Doped BiFeO₃ Nanoparticles (Irfan et al., 2017), research by Annapu Reddy et al. in Particle size dependent magnetic properties and phase transitions in multiferroic BiFeO₃ nano-particles: elucidating the photocatalytic mechanism under different light sources (Reddy, Pathak, & Nath, 2012), and research by Bai et al. in Size Effect on Optical and Photocatalytic Properties in BiFeO₃ Nanoparticles (Bai et al., 2016). There is still little research on computational bibliometric analysis related to the field of BiFeO₃ nanoparticle research, especially by using the Publish or Perish application as a tool in obtaining journal data and VOSviewer application as a tool for computational mapping in bibliometric analysis. This research is used to obtain update of term and quantity of term (Ramlan, Irmayani, & Nurhaeda, 2023).

Therefore, the aim of this research is to conducting research and development analysis on BiFeO₃ nanoparticles bibliometrically with computational mapping using VOSviewer application. This research provides information in the form of research studies for researchers in conducting research on relevant topics in the field of BiFeO₃ nanoparticle (Zubair, Suherman, & Darmawan, 2024).

2. Literature review

2.1 Membrane Technology

Membrane technology has evolved and is now widely used in the separation and purification of water. The membrane is generally defined as a porous medium in the form of a thin layer with semipermeable properties that allow certain species to pass through (Rahmanian, Mohammadi, & Tofighy, 2021). The particle size of the compound and the pore size of the membrane are used to separate species through the membrane, with particles larger than the membrane pores being retained on the membrane surface. The retentate, or part of the mixture that does not pass through the membrane, and the permeate, or part of the mixture that does pass through the membrane, are the results of the separation. The driving force for mass transfer on the membrane can be differences in concentration (C), pressure (P), temperature (T), or electric potential (E) (Yacob, Idham, & Erniyanti, 2023).

2.2 Desalination

Water desalination is the separation of dissolved minerals (including salt) from seawater, brackish water, or treated wastewater (Aisyah, Azharuddin, Rizal, & Zulkifli, 2022). Distillation, ion exchange, freeze desalination, and membranes are some of the basic techniques for separating salt and other dissolved solids (Idham et al., 2023). Membrane desalination technology is the use of a semipermeable membrane to isolate salt and achieve salt-water separation. Water desalination technologies that use membranes, such as reverse osmosis and nanofiltration, can be used (Zulkarnain, Said, & Amitasari, 2022). According to the driving force, pressure membrane water desalination technology (RO and NF) has the advantages of relatively high energy efficiency, low operating pressure, a high rejection rate for divalent salts, and is environmentally friendly when compared to other salt separation technologies (Ladista, 2023). Reverse osmosis is the most effective technology for producing drinking water from seawater at the moment. Water is pressed against a semipermeable membrane during reverse osmosis desalination, allowing water to pass through while salt is retained. A high-pressure pump will press the feed water into the membrane to supply it. A high-pressure pump will press the feed water into the membrane to supply pressure and push the water through the membrane, so a higher pressure is required to treat water with a higher salt concentration (Pramesti & Arianti, 2023; Riadi, Rohmah Nurazizah, Wakano, & Fadilah, 2023).

2.3 Bibliometric

Bibliometrics is a tool for determining objective publication data, which is frequently used as performance data and can assist in completing the tasks mentioned. Its basic features can be considered highly mathematically and statistically, or they can be rendered understandable and transparent to nonmathematicians. Opposition to and reservations about gathering data on research performance stem primarily from people who do not understand the method and fear it as manipulation. As a result, it is critical not only to make bibliometrics understandable and transparent, but also to reveal its limitations and identify alternatives (Putri & Nurhuda, 2023). Cole and Eales developed the first bibliometric analysis. The authors investigated which books on human anatomy were published between 1550 and 1860 in 1917 (Ulfa, Agustiani, Qodariah, & Jatnika, 2023).

On the other hand, Bibliometrics is a set of quantitative methods for analyzing academic literature and patents. Meanwhile, using keywords, the bibliometric method can describe distribution patterns within a given topic, field, institute, or country, as well as assess development trends or future research orientations. The basic idea behind bibliometrics is to quantify people's and institutions' academic output. A second step involves drawing qualitative conclusions from the figures and values. Bibliometrics is one method for accomplishing this (Anisak & Bakhri, 2024). The bibliometric method is an indirect approach that deduces academic quality from quantification of academic output and publications (Pradana & Putra, 2024). Aside from traditional publications, there are a slew of other quantifiable factors that can be used to assess academic performance and quality, such as the number of final projects supervised (doctoral theses, postdocs, etc.), the amount of external funding raised, the number of pending patents, the number of exhibitions and visitors, appointments on relevant national and international committees, the number of students enrolled per chair or professor, and the extent and number of publications (Dhia & Melinda, 2024).

3. Methodology

In this study, journal publications indexed by Google Scholar were used as a data collection of research articles. We use the Google Scholar database in this study because it is an open source program. the manager's reference application, namely Publish or Perish, is used as a tool to obtain research data. Publish or Perish application is used to collect data for the research articles that we want with the specified time period.

The research was conducted through several steps:

1. Collecting data on articles that have been published using the publish or perish application,
2. Microsoft Excel application is used to process bibliometric data on articles that have been obtained,
3. Using the VOSviewer application which publishes data through analysis bibliometric approach with computational mapping, and
4. Conduct a review of the results of computational mapping analysis.

Article data collection is searched by filtering publications using the keyword "BiFeO₃ nanoparticles" based on the relevant research title in the Publish or Perish application. Papers published between 2012 and 2022 were used as the data collection period for articles. The articles that have been obtained must be relevant according to the analysis of this research and then converted into two different file types, namely the research information system (.ris) and the comma-separated value format (*.csv).

Next, we use VOSviewer to visualize the data and select developing trends using bibliometric techniques. The collected article data is mapped by making 3 types of publication mapping visualizations, namely overlay visualization, density visualization, and network visualization between existing items. as a result we get 8 clusters with 255 terms and filter keywords as desired.

4. Results and Discussion

4.1 Development trend of research in the Field of BiFeO₃ nanoparticle

The outcomes of bibliometric analysis using Perish software and the keywords "BiFeO₃ nanoparticle." can be seen in Table 1 and Figure 1. The number of publications between 2012 and 2022, 996 publications on BiFeO₃ nanoparticles were published; these publications were chosen based on their relevance to the issue. Every year, the amount of study on BiFeO₃ nanoparticles advances, with the peak number of publications or research on this topic occurring in 2018.

Table 1. Development of BiFeO₃ nanoparticles research

Year of Publications	Total of Publications
2012	41
2013	62
2014	73
2015	89
2016	85
2017	89
2018	119
2019	108
2020	115
2021	115
2022	100
Total	996
Average	90,5

According to Table 1, it is shows that the development trend of research published in Google Scholar indexed journals in the field of BiFeO₃ nanoparticles. in Table 1, it is known that from 2012 to 2022 the number of research articles on BiFeO₃ nanoparticles was 996 articles. The details are 41 articles in 2012, 62 articles in 2013, 73 articles in 2014, 89 articles in 2015, 85 articles in 2016, 89 articles in 2017, 119 articles in 2018, 108 articles in 2019, 115 articles in 2020, 115 articles in 2021, and 100 articles in 2022. Based on the total publications, it shows that research on BiFeO₃ nanoparticles is relatively increasing every year.

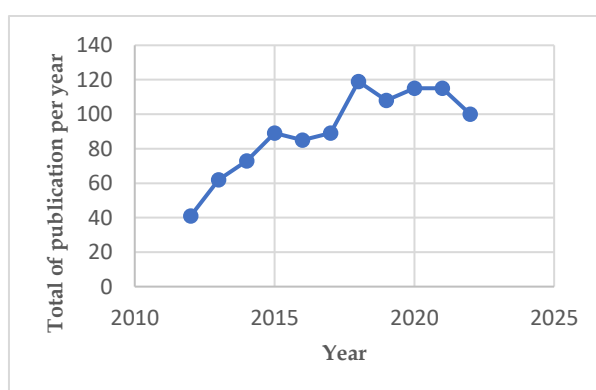


Figure 1. Trend of development in BiFeO₃ nanoparticles research

According to Figure 1, it is shows that the development of research on BiFeO₃ nanoparticles during the last decade in the range from 2012 to 2022. In Fig.1, it is known that research developments related to BiFeO₃ nanoparticles have increased from 2012-2018. This increase can be seen from the total publications in 2012 of 41 publications to 2018 of 119 publications. the development of research on BiFeO₃ nanoparticles in 2018-2022 has slightly fluctuated. however, the research development of BiFeO₃ nanoparticles has increased in the last decade. These data indicate that the popularity of research on BiFeO₃ nanoparticles is relatively stable and interest in BiFeO₃ nanoparticles can continue to increase.

4.2 Visualization BiFeO₃ nanoparticle Research Area Using VOSviewer

Article data were collected and treated with computational mapping using VOSviewer application. Based on the results of computational mapping found 255 items and the analysis is divided into 8 clusters, namely:

1. Cluster 1 has 63 items, and marked in red, the 63 items are adsorption, advantage, ag nanoparticle, application, au nanoparticle, bifeo, bismuth, catalyst, characterization, comparison, composite, degradation, development, diameter, efficient degradation, efficient photocatalyst, electron, enhanced photocatalytic activity, enhanced visible light property, fabrication, facile synthesis, graphene oxide, growth, high purity, hydrothermal method, hydrothermal synthesis, insight, magnetic nanoparticle, mechanism, metal, metal nanoparticle, methyl orange, microwave, morphology, nanocomposite, nanofiber, nanoparticle, nanowire, novel, organic pollutant, particle, performance, perovskite, photocatalysis, photocatalyst, photocatalytic activity, photocatalytic degradation, photocatalytic performing, photodegradation, preparation, process, rhodamine b, solution combustion nm, surface, synthesis, time, tio, visible light, visible light irradiation, visible light photocataly, water, work.
2. Cluster 2 has 51 items, and marked in green, the 51 items are article, bi0, bife, bife03 ceramic, bife03 sample, bismuth ferrite, bulk, ceramic, change, comparative study, composition, compound, conventional solid state, correlation, crystal structure, effect, electrical property, feo, ferroelectric property, ferroelectricity, ferromagnetism, improvement, Ion, magnetic behavior, magnetic property, magnetoelectric coupling, mol, multiferroic, multiferroic bifeo, multiferroic ceramic, multiferroic property, pattern, phase, polycrystalline sample, powder, pure bife03, rare earth, senes, site, sol gel, solgel method, solid solution, solid state reaction, solid state reaction method, spark plasma, structural property, structural transition, structure, substitution, ti co, undoped bifeo.
3. Cluster 3 has 39 items, and marked in blue, the 39 items are antibacterial activity, band gap, behavior, bfo, bife03 film, bife03 phase, bife03 thin film, cofe204, defect, dielectric property, electric property, electronic structure, enhancement, exchange bias, film, impact, impurity phase, matrix, multiferroic bife03, multiferroic material, nanocrystalline, observation, order, oxygen vacancy, photovoltaic effect, physical property, polarization, polycrystalline, polycrystalline bifeo, potential application, pulsed laser deposition, raman spectroscopy, role, strain, study, substrate, system, thin film, variation.
4. Cluster 4 has 36 items, and marked in yellow, the 36 items are ba x feo, bife03 material, bife03 nanopowder, case, co doped bife03, co precipitation method, concentration, dielectric, dielectric properties, doping, formation, low temperature, magnetic, magnetic properties, microstructure, microwave absorption V:, multiferroic nanoparticle, nano, nanopowder, optical, optical property, paper, presence, present work, pure phase, raman, rhombohedral structure, route, sample, shape, single phase bifeo, sol, sol gel method, structural, x ray diffraction study, x rd.
5. Cluster 5 has 34 items, and marked in purple, the 34 items are addition, analysis, average Elze, bfo nanoparticle, bife03, bife03 perovskite, bismuth ferrite nanoparticle, co doping, doped bfo nanoparticle, enhanced multiferroic property, example, exchange bias effect, ferroelectric, fig, figure, function, lanthanum, magnetic field, nanocrystal, nanocrystalline bife03, nanomaterial, origin, phase transition, possibility, prepared nanoparticle, pure bifeo, room temperature, solgel technique, structural study, temperature, x ray, x ray diffraction, xrd pattern, yftrium.
6. Cluster 6 has 17 items, and marked in light blue, the 17 items are enhanced magnetization, evidence, ferrite nanoparticle, magnetism, magnetization, magnetodielectric property, magnetoelectric property, particle size, present study, report, single phase, size, solgel, structural analysis, structural transformation, value, weak ferromagnetism.
7. Cluster 7 has 14 items, and marked in orange, the 14 items are bife03 nanoparticle, co substitution, cofe, influence, investigation, journal, mn co, multiferroic bife03 nanoparticles, photocatalytic property, property, research, saturation magnetization, synthesized nanoparticle, tartaric acid.
8. Cluster 8 has 1 items, and marked in brown, the 1 items are size effect.

4.3 Visualization Mapping of BiFeO₃ Nanoparticle Keyword

In each group, it shows that there is an interaction between one term and another, with each term found being labeled in the form of a colored circle. Each term varies has a circle size depending on the frequency of occurrence of the term (Hamidah, Sriyono, & Hudha, 2020). Relationship that relates to

finding the term in the article is referred to as the circle size on the label (Nandiyanto. et al., 2021). The bigger the size of the label, the more often the term is found (Hertati, 2023). The computational mapping visualization reviewed in this study consists of 3 parts: network visualization (see Figure 2), density visualization (see Figure 3), and overlay visualization (see Figure 4).

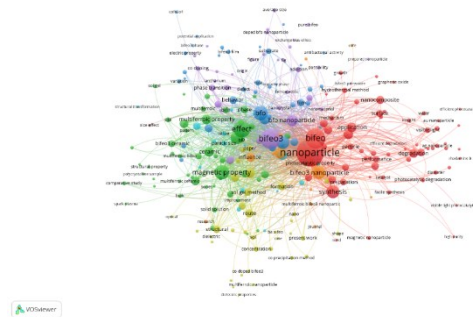


Figure 2. Network visualization of BiFeO₃ nanoparticle keyword

According to Figure 2, it shows that the correlation between terms. The correlation between terms is described in an interrelated network. In Fig.2, it is found that there are groups of terms that are often studied and according to the research topic of BiFeO₃ nanoparticles.

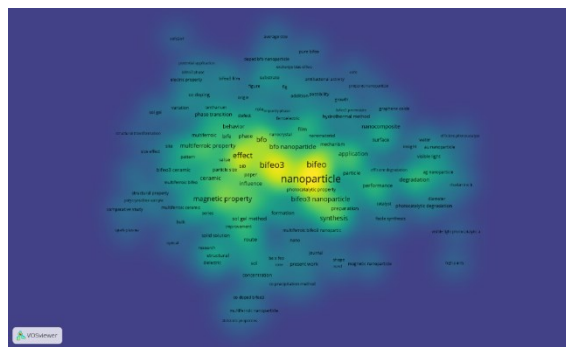


Figure 3. Density visualization of BiFeO₃ nanoparticle keyword

According to Figure 3, shows that the density visualization. Density visualization indicates that the larger the diameter of a circle and the brighter the yellow color of the keyword term, the more frequent the term will appear (Hamidah et al., 2020). This shows that a lot of research has been done on related terms. On the other hand, if the color of the term fades close to the background color, then the number of studies on the term is small. In Fig.3, it can be seen that research related to the terms, bfo, bifeo3, bifeo, and nanoparticle have a high number of studies.

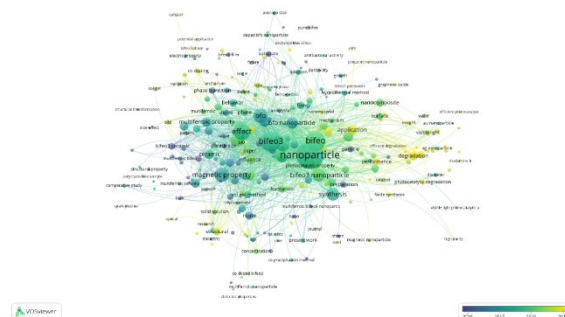


Figure 4. Overlay visualization of BiFeO₃ nanoparticle keyword

According to Figure 4, shows that the overlay visualization. This visualization overlay shows the update of research on related terms. In Fig. 4, Most research on BiFeO₃ nanoparticles was found in 2017 to 2018 so that we can find inspiration for the latest research on BiFeO₃ nanoparticles.

5. Conclusion

The purpose of this study is to analyze computational mapping on bibliometric data of research articles using VOSviewer application. Google Scholar database is used as a place to get article data using Publish or Perish. The library data used in this research concerns titles, keywords, and abstracts. The data obtained by searching using the keyword "BiFeO₃ nanoparticles" resulted in 8 clusters with a different number of terms in each cluster and each color represented its own cluster. Based on the search results, in the range of 2012 to 2022, as many as 996 articles have been found as research article data. In 2012 – 2018 there was an increase in the number of studies from 41 to 119 (78 studies). However, in 2018 – 2022 it decreased from 119 to 100 (19 studies). Results of this research indicate that there is a high enough opportunity for further research on BiFeO₃ nanoparticles to be developed and related to other terms.

Limitation and suggestion

This research is limited to the analysis of research developments related to BiFeO₃ nanoparticles as a research material in general in the last decade using bibliometric methods so that deeper study is needed. For further research, this bibliometric analysis can be carried out more specifically regarding the various applications of using BiFeO₃ nanoparticles, as well as research mapping related to each keyword that needs to be studied further.

References

- Aisyah, A., Azharuddin, A., Rizal, S., & Zulkifli, S. (2022). Studi Perbandingan Alat Bukti Saksi dalam KUHAP dan KUHAP Islam. *Kajian Ilmiah Hukum dan Kenegaraan*, 1(1), 1-11. doi:[10.35912/kihan.v1i1.1338](https://doi.org/10.35912/kihan.v1i1.1338)
- Anisak, A., & Bakhri, S. (2024). Peran dan Tantangan Bank Syariah Indonesia dalam Meningkatkan Inklusi Keuangan Melalui Produk Mikro Syariah. *Jurnal Relevansi: Ekonomi, Manajemen Dan Bisnis*, 8(2), 79-83. <https://doi.org/10.61401/relevansi.v8i2.151>
- Bai, X., Wei, J., Tian, B., Liu, Y., Reiss, T., Guiblin, N., . . . C. Infante, I. (2016). Size effect on optical and photocatalytic properties in BiFeO₃ nanoparticles. *The Journal of Physical Chemistry C*, 120(7), 3595-3601.
- Bangruwa, J. S., Kumar, S., Chauhan, A., Kumar, P., & Verma, V. (2019). Modified magnetic and electrical properties of perovskite-spinel multiferroic composites. *Journal of Superconductivity and Novel Magnetism*, 32(8), 2559-2569. [10.1007/s10948-018-4986-z](https://doi.org/10.1007/s10948-018-4986-z)
- Dhia, M. R., & Melinda, S. (2024). The Influence Of Celebrity Endorser and Brand Image on Purchase Decisions for Somethinc Skincare Products on the Online Shop Platform. *Jurnal Relevansi: Ekonomi, Manajemen Dan Bisnis*, 8(2), 94-100. <https://doi.org/10.61401/relevansi.v8i2.154>
- Hamidah, I., Sriyono, S., & Hudha, M. N. (2020). A Bibliometric analysis of Covid-19 research using VOSviewer. *Indonesian Journal of Science and Technology*, 5(2), 209-216. <https://doi.org/10.17509/ijost.v5i2.24522>
- Hertati, L. (2023). Exploring Moralitas Individual Mahasiswa, Sebuah Peran Mengatasi Etika Kecurangan Mahasiswa Akuntansi Di Dunia Pendidikan. *Jurnal Relevansi: Ekonomi, Manajemen Dan Bisnis*, 7(2), 116-126. <https://doi.org/10.61401/relevansi.v7i2.106>
- Idham, I., Pasaribu, J., Jihad, K., Muhammad, I., Jatmuazam, A., Fadillah, M. H., . . . Herizaldi, S. (2023). Masyarakat sebagai Garda Terdepan dalam Menghadapi Illegal Fishing: Studi Penelitian di Pulau Rempang Kota Batam. *Kajian Ilmiah Hukum dan Kenegaraan*, 2(1), 45-51. doi:[10.35912/kihan.v2i1.2360](https://doi.org/10.35912/kihan.v2i1.2360)
- Iftikhar, P. M., Ali, F., Faisaluddin, M., Khayyat, A., De Sa, M. D. G., Rao, T., & Iftikhar, P. (2019). A bibliometric analysis of the top 30 most-cited articles in gestational diabetes mellitus literature (1946-2019). *Cureus*, 11(2). [10.7759/cureus.4131](https://doi.org/10.7759/cureus.4131)

- Irfan, S., Shen, Y., Rizwan, S., Wang, H. C., Khan, S. B., & Nan, C. W. (2017). Band-gap engineering and enhanced photocatalytic activity of Sm and Mn doped BiFeO₃ nanoparticles. *Journal of the American Ceramic Society*, 100(1), 31-40. [10.1111/jace.14487](https://doi.org/10.1111/jace.14487)
- Junistia, E., Nearti, Y., & Jayanti, N. (2025). Pengaruh Fluktuasi Harga Cabai Keriting (Capsicum Annum L) terhadap Pendapatan Petani di Desa Lubuk Saung Kecamatan Banyuasin III Kabupaten Banyuasin. *Jurnal Ilmiah Pertanian dan Peternakan*, 3(1), 1-14. doi:[10.35912/jipper.v3i1.5409](https://doi.org/10.35912/jipper.v3i1.5409)
- Ladista, R. D. (2023). Economic Recovery: A Bibliometric Study. *Studi Ekonomi dan Kebijakan Publik*, 1(2), 97-108. doi:[10.35912/sekp.v1i2.1491](https://doi.org/10.35912/sekp.v1i2.1491)
- Marhaen, M., Kusmiadi, R., & Ropalia, R. (2023). Kajian Penggunaan Daun Pisang Kering dalam Pematangan Buah Pisang (Musa Paradisiaca L CV. Kepok) dengan Metode Pemeraman di Lubang Tanah. *Jurnal Ilmiah Pertanian dan Peternakan*, 1(1), 35-46. doi:[10.35912/jipper.v1i1.2602](https://doi.org/10.35912/jipper.v1i1.2602)
- Pradana, M. R. A., & Putra, N. P. (2024). Manajemen Pembangunan Kota Pintar: Sinergi Teknologi, Kebijakan Publik, dan Kearifan Lokal. *Jurnal Relevansi: Ekonomi, Manajemen Dan Bisnis*, 8(2), 124-131. [10.61401/relevansi.v8i2.157](https://doi.org/10.61401/relevansi.v8i2.157)
- Pramesti, V. A., & Arianti, R. (2023). Kebersyukuran pada Anak yang Sudah Mengetahui Statusnya sebagai Anak Adopsi. *Kajian Psikologi dan Kesehatan Mental*, 1(1), 1-15. doi:[10.35912/kpkm.v1i1.1948](https://doi.org/10.35912/kpkm.v1i1.1948)
- Priyadi, P., A'yun, Q., Navianti, D., & Sukarjo, S. (2024). Horn Banana Peel Powder Biocoagulants in Lowering the Turbidity of Water. *Jurnal Ilmiah Pertanian dan Peternakan*, 2(1), 47-57. doi:[10.35912/jipper.v2i1.5314](https://doi.org/10.35912/jipper.v2i1.5314)
- Putri, Y., & Nurhuda, A. (2023). Moralitas Aborsi karena Kehamilan Remaja: Ditinjau dalam Perspektif Feminisme dan Sains. *Kajian Psikologi dan Kesehatan Mental*, 1(1), 17-24. doi:[10.35912/kpkm.v1i1.2284](https://doi.org/10.35912/kpkm.v1i1.2284)
- Rahmaniyan, B., Mohammadi, T., & Tofighy, M. A. (2021). Development of high flux PVDF/modified TNTs membrane with improved properties for desalination by vacuum membrane distillation. *Journal of Environmental Chemical Engineering*, 9(6), 106730. <https://doi.org/10.1016/j.jece.2021.106730>
- Ramlan, R., Irmayani, I., & Nurhaeda, N. (2023). Faktor Faktor yang Mempengaruhi Pendapatan Petani Cengkeh di Desa Rante Alang Kecamatan Larompong Kabupaten Luwu. *Jurnal Ilmiah Pertanian dan Peternakan*, 1(1), 1-8. doi:[10.35912/jipper.v1i1.1977](https://doi.org/10.35912/jipper.v1i1.1977)
- Reddy, V. A., Pathak, N. P., & Nath, R. (2012). Particle size dependent magnetic properties and phase transitions in multiferroic BiFeO₃ nano-particles. *Journal of Alloys and Compounds*, 543, 206-212. <http://dx.doi.org/10.1016/j.jallcom.2012.07.098>
- Riadi, S., Rohmah Nurazizah, G., Wakano, D., & Fadilah, R. (2023). Effect of Urea Application on Corn Productivity: A Meta-Analysis. *Jurnal Ilmiah Pertanian dan Peternakan*, 1(1), 27-34. doi:[10.35912/jipper.v1i1.2567](https://doi.org/10.35912/jipper.v1i1.2567)
- Ulfa, A., Agustiani, H., Qodariah, L., & Jatnika, R. (2023). Children's Perceptions of Parental Mediation on Internet Use. *Kajian Psikologi dan Kesehatan Mental*, 1(2), 97-108. doi:[10.35912/kpkm.v1i2.2759](https://doi.org/10.35912/kpkm.v1i2.2759)
- Yacob, A., Idham, I., & Erniyanti, E. (2023). Relevansi Penerapan Teori Hukum terhadap Perlindungan Nasabah Perbankan yang Dirugikan oleh Transaksi Internet Banking (Analisis Teori Hukum Positif dan Teori Utilitas). *Kajian Ilmiah Hukum dan Kenegaraan*, 1(1), 53-61. doi:[10.35912/kihan.v1i1.1906](https://doi.org/10.35912/kihan.v1i1.1906)
- Zubair, A., Suherman, S., & Darmawan, D. (2024). Analisis Kemitraan dan Potensi Ekonomi terhadap peningkatan pendapatan Petani Kopi. *Jurnal Ilmiah Pertanian dan Peternakan*, 2(1), 1-8. doi:[10.35912/jipper.v2i1.3069](https://doi.org/10.35912/jipper.v2i1.3069)
- Zulkarnain, Z., Said, D. U., & Amitasari, D. (2022). Analisis Efisiensi Teknis, Alokatif dan Ekonomi pada Usahatani Padi Sawah. *Studi Ekonomi dan Kebijakan Publik*, 1(1), 1-12. doi:[10.35912/sekp.v1i1.728](https://doi.org/10.35912/sekp.v1i1.728)