Vol 7 (2022)

Table of Contents

Articles

Editorial Team

Editors

Dr. Ir. Dina Poerwoningsih, [SCOPUS ID: 57194446655] Department of Architecture, University of Merdeka Malang
Vichy Fathoni, University of Merdeka Malang
Vichy Fathoni, University of Merdeka Malang
Vichy Fathoni, University of Merdeka Malang, Indonesia
Dr. Pindo Tutuko, Universitas Merdeka Malang, Indonesia

BIBLIOMETRIC ANALYSIS OF SUSTAINABLE ARCHITECTURE IN INDONESIA

Albertus Nahak[1], Dina Poerwoningsih [2], Pindo Tutuko[3]
[1.2.3] University of Merdeka Malang,
* Corresponding Author: Albertus Nahak. E-mail albert.asb57@gmail.com

ABSTRACT

Sustainable architecture, also known as green architecture, is a good solution to maintain environmental impacts due to development, by paying attention to sustainability, materials, materials, energy, and ecosystems for future generations in line with the goals of the Sustainable Development Goals (SDGs). The purpose of writing this article is to analyze various articles from international-based scientific publications, namely "Elsevier" with keywords or topics about "sustainable architecture" in Indonesia. The method of writing this article uses bibliometric analysis to describe quantitative data from international studies related to the topic of sustainable architecture in Indonesia. The technique of collecting data from Elsevier is by setting the search term "Sustainable Architecture" and then determining the publication period for 2012-2022. The study instruments are (1) trends publications in 2012-2022; (2) type of publication; (3) core journals in international publications; (4) subject area of study; (5) mapping of study themes based on keywords and authors; (6) study productivity; and (7) distribution regional by author. The results of the analysis of the percentage of publications per year show that the issue of sustainable architecture in Indonesia has received enough attention from local and international academics. Academic attention to the topic is very high with a high intention and desire to publish their findings in an international journal scale. The best approach in the study of sustainable architecture is to pay attention to social, environmental, artistic, and humanities aspects.

Keywords: Sustainable architecture; SDGs; Indonesia; Publication; Bibliometrics.

1. INTRODUCTION

At present, the construction industry has turned to the consumption of a large number of natural resources in line with global population growth, which has led to a shortage of resources, and consequently an increase in construction debris; Therefore, this article has studied the positive and negative points of the architectural development process. More integrity will be observed between the construction and natural environments, both in past architectural developments and in future architectural upgrades [1].

The principle of sustainability or meeting the needs of the current generation without imposing the needs of future generations is a major concern in the development of modern infrastructure [2]. Sustainability is very important for urban development in ethnic minority autonomous regions to achieve economic, social, and environmental development [3].

From an economic perspective, ensuring food security can increase sustainability, and, at the same time, demonstrate widely perceived economic value [4]. Understanding capacity and overall development status are critical to implementing ecosystem protection strategies while balancing community needs. Integrating ecosystem dynamics, changes in resource consumption, and resource utilization rates from a systems view can inform strategies and management decisions for sustainable development [5].

This article aims to discuss sustainable architecture in Indonesia, using bibliometric analysis, to find out the trend of publication development by topic. This study followed a systematic literature review approach along with bibliometric analysis, to identify relevant papers and the most important themes in the field. Bibliometrics provides a valuable tool for quantitative analysis of development and growth in specific research areas [6];[7].

In general, bibliometrics can be divided into two classes. The former is based on activity level, which provides data on the impact of research, such as current topics in the area, key countries, and journals. The other is the application of relationship indicators and social network analysis to monitor the connections and linkages between different keywords, countries, and institutions [8]. Bibliometric techniques have been used in various fields of environmental-related research, such as wetlands [9], river pollution [10], dan and soil remediation [11].

Through bibliometrics and other methods, this study identifies the development of the number of international publications in 2012-2022; type of publication; core journals in international publications; field/subject of study; mapping of study themes based on keywords and authors; Articles Productivity; and Distribution regional of authors on an international stage.

2. RESEARCH METHODS

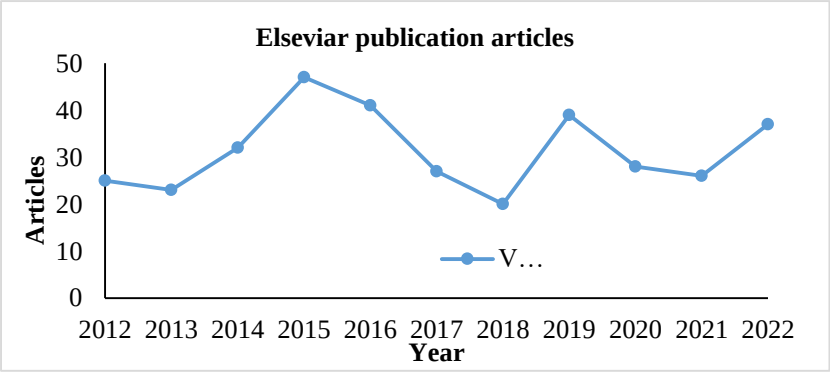
The research method is descriptive quantitative, by collecting data on international journal publications from the Scopus database. The collection of scientific publication articles using Harzhing Publish or Perish, the search term or search keywords refers to the theme, namely "sustainable architecture in Indonesia". Search sources using the database (Scopus) with the determination of the publication period of articles ranging from 2012-2022. The analytical study instruments include; (1) trends publications in 2012-2022; (2) type of publication; (3) core journals in international publications; (4) field/subject of articles; (5) mapping of articles themes based on keywords and authors (6) Study productivity; and (7) Distribution Regional of the author. Instrumental analysis techniques used Microsoft excel 2013 and analyzed using VosViewer.

3. RESULTS AND DISCUSSION

Publication Trends

Search results using the keyword "Sustainable Architecture" in Indonesia from 2012-2022 found 344 articles. Based on the graph above, shows that the increase in international standard publications according to search topics increased in 2015 with the number of publications of 45 articles or (14%) followed by publications in 2016 of 41 articles or (12%), while the lowest number of publications occurred in 2018 which was 20 articles or (6%). The percentage of publications per year shows that the issue of sustainable architecture in Indonesia has received enough attention from local and international academics, where almost every year studies on sustainable architecture are published, both interdisciplinary and multidisciplinary.

Figure 1. Graph of Article Publication Progress



Source; Excel Analysis

Publication Type

Table 1. Articles by Publication Type

Article Type	Value
Review Articles	8
Research Articles	319
Encyclopedia	2
Book Chapters	10
Data-Articles	1
Editorials	1
Short Communication	3

Source; Sciencedirect

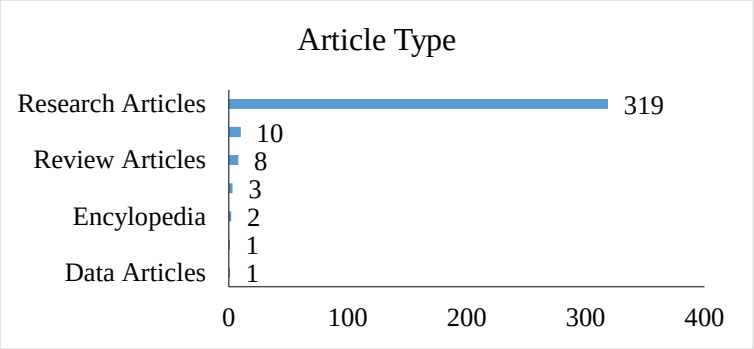


Figure 2. Article Graph by Publication Type
Source; Excel Analysis

Data based on the search for the keyword "Sustainable Architecture" in Indonesia is divided by type of article according to table 1 and figure 2 as many as 7 types. The highest published type of article is research articles with 319 or (93%) followed by book chapters, article reviews, brief communications, encyclopedias, and editorials as well as article data. Based on the data above, it can be concluded that academics' attention to the topic is very high with a high intention and desire to publish their findings in an international journal scale.

Core Journals in International Publications

Table 2. Publication Sources

Publication Title	Value
Procedia - Social and Behavioral Sciences	52
Procedia Environmental Sciences	25
Procedia Engineering	18
Procedia Computer Science	13
International Journal Of Disaster Risk Reduction	12
Cities	9
Environmental Science & Policy	7
Journal of Cleaner Production	6
Forest Policy and Economics	6
Marine Policy	5
Global Environmental Change	5

Sustainable Cities and Society	5
Transportation Research Procedia	5
Heliyon	5
Geoforum	4
Journal of Volcanology and Geothermal Research	4
Quaternary Science Reviews	4
Energy Procedia	4
Frontiers Of Architectural Research	4
City, Culture, and Society	3
Remote Sensing of Environmental	3
Habitat International	3
World Development	3
Rewneble and Sustainable Energy Reviews	3
Procedia CIRP	3

Source; Sciencedirect

Based on table 2, the highest publication based on the source of publication of top-ranked articles from studies in the field of social and behavioral sciences with 52 articles or (25%) followed by the second highest ranking in the field of environmental science with 25 articles or (12%). So the concept of sustainable architecture is very concerned with environmental, social, and humanities aspects.

Subject Area

Table 3. Study Subject Area

Subject Areas	Value
Social Sciences	141
Environmental Science	96
Arts and Humanities	53
Earth and Planetary Sciences	45
Agricultural and Biological Sciences	41
Energy	40
Engineering	40
Business, Management, and Accounting	22
Economics, Econometrics, and Finance	22
Computer Science	19

Source; Sciencedirect

Based on table 3 and figure 3, it can be seen that published articles based on study subjects are dominated by social science studies with 141 articles or (27%), following studies from environmental science with 96 articles or (18%), arts and humanities with 53 articles or (10%) . Subject Area Figure 3. Article Graph by subject area The following facts prove that the academic sector or the intellectuals are very concerned about the social, environmental, and arts and humanities scope in conducting research. From these facts, it is known that the best approach in the study of sustainable architecture is to pay attention to social, environmental, artistic, and humanities aspects.

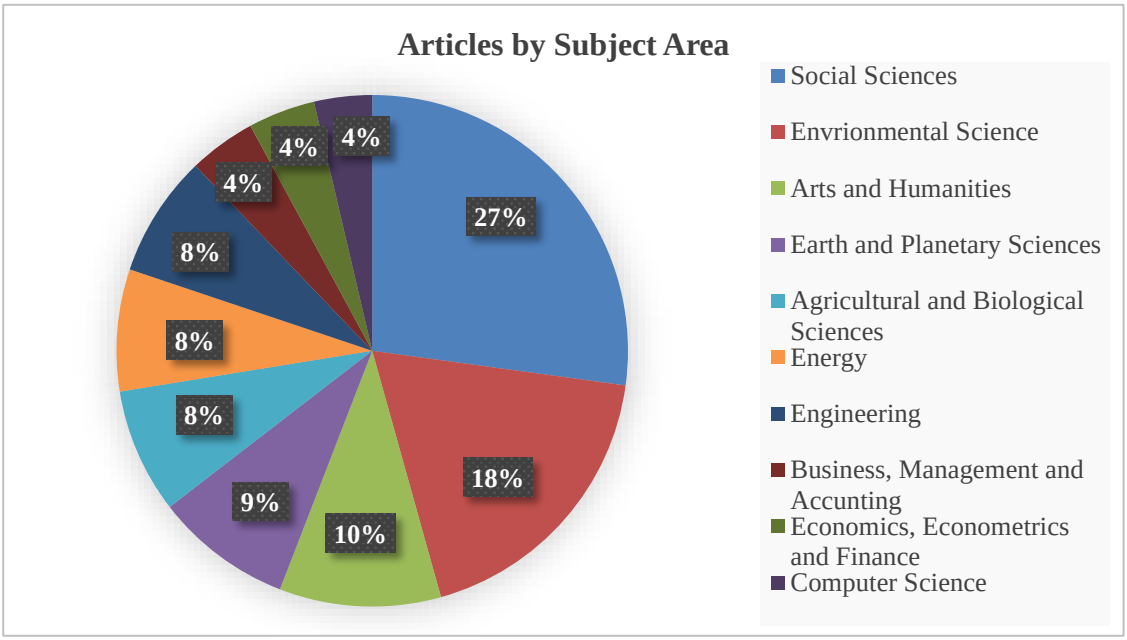


Figure 3. Article Graph by subject area
Source; Excel Analysis

Mapping Theme of the Study

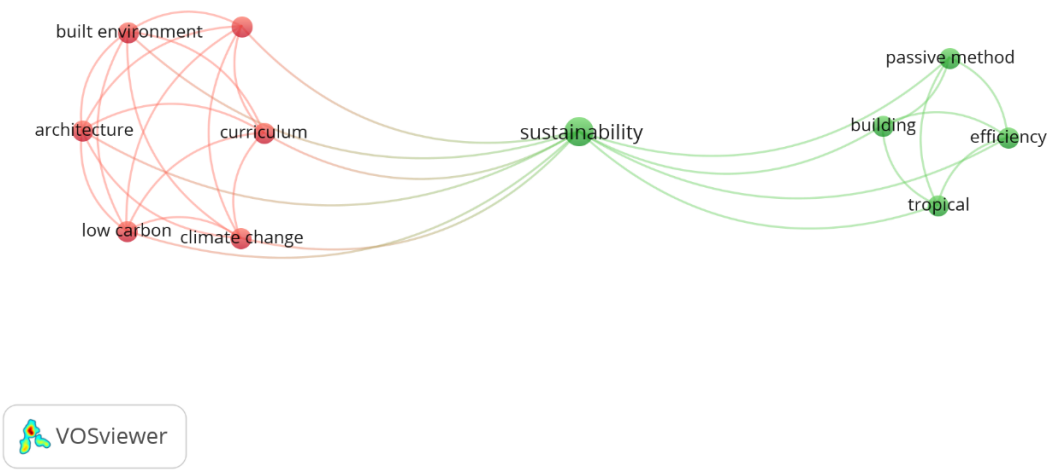


Figure 4. Mapping the Theme of Sustainable Architecture Studies
Source; VOSviewer Analysis

Figure 4 is an analysis of VosViewer based on keywords, the results of the analysis show that the study map consists of 2 clusters. The first cluster consists of; architecture, built environment, climate change, curriculum, low carbon, and profession. The second cluster consists of building, efficiency, passive method, sustainability, and tropical. The results of the analysis show that sustainable studies are an interesting theme with a very broad scope, it can be concluded that architectural studies from the aspects of art, science, culture, and the

environment strongly emphasize sustainability aspects, as well as the field of engineering studies.

The productivity of the Articles by Authors

Table 4. Authors Productivity

Authors	Amount
Arifin H.S	11
Arifin N	11
Fujita T	11
Gomi K	11
Kaswanto R.L	11
Koakutsu K	11
Muchtar M	11
Munandar A	11
Nakano R	11
Nugroho S.B	11
Takahashi K	11
Zusman E	11

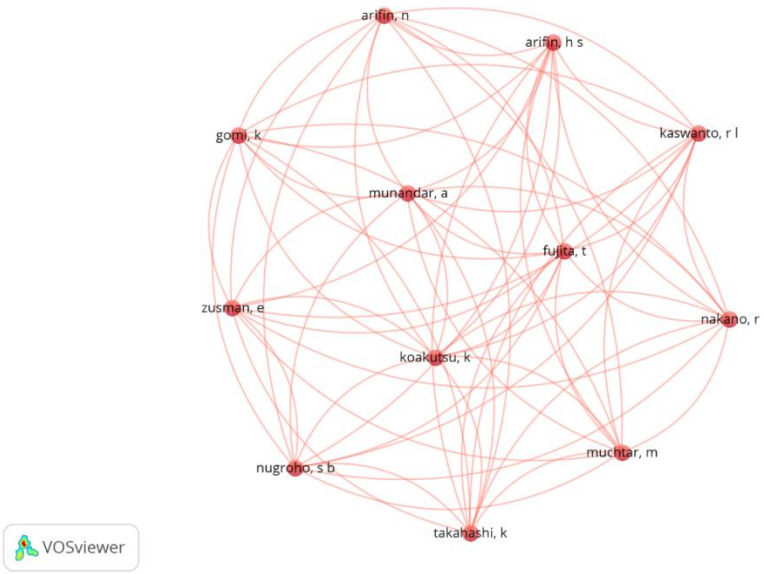


Figure 5. Analysis of Author Productivity VosViewer
Source; VOSviewer Analysis

Author productivity according to Vosviewer analysis, it is known that the productivity level of the top 10 authors has the same productivity as the number of each 11 publications.

The Author's Regional Distributions

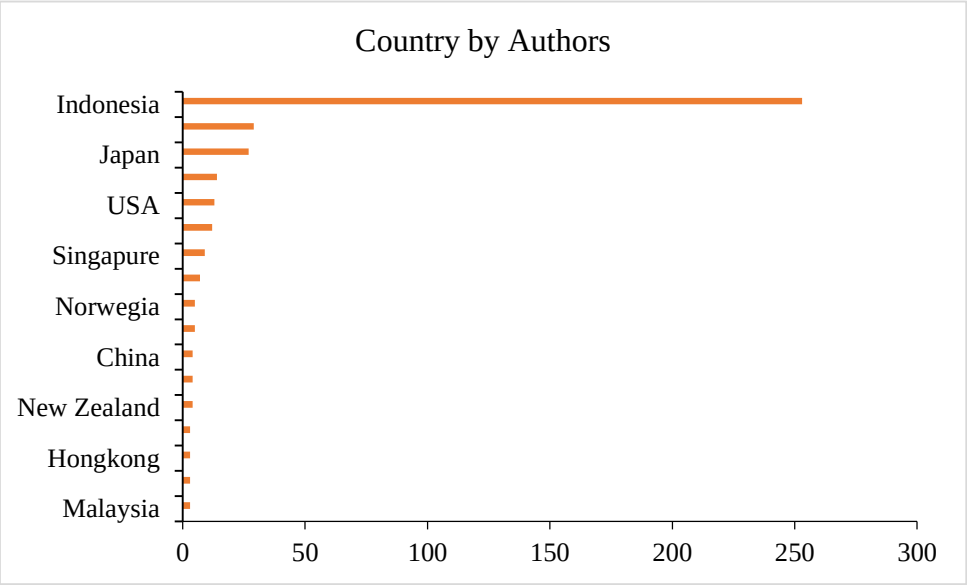


Figure 6. Author's Region
Source; Sciencedirect

The data based on Figure 6 shows the country of origin of the author in the study of "Sustainable Architecture". Indonesia is at the top, this proves that many Indonesian scholars are proactive in conducting studies on sustainability architecture in Indonesia.

4. CONCLUSION

Indonesia is a country of multicultural; of course, the focus of Indonesia's development is the main concern, in realizing a harmonious life now and in the future. Aspects of sustainability in all aspects must be considered for the sustainability of the lives of future generations. Based on a brief study of sustainable architecture in Indonesia using bibliometric methods, shows an index of positive facts. First, academics always follow the trend of publishing scientific works, especially the study of sustainable architecture in Indonesia. Both academics' attention to the topic is very high with a high intention and desire to publish their findings on an international journal scale. Third, the concept of sustainable architecture pays great attention to environmental, social, and humanities aspects. The four scholars gave the direction that the best approach in the study of sustainable architecture was to pay attention to social, environmental, artistic, and humanities aspects. Fifth sustainable studies become an interesting theme with a very broad scope, it can be concluded that architectural studies from the aspects of art, science, culture, and the environment strongly emphasize the sustainability aspect, as well as the field of engineering studies. Sixth on a global scale, scholars have a high potential to compete in the academic field; this can be seen from the topic of sustainable architecture studies which shows Indonesia as the highest writing area in sustainable architecture studies.

REFERENCES

[1] S. M. H. Honarvar, M. Golabchi, and M. B. Ledari, "Building circularity as a measure of sustainability in the old and modern architecture: A case study of architecture development in the hot and dry climate," *Energy Build.*, vol. 275, p. 112469, 2022, doi: https://doi.org/10.1016/j.enbuild.2022.112469.

[2] S. Assefa, H.-Y. Lee, and F.-J. Shiue, "A building sustainability assessment system (BSAS) for least developed countries: A case of Ethiopia," *Sustain. Cities Soc.*, vol. 87, p. 104238, 2022, doi: https://doi.org/10.1016/j.scs.2022.104238.

[3] R. Shi, P. Yi, W. Li, and L. Wang, "Sustainability self-determination evaluation based on the possibility ranking method: A case study of cities in ethnic minority autonomous areas of China," *Sustain. Cities Soc.*, vol. 87, p. 104188, 2022, doi: https://doi.org/10.1016/j.scs.2022.104188.

[4] D. de O. Alves and L. de Oliveira, "Commercial urban agriculture: A review for sustainable development," *Sustain. Cities Soc.*, vol. 87, p. 104185, 2022, doi: https://doi.org/10.1016/j.scs.2022.104185.

[5] Y. Fan and C. Fang, "Measuring Qinghai-Tibet plateau's sustainability," *Sustain. Cities Soc.*, vol. 85, p. 104058, 2022, doi: https://doi.org/10.1016/j.scs.2022.104058.

[6] G. Blanco-Zaitegi, I. Álvarez Etxeberria, and J. M. Moneva, "Biodiversity accounting and reporting: A systematic literature review and bibliometric analysis," *J. Clean. Prod.*, vol. 371, p. 133677, 2022, doi: https://doi.org/10.1016/j.jclepro.2022.133677.

[7] M. Ding and H. Zeng, "A bibliometric analysis of research progress in sulfate-rich wastewater pollution control technology," *Ecotoxicol. Environ. Saf.*, vol. 238, p. 113626, 2022, doi: https://doi.org/10.1016/j.ecoenv.2022.113626.

[8] G. Mao, H. Hu, X. Liu, J. Crittenden, and N. Huang, "A bibliometric analysis of industrial wastewater treatments from 1998 to 2019," *Environ. Pollut.*, vol. 275, p. 115785, 2021, doi: https://doi.org/10.1016/j.envpol.2020.115785.

[9] G. S. Colares *et al.*, "Floating treatment wetlands: A review and bibliometric analysis," *Sci. Total Environ.*, vol. 714, p. 136776, 2020, doi: https://doi.org/10.1016/j.scitotenv.2020.136776.

[10] W. Yuan, C. Xiang, P. Zhao, M. Guozhu, and H. Du, "A bibliometric analysis for the research on river water quality assessment and simulation during 2000–2014," *Scientometrics*, vol. 108, Jun. 2016, doi: 10.1007/s11192-016-2014-2.

[11] M. Guozhu, T. Shi, S. Zhang, J. Crittenden, S. Guo, and H. Du, "Bibliometric analysis of insights into soil remediation," *J. Soils Sediments*, vol. 18, Jul. 2018, doi: 10.1007/s11368-018-1932-4.