Introducing ASEAN Journal for Science and Engineering in Materials: Bibliometric Analysis

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ARTICLE INFO	ABSTRACT
	This research aims to analyze bibliometric data of publications in the ASEAN Journal for Science and Engineering in Materials (AJSEM) from 2022 to 2023. This research was conducted to verify the impact of AJSEM on research activities on a local and international scale. Bibliometric analysis using Publish or Perish, VOSviewer, and R Studio was used with the Google Scholar database. AJSEM has a uniform scope only in the field of science and engineering in materials. AJSEM can be a means of cooperation with international countries. Currently, AJSEM has succeeded in publishing several publications from 14 countries originating from the continents of Africa, Europe, Asia, and America. This research can be a reference for researchers who publish articles in the field of science and engineering in materials. Apart from that, it is hoped that this research can encourage and increase the enthusiasm of local and international researchers, especially researchers from ASEAN countries, in conducting research, especially in the fields of science and engineering in materials.

1. Introduction

Materials science and engineering, commonly known as materials engineering, is a field of research and engineering concerned with the understanding, development, characterization, and application of various materials [1,2]. The field of materials science and engineering is important in a variety of industries, including manufacturing, technology, and engineering. Materials science and engineering covers various types of materials, such as metals, polymers, ceramics, composites, and others [3,4]. Materials science and engineering serve as the basis for many modern technological and industrial applications. Materials science and engineering studies can cover a variety of aspects, including physics, chemistry, engineering, and other related disciplines, to better understand the properties of materials and their practical applications [5].

Materials science and engineering are key drivers of technological innovation. Research and development of new materials opens up opportunities for new technologies, such as advanced electronics, electric cars, renewable energy materials, and more. Research in materials science can

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help create more energy-efficient materials such as good insulation, thereby reducing energy consumption and impact on the environment.

Currently, the digital era has transformed. The research process and how the results are disseminated to society and the world demonstrate this. Many countries around the world, including Indonesia, have had to issue their academic journals. This is done to improve technology and science. Scholarly periodicals, even those more than ten years old, should be better distributed. One option for researchers is to publish their research results in scientific journals. Research must be published in an accredited scientific journal before it can be certified as a copyright.

Many people keep journals, both open access and limited access [6,7]. Research published in scientific journals has been common practice for decades. Scientific journals are a means for researchers to publish their research findings apart from being a source of knowledge. Scientific journals are used as an important tool in advancing research and technology, as well as fostering communication between scientific groups in various parts of the world. Therefore, the general public can access and utilize the research results of scientists through scientific journal articles.

AJSEM is an open-access and peer-reviewed journal, published by Bumi Publikasi Nusantara, which is a media dissemination for the research results of scientists and engineers in various fields of science and technology. AJSEM is a biannual journal published in March and September. Each issue consists of 5-10 articles/reviews. AJSEM has been involved with 38 affiliates from 14 countries in the world, including Algeria, Brazil, Brunei Darussalam, India, Indonesia, Iraq, Malaysia, Mauritania, Mexico, Morocco, Nigeria, Sweden, United States, and Uzbekistan. One of the best articles published in 2023 in AJSEM has been cited 29 times. The top 15 best papers are listed in Table 1.

Table 1
Top cited articles in AJSEM

No.	Title	Citations	Year	Ref
1	Bibliometric data analysis of research on resin-based brake-pads from 2012 to 2021 using vosviewer mapping analysis computations	29	2023	[8]
2	Aluminum wastes effect on solar distillation	12	2022	[9]
3	Physicochemical properties of human hair using Fourier transform infra-red (FTIR) and scanning electron microscope (SEM)	10	2022	[10]
4	Palm fibers effect on the performance of a conventional solar still	10	2022	[11]
5	Past, current and future trends of salicylic acid and its derivatives: A bibliometric review of papers from the Scopus database published from 2000 to 2021	8	2023	[12]
6	Bibliometric Analysis of Briquette Research Trends During the Covid-19 Pandemic	8	2022	[13]
7	Why 200 C is Effective for Creating Carbon from Organic Waste (from Thermal Gravity (TG-DTA) Perspective)?	7	2022	[14]
8	Conversion of Indonesian coal fly ash into zeolites for ammonium adsorption	6	2022	[15]
9	Teaching concept of bio-battery material: Use of sweet potato peels and lime juice solution	5	2022	[16]
10	Physicochemical properties of soil ecosystem polluted with spent engine oil	5	2022	[17]
11	Literature review: accidents in the material and construction industry	4	2023	[18]
12	Regression study on the impact of vehicular emission pollutants on ozone level: Chemical and material perspectives	2	2023	[19]
13	Metabolic disequilibrium: A review in the indication of soil ecosystem insulted with xenobiotics	2	2022	[20]
14	Phytochemical Assessment of The Extracts of Stem (Bark) and Leaves of Theobroma Cocoa Materials: Experimental Procedure and Its Comparison to Literature	2	2022	[21]
15	Models for elasto-electricity and photovoltaic material in the micropower plant	2	2022	[22]

In this research, bibliometric analysis is used to achieve research objectives. Table 2 shows that several researchers have previously conducted research using bibligraphic analysis. Table 2 compares our study with previous studies that used bibliographic analysis. In examining and visualizing the latest publications, bibliometric analysis is quite effective [23]. Bibliometric analysis is also used to make decisions about continuing or stopping research in the future [24]. However, there has not been much discussion about the impact of journals that use bibligraphic analysis. Based on the results of this analysis, we investigated the bibliographic data of AJSEM publications from 2022 to 2023 to find out whether this journal has succeeded in developing globally and what impact it can have.

Table 2
Prior bibliometric analysis research

No	Topic Discussion	Ref
1	This work presents the development of dental aerosol suction using VOSViewer and the dissemination of bibliometrics maps.	[25]
2	This study looks at how research has changed over the Covid-19 era using bibliometric methodology.	[26]
3	The literature review for this study discusses the benefits and drawbacks of using pure biodiesel on engine performance.	[27]
4	This study discusses the current state and future directions of bioenergy management research.	[28]
5	This study investigated the dissolution of empty palm oil fruit bunches using benzotriazole ionic salt solutions and VOSviewer, a tool for bibliometric analysis.	[29]
6	Decision-making information is covered in this study.	[30]
7	This study covers the integration of mapping analysis using the VOSviewer application.	[31]
8	This study discusses the usage of VOSviewer in conjunction with mapping analysis.	[32]
9	The expansion of geotechnical engineering research was investigated in this work using VOSviewer and bibliometric distribution maps.	[33]
10	This paper describes recent developments in engineering research and scientific education.	[34]
11	This study investigates the "Special Needs of Chemical Engineering" by combining mapping analysis and the VOSviewer tool.	[35]
12	describing the research output in the field of nursing in Latin America regarding patient safety	[36]
13	The impact of scientific production and communication patterns in Cuban hospitals are characterized by this study.	[37]
14	Using the journal Rank, the Scival and Scimago Country tools, and documents in the "History and Philosophy of Science" category from 1996 to 2016, a bibliometric analysis was carried out.	[38]
15	Bibliometric analysis of the themes covered by SciVal between 2017 and 2021 to characterize the scientific output on lithium-ion batteries.	[39]
16	The present directions in materials research are discussed in this paper.	[40]
17	This study examines the causes of and patterns in the expansion of SDG research.	[41]
18	This study looks at research in chemical engineering.	[42]
19	This study uses data from Scopus-indexed article databases to investigate the evolution of bibliometric analysis research in the domains of science and Islam.	[43]
20	This study uses bibliometric analysis to examine how resin matrix composition affects brake pad performance.	[44]
21	This article examines the trends in briquette research during the COVID-19 epidemic.	[45]
22	This study uses bibliometric analysis to discuss the evolution of publications in techno-economic education.	[46]
23	This study investigates the use of bibliographic databases to explain Indonesia's decline in scientific publications.	[47]
24	VOSviewer is utilized in this study's Publish or Perish program to evaluate bibliometrics.	[48]
25	This study examines the evolution of technical research using VOSviewer, using data from papers indexed by Google Scholar.	[49]
26	The evolution of research in the field of engineering education is examined in this paper.	[50]
27	A bibliometric examination of the use of particle technology in computational fluid dynamics research	[51]
28	Methods in language teaching to enhance science students' knowledge during laboratory practicum	[52]

29	Definition, comprehension-boosting factors for students, and computational bibliometric analysis of language	[53]
30	Bibliometric analysis of learning Science by regulating strategy in language education	[54]

2. Methodology

We took all bibliographic data from articles published in AJSEM from 2022 to 2023. Publish or Perish results are saved in two formats: *.ris for mapping using VOSviewer and *.csv for data processing using Microsoft Excel. The article data taken consists of publication year, author's name, author's country, and keywords. Then, we used VOSviewer as a data visualization tool to create a network from the preprocessed data set to build a scientometric network to measure productivity. In the Publish or Perish application, the terms "ASEAN Journal for Science and Engineering" OR "AJSEM" are used as search keywords (publication name). Bibliometric analysis in this research is divided into 4 stages, namely searching, filtering, visualization, and data analysis.

We collect data to analyze trends and identify the impact of AJSEM journals on research publications. At this stage, published research documents (articles) related to science, engineering, and education topics are collected using the Publish or Perish application. Research documents were collected using the publication name "ASEAN Journal for Science and Engineering" OR "AJSEM". The article data taken is article data published from 2022 to 2023. We filtered the documents that were obtained by paying attention to the publisher of the journal article. Articles that are not published on AJSEM will be eliminated. The elimination process was carried out in the Publish or Perish application and Microsoft Excel. After filtering the data, 29 relevant articles were obtained.

Next, the data is uploaded to VOSviewer in (*.ris) format for data mapping. At this stage, the terms for the VOSviewer network mapping visualization filtering article data are mapped using the source database. In the final step, data analysis is carried out on data that has been visualized and processed using Microsoft Excel. This analysis produces research development results per year, authors with the most research, countries, and relationships between authors and other countries. This stage also explains the clusters resulting from the visualization.

3. Results and Discussion

The results of article data analysis obtained via Publish or Perish, VOSviewer, and Microsoft Excel show that AJSEM has succeeded in gaining recognition from the writing community. The type of article published by AJSEM is a journal article. The distribution of publications in Figure 1 proves that AJSEE has published around 29 articles in a period of 2 years, namely from 2022-2023. In 2022, the number of articles published in AJSEM is 15 articles, while in 2023 there is 13 articles published. Judging from the numbers and data in Figure 1, the number of publications in AJSEM from 2022-2023 has decreased by 2 articles. However, this number may change in the future, considering the time when this data was collected in October 2023.
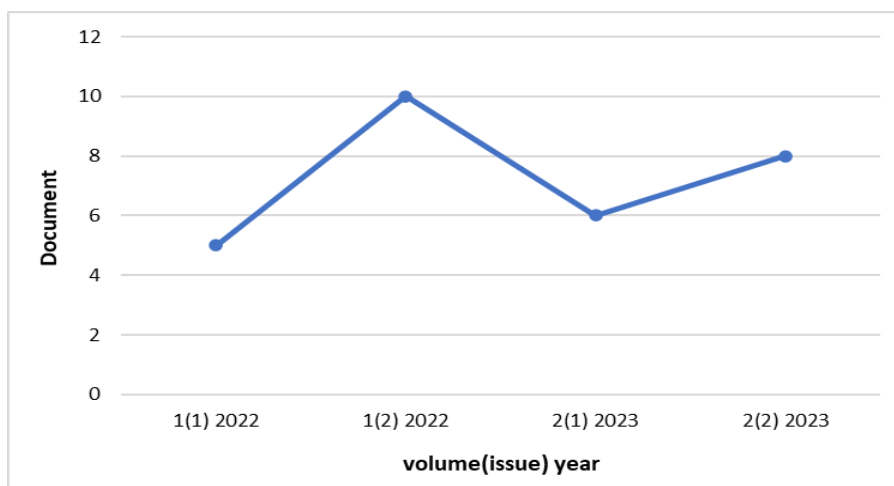
Fig. 1. Distribution of research papers from AJSEM per year of publication

Table 3 shows the most productive authors publishing their articles in AJSEM. Based on Table 3, the author with the highest number of articles published in AJSEM is Asep Bayu Dani Nandiyanto with 4 articles. Then there are Abdelkader Bellila, Abderrahmane Khechekhouche, Ezenwali Moses Obinna, Risti Ragadhita, and Teguh Kurniawan with 2 articles each. Next were Chamseddine Kined, Imad Kermerchou, Indar Kustiningsih, and Nurhani Nadiah Mohd Najdi with 1 article each. From data from several authors who published their articles on AJSEM, AJSEM is widely used by international researchers, not just local ones, especially researchers from Africa (Table 4). In addition, of the 10 authors shown in Table 3, it was identified that managers from AJSEM were among the 10 most productive authors with a total of 4 articles in 2021-2022. With AJSEM's high reputation, it can help attract local researchers to publish their articles in AJSEM. This confirms that some journals publish high-quality articles only if the journal management is homogeneous and includes many respected editors [55,56].

Table 3
The ten most productive AJSEM researchers from 2021-2022

Rating	Researcher	Number of Documents
1	Asep Bayu Dani Nandiyanto	4
2	Abdelkader Bellila	2
3	Abderrahmane Khechekhouche	2
4	Ezenwali Moses Obinna	2
5	Risti Ragadhita	2
6	Teguh Kurniawan	2
7	Chamseddine Kined	1
8	Imad Kermerchou	1
9	Indar Kustiningsih	1
10	Nurhani Nadiah Mohd Najdi	1

When analyzing which countries actively contribute to publishing articles on AJSEM, we find that Nigeria is the country that contributes most actively to publishing articles on AJSEM (see Figure 2). Even though 31.91% of the articles published in AJSEM are articles originating from Nigerian researchers, 17.02% originate from local researchers (Indonesia) and the other 51.89% originate from non-local and non-Nigerian researchers. Countries included in the 51.89% of those previously mentioned are Algeria, Brazil, Brunei Darussalam, India, Iraq, Malaysia, Mauritania, Mexico, Morocco, Sweden, the United States, and Uzbekistan (Table 5). These results prove that AJSEM is not

limited to local communities and is open to researchers throughout the world and also prove that the internationalization of AJSEM is providing good results.

In Table 4, the number of articles belonging to the Indonesian state was 8 publications over the last two years. This number is not the most articles published in AJSEM over the last two years. The country that publishes the most publications on AJSEM is Nigeria with a total of 15 articles published over the last 2 years, namely 2022-2023. Based on the results of an analysis of countries that actively publish their research in AJSEM, most of the contributing countries come from Asia. These Asian countries have surprisingly become AJSEM's main collaborators for the last 2 years (2022-2023). Apart from Asian countries, there are countries on the African continent that are among the most productive countries, in fact, this country is ranked 1st. The country in question is Nigeria with a total of 15 articles published. The inclusion of articles from Africa and America confirms that AJSEM can become an incubator for building international cooperation outside Asian countries.
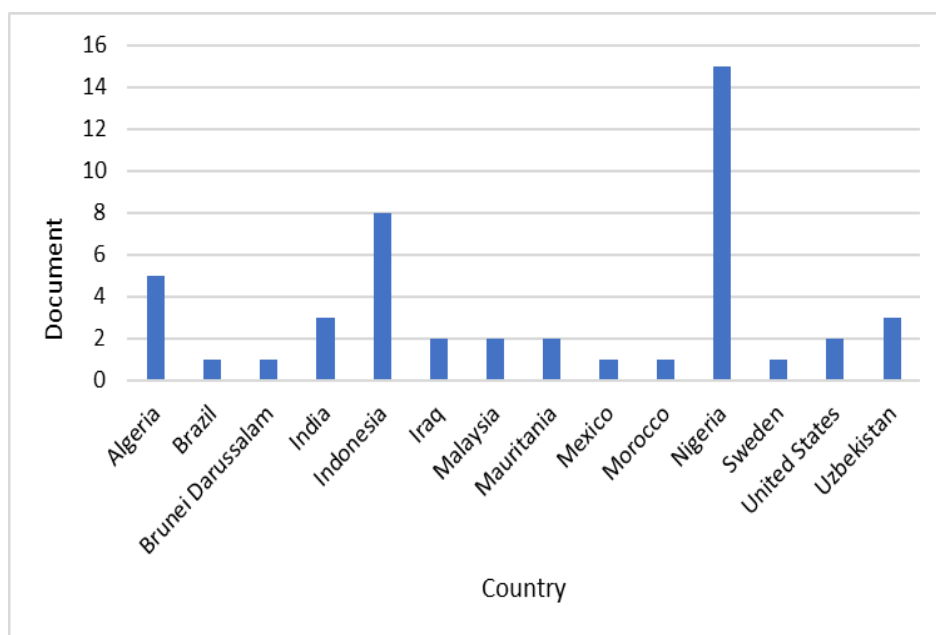

Fig. 2. Countries contributing to AJSEM

Table 4
The most productive countries publish articles in AJSEM in 2022-2023

Country	Continent	Total	Percentages (%)
Algeria	Africa	5	10.64
Brazil	America	1	2.13
Brunei Darussalam	Asia	1	2.13
India	Asia	3	6.38
Indonesia	Asia	8	17.02
Iraq	Asia	2	4.26
Malaysia	Asia	2	4.26
Mauritania	Africa	2	4.26
Mexico	America	1	2.13
Morocco	Africa	1	2.13
Nigeria	Africa	15	31.91
Sweden	Europa	1	2.13
United States	America	2	4.26
Uzbekistan	Asia	3	6.38

Based on the mapping results in Figure 3, most of the terms published in AJSEM are related to science and engineering in materials. Apart from that, from the mapping results, 4 cluster groups were obtained, namely cluster 1 (human hair, impact, mineral, physicochemical property, review, soil ecosystem, study), cluster 2 (application, characterization, Indonesia, synthesis, zeolite), cluster 3 (pandemic, research, research data), and cluster 4 (effect, performance, solar distillation). Each item is obtained from the results of selecting events, namely a minimum of 2. Apart from that, the clusters that have been mentioned are differentiated based on color. Cluster 1 is red, Cluster 2 is green, Cluster 3 is blue, and Cluster 4 is yellow.
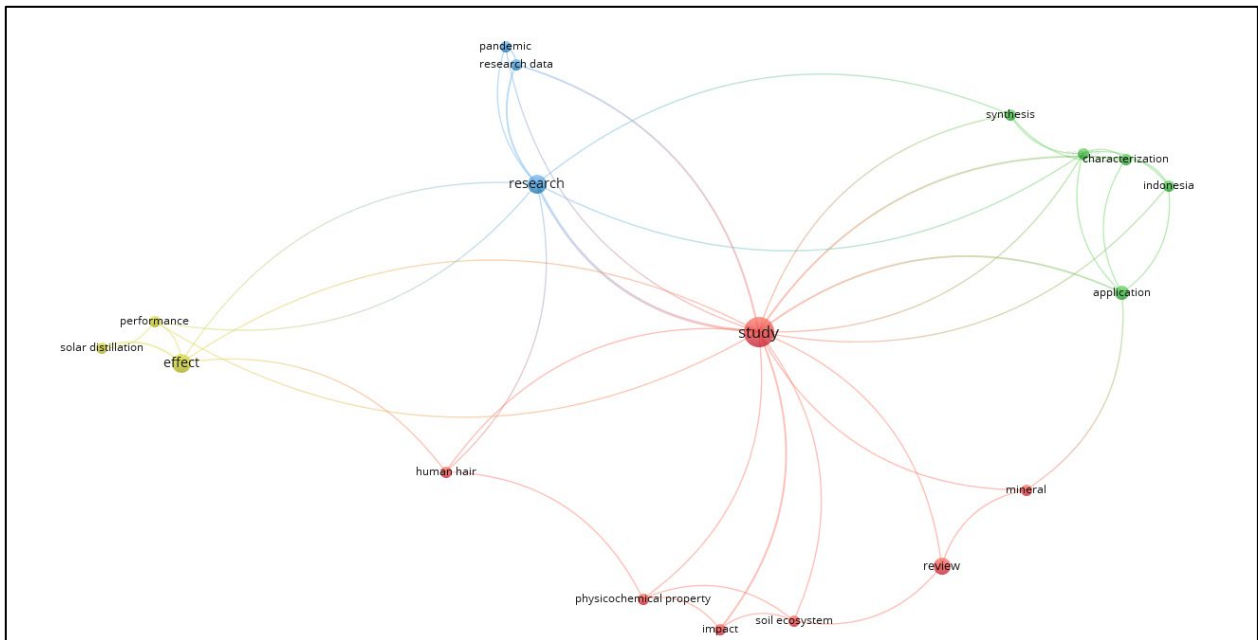

Fig. 3. Co-occurrence network of the keywords from research papers published in AJSEM from 2022 to 2023

Detailed AJSEM publication data is presented in Figure 4. These results show that the longer the life of a journal is correlated with the greater number of author contributions and the more diverse affiliations. It should be noted that AJSEM is ready for internationalization as this journal involves authors from many countries and affiliates. Finally, in addition to the above publications, AJSEM publishes excellent research, which will bring ideas and suggestions for readers to improve science and technology. Several published articles are in Table 5.
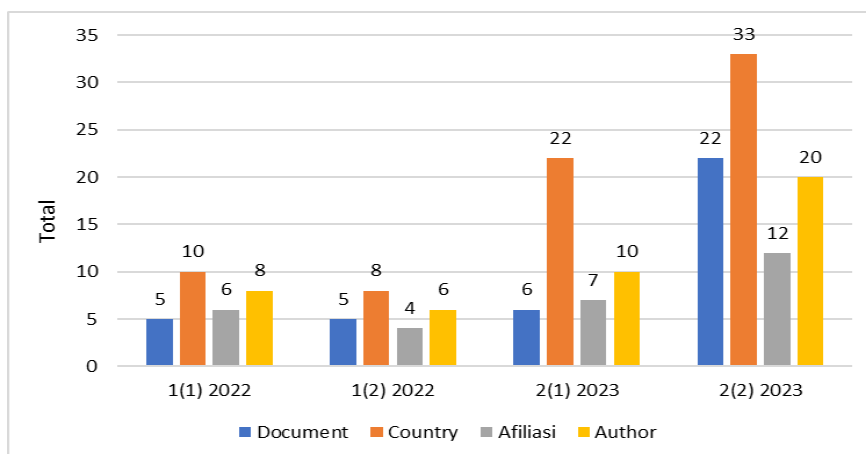

Fig. 4. Publication data in AJSEM

Table 5
Prospective cited articles in AJSEM

No	Author(s)	Title	Metadata	Year	Ref
1	Ebulue	Metabolic disequilibrium: A review in the indication of soil ecosystem insulted with xenobiotics	2 (1), 1-8	2022	[20]
2	Abulude *et al.,*	Phytochemical Assessment of The Extracts of Stem (Bark) and Leaves of Theobroma Cocoa Materials: Experimental Procedure and Its Comparison to Literature	1 (2), 85-92	2022	[21]
3	Strömberg	Models for elasto-electricity and photovoltaic material in the micropower plant	1 (2), 67-70	2022	[22]
4	Maratussolihah *et al.,*	Techno-Economic Evaluation of Gold Nanoparticles Using Banana Peel (Musa Paradisiaca)	1 (1), 1-12	2022	[57]
5	Najdi *et al.,*	The effect of zeolite imidazole framework geometrical structure on carbon dioxide permeability for mixed matrix membrane	1 (1), 21-28	2022	[58]
6	Ristiana	Electrical textile: Graphite paste on gloves for touching screen of smartphones and tablets	1 (1), 13-20	2022	[59]
7	Moutaly & N'diaye	Preliminary Physico-Chemical and Phytochemical Study of Seeds of Balanites Aegyptiaca	1 (2), 93-98	2022	[60]
8	Kishan *et al.,*	Sustainable Urban Development Strategies for Slum Upgrading and Environmental Improvement using Material Science Technology	1 (2), 107-116	2022	[61]
9	Kurniawan *et al.,*	Characterization of Zeolites from Tasikmalaya, Indonesia, and Its Application for Ammonium Removal	1 (1), 37-48	2022	[62]
10	Ekwumemgbo & Okon	Regression study on the impact of vehicular emission pollutants on ozone level: Chemical and material perspectives	2 (2), 81-94	2023	[19]
11	Obinna	iosorption/precipitation of heavy metals by partially degraded keratin/soluble peptides/amino acids by-products of degradation of human hair by keratinase isolated from alcaligenes Faecalis Strain AIR10	2 (1), 9-28	2023	[63]
12	Reflin *et al.,*	Mechanical Design and Analysis of Eco-Print Textile Pounding Machine	2 (2), 143-158	2023	[64]
13	Haritha	A Review of Recent Advancements in Geophysical Technologies and Their Implications for Mineral and Hydrocarbon Exploration	2 (2), 95-108	2023	[65]
14	Qizi & Lolayevich	Improvement of the Technology of Industrial Wastewater Treatment in the Mining Industry	2 (1), 45-52	2023	[66]
15	Hadi *et al.,*	Green Concrete: Ferrock Applicability and Cost-Benefit Effective Analysis	2 (2), 119-134	2023	[67]
16	El-Bacha *et al.,*	Real-time Mineral Analysis using Deep Learning	2 (2), 159-168	2023	[68]
17	Haritha	Processing and Interpretation of Magnetic and IP-Resistivity Data	3 (1), 1-20	2024	[69]
18	Ragadhita & Nandiyanto	How to Calculate and Design Shell and Tube-type Heat Exchanger with a Single Heat Transfer	3(1), 21-42	2024	[70]

4. Conclusion

This research paper analyzes AJSEM results from 2022 to 2023 by evaluating bibliometric data. We analyze the impact of AJSEM's development and internationalization on local research communities and ASEAN countries. AJSEM has grown rapidly thanks to its open-source research policy. On the other hand, the journal tries to cover a variety of topics, especially those related to science and engineering in materials. AJSEM encourages national and international research networks by turning journals into discussion forums and promoting original research initiatives in the

fields of science and engineering in materials. This was achieved thanks to the contribution of 14 countries from Asia, Africa, America, and Europe. Apart from that, this journal is useful in initiating new research collaborations between local writers (Indonesia) and Asian countries (India, Malaysia, Brunei Darussalam, Iraq, Uzbekistan) compared to non-Asian countries such as Algeria, Brazil, Mauritania, Mexico, Morocco, Nigeria, Sweden, and the United States. The internationalization carried out by AJSEM encourages the development of international collaboration networks which have an impact on increasing thematic coverage and diversity of research results. Collaboration between national and international researchers ensures greater visibility and greater impact for researchers. Additionally, we determined that journals can be used as a supporting tool and model for developing collaboration

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