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Bibliometric Analysis of Briquette Research Trends During the Covid-19 Pandemic

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ABSTRACTS

This study aims to analyze the scope of research on briquettes using bibliometric analysis and data mapping processes. The research data used is obtained from published journals. The search was conducted using the publish or perish application with the keyword "briquette'. The search process is based on topic areas with titles, keywords, and abstracts in the study material. The mapping process is carried out using VOSviewer. A total of 973 relevant articles were found. The results showed that research on briquettes has decreased over the past three years, namely 2020, 2021, and 2022. The decline was caused by the Covid-19 pandemic. Through VOSviewer we analyze the number of articles that have been published about the material and its relationship with the topic area. This review can certainly provide a reference point for further research related to the material.

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1. INTRODUCTION

Briquettes are nothing new. Briquettes have been widely known by the general public. In Indonesia itself, briquettes are very often used for the industrial needs of a company. Briquettes are the change in the size of the material through the process of clumping with emphasis and addition or without the addition of binders. The change in size is a change that was originally in the form of a powder or powder the size of sand into a larger material and is easy to handle or use (Satmoko *et al*., 2013). Briquettes can be made with a mixture of coal and biomass. The mixing of coal and biomass has several advantages because it has a content of volatile compounds (volatile compounds) from biomass and the high carbon content of new coals (Jamilatun 2008).

Biomass is a term used to describe all types of organic matter that are the result of the process of photosynthesis (McKendry, 2002). Reports on the use of biomass as alternative energy are well documented. In addition to using coal, briquettes can also be made with other raw materials such as: coconut shells, rice husks, husks, sawdust, corn cobs, and dry leaves. The function of briquettes is as an alternative fuel. Briquettes can replace fossil fuels derived from plants and animals millions of years ago. So, by using briquettes, you would save the use of non-renewable energy sources, namely petroleum. The development of briquettes research can be carried out by means of bibliometric analysis. Bibliometric analysis is a way of analyzing data that is displayed visually through mapping tools. Bibliometric analysis was carried out to see trending research topics (Nugraha, 2022). Research on bibliometrics has been carried out by many previous researchers as shown in **Table 1**.

Table 1. Previous research on bibliometrics.

No.	Topic	Result	Ref
1.	Analysis of Techno-Economic Education Publications	This analysis found that there are only around 60 publications produced each year that discuss technology and economics. 2021 would record the most publications on techno-economics with 80 papers. Due of the pandemic era, many academics have shifted their focus to computational-based research.	Ragahita & Nandiyanto (2022).
2.	Production of Magnetite Nanoparticles Analysis	Based on the investigation, it was found that 994 articles acquired between 2017 and 2021 were pertinent to the keywords chosen. The results showed that the synthesis of Fe_3O_4 nanoparticles rose between 2017 and 2019 before declining.	Nugraha & Nandiyanto (2022).
3.	Examination of special education	We found 990 pertinent articles published between 2017 and 2021 based on the search results. From 2017 through 2020, there was less study on vocational education, but in 2021, there was more. Five categories appeared when "vocational school" was searched, each with its unique set of entries and color scheme.	Al Husaeni *et al*. (2023).
4.	Analysis of Resin-Based Brake Pad Research	Resin-based brake pads attracted more research attention between 2017 and 2021. 2015 had the fewest publications, only producing 23. The three primary phrases that are frequently used and connected to the study issue of resin-based brake pads are pad material, development, and epoxy resin.	Nandiyanto *et al*. (2023).
5.	Analysis of the Synthesis of Carbon Nanotubes	Between 2018 and 2022, 247 pertinent published papers were discovered in the search results. From 2018 to 2021, more articles on the synthesis of carbon nanotubes were published.	Aldhafi & Nandiyanto (2021).

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Although research on bibliometrics has been done by many previous researchers. However, bibliometric analysis research on briquettes linked to the Covid-19 pandemic conditions is still very rare. This research was conducted with the aim of analyzing the scope of research on briquettes using bibliometric analysis and data mapping processes. It is hoped that this research can make it easier for researchers who would conduct research, especially regarding briquettes.

2. METHODS

Bibliometric analysis research has 4 stages, namely data search using the publish or perish application, data processing using Ms. Excel, data mapping using the VOSviewer application, and data analysis of VOSviewer mapping results shown by **Figure 1**.

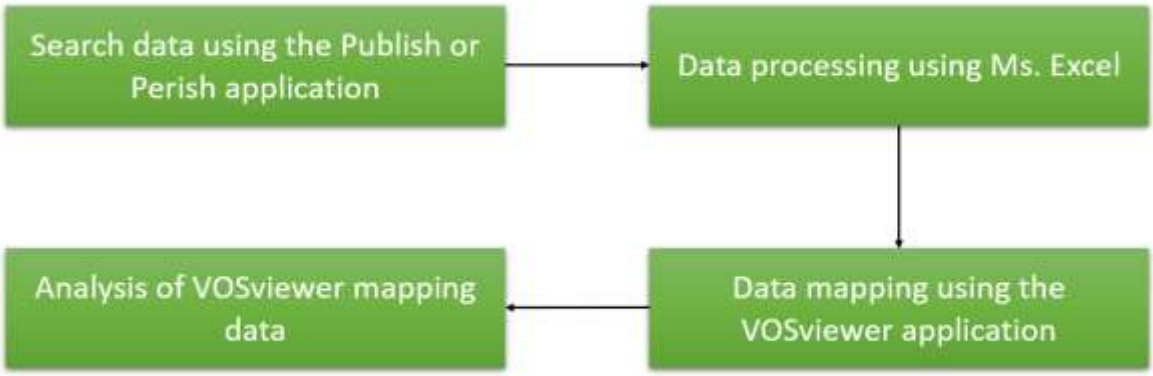

Figure 1. Stages of bibliometric analysis.

2.1. Publication data search

The search for publication data in this study used the publish or perish application. Publish or perish is an application that can be used to search article data based on keywords, titles, authors and publication names with a minimum range of years of the last 5 years.

The article data used in this study is article data that has been published and indexed by Google Scholar with a range of years from 2017 – 2022. The keyword used in the data search is "briquettes" with the maximum number of results that would be obtained as many as 1000 articles. The number of articles obtained from the publish or perish search results is 973 articles.

After the data search is complete, the data would be saved in 2 file forms, namely RIS and CSV formats. The RIS format is used to map data using VOSviewer, while the CSV format is used for data processing using Microsoft Excel. The use of the publish or perish application in detail has been discussed in our previous research (Al Husaeni & Nandiyanto, 2022).

2.2. Publication data processing

The publish or perish search result data is processed using Ms. Excel. Files with CSV format are used in the processing of article data that has been found in the previous stage. Data processing using Ms. Excel is carried out to obtain data on the number of articles per year and see the research that has been carried out by researchers regarding briquettes.

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2.3. Publication data mapping

Vosviewer applications are used to map search result data using publish or perish. Data stored in RIS format is used in data mapping using VOSviewer. We have explained the steps to use the VOSviewer application in detail in our previous research (Al Husaeni & Nandiyanto, 2022).

2.4. Analysis of mapping data

The mapped data was then analyzed for seers of research developments on briquettes. In addition, the data from this mapping is analyzed in order to get the results of whether research on briquettes is often carried out or not.

3. RESULTS AND DISCUSSION

3.1. The development of research on briquettes

As shown in **Figure 2**, the development of research on briquettes has decreased in the last three years, namely 2020, 2021, and 2022. In 2017 the number of studies was 182 articles and continued to increase although not many were 184 in 2018 and 186 in 2019. The increase in the number of publications regarding briquettes did not last long because in the next three years the number of publications decreased, namely 182 in 2020, 150 in 2021, and 89 in 2022.

The decline in the number of publications in 2020, 2021, and 2022 was caused by the Covid-19 pandemic (Horbach, 2020; Harper, 2020). During the Covid-19 pandemic, there are policies such as: social distancing, and lockdown. These policies are one of the causes of the difficulty of conducting briquettes research so that the number of publications decreases. In addition, a drastic decrease in the number of publications in 2022 can also be caused by the not yet end of the year.

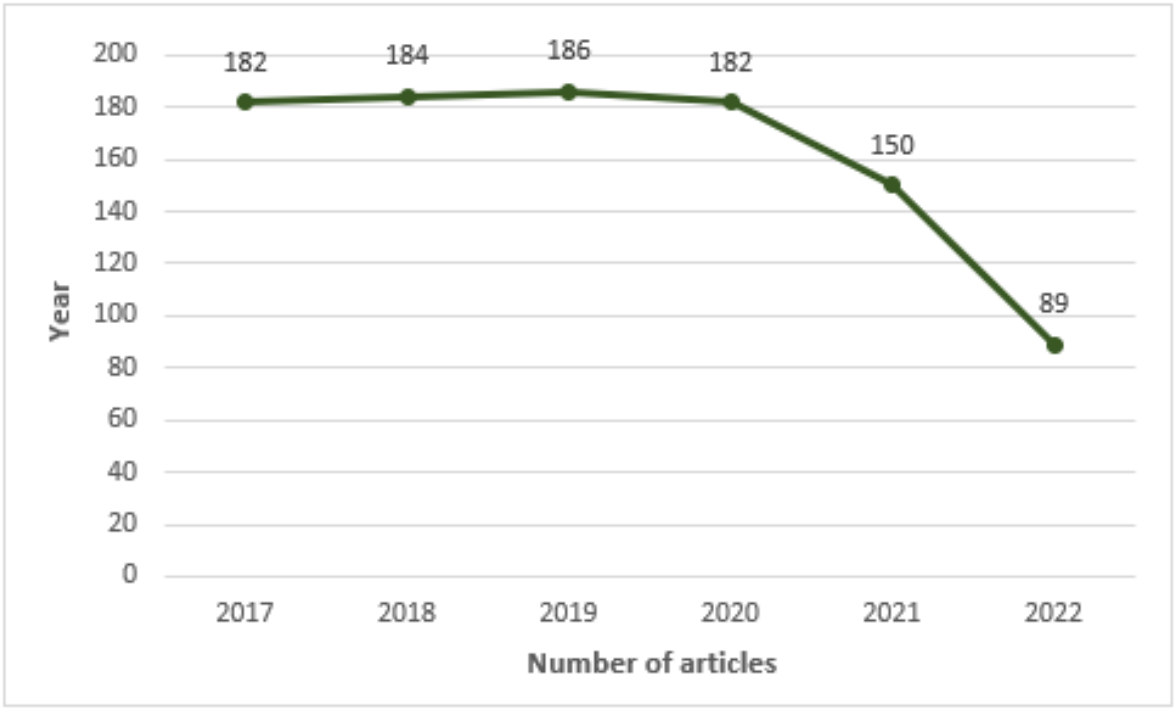

Figure 2. The development of research on briquettes.

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3.2. Bibliometric analysis of keywords, terms, and topic trends

Figure 3 shows a visualization network of mapping results using the VOSviewer application. In the visualization network, various clusters can be identified that are distinguished by different colors (Nandiyanto *et al*., 2022; Al Husaeni & Nandiyanto, 2023). In addition, through the visualization network, it can also be seen that the keywords used in this study are in cluster 2 consisting of 21 items and have a total of 110 links. The term briquette was most often researched in 2019. This can be seen in **Figure 4**.

Each term contained in **Figure 3** is circular with a different size. The size of the node indicates the frequency with which each term appears. Each node or term is connected by a line where the shorter the distance between two nodes, the greater the number of occurrences of the node or term (Nugraha *et al*., 2022).

Figure 4 shows the shape of the overlay visualization. In the overlay visualization image, there is a scale menu that shows the color from purple to yellow. The color shows 6 clusters.

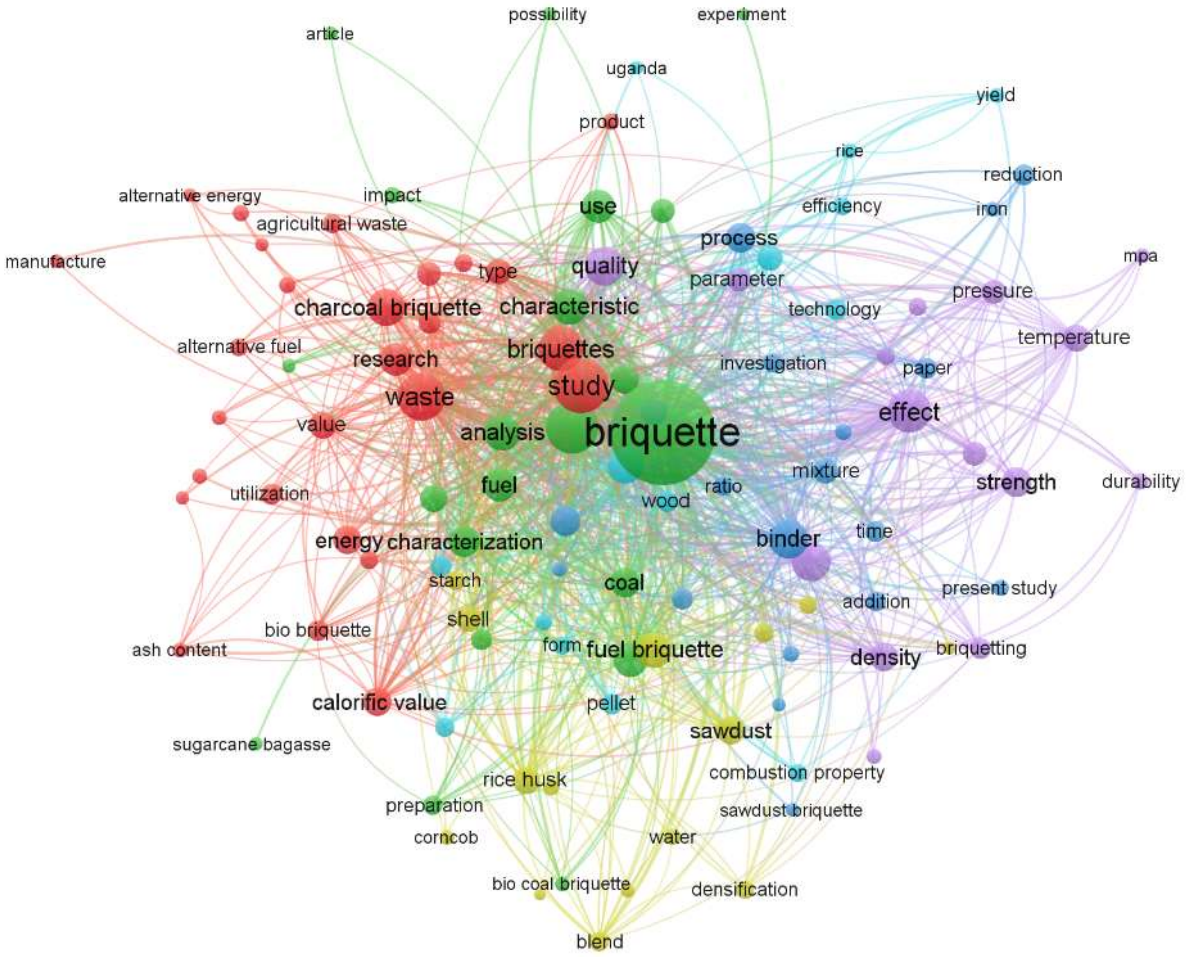

Figure 3. Network visualization data mapping results.

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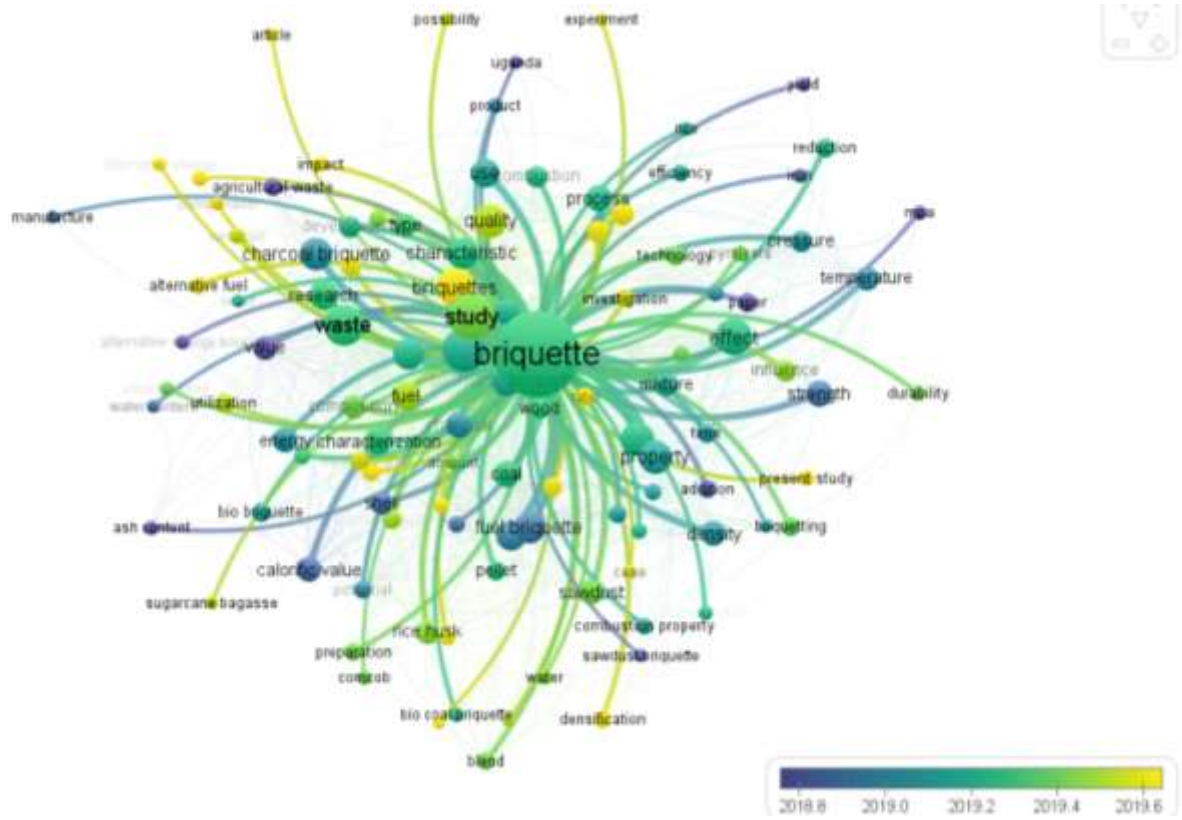

Figure 4. Overlay visualization.

4. CONCLUSION

This study was conducted to analyze bibliometric articles about the material. In this study the keyword briquette was used in the data search process. The search process is based on topic areas with titles, keywords, and abstracts. After the search process was carried out, 973 relevant articles were obtained. After that, the mapping process is carried out using VOSviewer. Based on the results of analysis and mapping with VOSviewer, it is known that briquettes with briquette terms are most studied in the 2017-2022 range. In addition, research figures in 2020 - 2022 where the covid-19 outbreak began to decrease from the previous year, namely 2017-2019. The low number of publications on briquettes in 2022 provides an opportunity for researchers who would conduct research on related keywords.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

6. REFERENCES

Al Husaeni, D. F., and Nandiyanto, A. B. D. (2022). Bibliometric using VOSviewer with Publish or Perish (using google scholar data): From step-by-step processing for users to the

practical examples in the analysis of digital learning articles in pre and post Covid-19 pandemic. *ASEAN Journal of Science and Engineering, 2*(1), 19-46.

Al Husaeni, D. N., and Nandiyanto, A. B. D. (2023). A bibliometric analysis of vocational school keywords using VOSviewer. *ASEAN Journal of Science and Engineering Education, 3*(1), 1-10.

Al Husaeni, D. N., Nandiyanto, A. B. D., and Maryanti, R. (2023). A bibliometric analysis of vocational school keywords using VOSviewer. *Indonesian Journal of Community and Special Needs Education, 3*(1), 1-10.

Aldhafi, A., and Nandiyanto, A.B.D. (2021). A bibliometric analysis of carbon nanotubes synthesis research using vosviewer. *International Journal of Research and Applied Technology (INJURATECH), 1*(2), 76-81.

Harper, L., Kalfa, N., Beckers, G. M. A., Kaefer, M., Nieuwhof-Leppink, A. J., Fossum, M., Herbst, K. W., Bagli, D., and ESPU Research Committee. (2020). The impact of COVID-19 on research. *Journal of Pediatric Urology, 16*(5), 715-716.

Horbach, S. P. (2020). Pandemic publishing: Medical journals strongly speed up their publication process for COVID-19. *Quantitative Science Studies, 1*(3), 1056-1067.

Jamilatun, S. (2008). Sifat-sifat penyalaan dan pembakaran briket biomassa, briket batubara dan arang kayu. *Jurnal Rekayasa Proses, 2*(2), 37-40.

McKendry, P. (2002). Energy production from biomass (part 1): Overview of biomass. *Bioresource Technology, 83*(1), 37-46.

Nandiyanto, A. B. D., Al Husaeni, D. N., Ragadhita, R., Fiandini, M., Al Husaeni, D. F., and Aziz, M. (2022). Resin matrix composition on the performance of brake pads made from durian seeds: From computational bibliometric literature analysis to experiment. *Automotive Experiences, 5*(3), 328-342.

Nandiyanto, A. B. D., Al Husaeni, D. F, and Ragadhita, R. (2023). Bibliometric data analysis of research on resin-based brake-pads from 2012 to 2021 using vosviewer mapping analysis computations. *ASEAN Journal for Science and Engineering in Materials, 2*(1), 35-44

Nugraha, A. S. (2022). Bibliometric analysis of magnetite nanoparticle production research during 2017-2021 using VOSviewer. *Indonesian Journal of Multidiciplinary Research, 2*(2), 327-332.

Nugraha, A., Fatimah, S., and Nandiyanto, A. B. D. (2022). The research trends of rice husk-based briquettes using bibliometric analysis. *Journal of Earth Energy Science, Engineering, and Technology, 5*(2), 55-65.

Nugraha, S. A., and Nandiyanto, A. B. D. (2022). Bibliometric analysis of magnetite nanoparticle production research during 2017-2021 using Vosviewer. *Indonesian Journal of Multidiciplinary Research, 2*(2), 327-332.

DOI:
p- ISSN 2828-920X e- ISSN 2828-9951

Ragahita, R., and Nandiyanto, A. B. D. (2022). Computational bibliometric analysis on publication of techno-economic education. *Indonesian Journal of Multidiciplinary Research, 2*(1), 213-220.

Satmoko, M. E. A., Saputro, D. D., and Budiyono, A. (2013). Karakterisasi briket dari limbah pengolahan kayu sengon dengan metode cetak panas. *Journal of Mechanical Engineering Learning, 2*(1), 1-8.

DOI:
p- ISSN 2828-920X e- ISSN 2828-9951