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# Computational Bibliometric Analysis of Research on Science and Islam with VOSviewer: Scopus Database in 2012 to 2022

*Dwi Fitria Al Husaeni\*, Dwi Novia Al Husaeni*

Departemen Pendidikan Ilmu Komputer, Universitas Pendidikan Indonesia, Indonesia
*Correspondence: E-mail: dwifitriaalhusaeni@upi.edu

**A B S T R A C T**

This research was conducted to conduct bibliometric analysis in the scope of science and Islamic research. The research method is a bibliometric analysis using VOSviewer as a mapping tool. Bibliometric analysis research has 4 stages: (i) searching for data using the publish or perish application, (ii) processing data using Ms. Excel, (iii) mapping the data using the VOSviewer application, and (iv) analyzing the data from the VOSviewer mapping. The research data material was collected from the Scopus database from 2012 to 2022. The search process was carried out using the keywords "Science" and "Islam". The results showed that the average number of citations to articles on science and Islam from 2012-2021 was 296.20 per year and the average number of citations per article was 14.18. The development of research on science and Islam from year to year continues to decline. The highest research occurred in 2012 with 39 publications and in 2022 no publications. Islam, science, Islamic perspective, education, and study are the terms most associated with scientific and Islamic research. The countries most associated with this research are Indonesia and Malaysia. This review is expected to be used as study material and reference material for further research in determining the field of study and the novelty of the research to be carried out.

**A R T I C L E   I N F O**

## 1. INTRODUCTION

Bibliometric is the oldest study in library science and belongs to quantitative studies. Bibliometric studies are library studies that apply statistics and mathematics (Kannan & Thanuskodi, 2019). Bibliometrics is one of the methods used to analyze research that has been done. Bibliometrics can be used to find out the direction and trend of science in various disciplines and to know the subjects or fields of these disciplines. The results of the bibliometric analysis can be displayed through a mapping. The bibliometric analysis displayed in a mapping can provide an overview of various information on the development of the field of science and the performance of the research carried out. VOSviewer is a software that can be used as a mapping tool for bibliometric analysis.

VOSviewer is a bibliometric mapping software. VOSviewer is a software that can be used to build and visualize bibliometric networks such as journals, titles, authors, authors, and publications (Hudha *et al.*, 2020). VOSviewer can produce mapping images in three types, namely network visualization, density visualization, and overlay visualization (Al Husaeni & Nandiyanto, 2022). VOSviewer is also capable of mapping various types of bibliometric analysis, generating major bibliographic databases, and advanced visualizations with visual labeling.

There have been many studies that have conducted a bibliometric analysis using the VOSviewer mapping tools. These studies include Digital learning (Al Husaeni & Nandiyanto, 2022), Computer science (Al Husaeni & Nandiyanto, 2023a), Vocational school (Al Husaeni & Nandiyanto, 2023b), High school (Al Husaeni & Nandiyanto 2023c), Covid-19 research (Hamidah *et al.*, 2020), Scientific publications (Mulyawati & Ramadhan 2021), Chemical engineering (Nandiyanto *et al.*, 2021), Materials research (Nandiyanto & Al Husaeni, 2021), Special Needs Education (Al Husaeni *et al.*, 2023a), Publication of Techno-Economic Education (Ragahita & Nandiyanto, 2022), Engine performance (Setiyo *et al.*, 2021), Dataset portrays decreasing number of scientific publications (Nandiyanto *et al.*, 2020a), Application in robotic hand systems (Castiblanco *et al.*, 2021), Research effectiveness in a subject area among top class universities (Nandiyanto *et al.*, 2020b), Educational Research (Al Husaeni *et al.*, 2023b), Management of bioenergy (Soegoto *et al.*, 2022), Magnetite Nanoparticle (Nugraha, 2022), Nanocrystalline Cellulose Production Research (Fauziah, 2022), Nano Metal-Organic Frameworks Synthesis (Shidiq, 2023), Titanium Dioxide Nanoparticle Synthesis (Nugraha & Nandiyanto, 2022), Nanocrystalline Cellulose (Maulidah & Nandiyanto, 2022), Carbon Nanotubes (Aldhafi & Nandiyanto, 2021), and Nano-Sized Agricultural Waste Brake Pads (Deni & Nandiyanto, 2022).

Based on these data, the collection of published data on the studies that have been carried out is taken from the Google Scholar database. In addition, no research analyzes bibliometrics from the field of Islamic religious studies related to science. Therefore, this study was conducted with the aim of conducting a bibliometric analysis of research data on Science and Islam taken from the Scopus database with a range of 2012 to 2022 using the mapping tools VOSviewer. The novelty of this research is (i) the field of study that is taken is focusing on Science and Islam; (ii) bibliometric analysis is performed computationally using mapping tools; (iii) data collection focuses on research published in Scopus indexed journals from 2012 to 2022. The results of this study are expected to be a reference as material to consider the field of study and the novelty of further research, especially in research in the field of science and Islam.

## 2. METHOD

Bibliometric analysis research has 4 stages, namely searching for data using the publish or perish application, processing data using Ms. Excel, mapping the data using the VOSviewer application, and analyzing the data from the VOSviewer mapping shown in **Figure 1**.
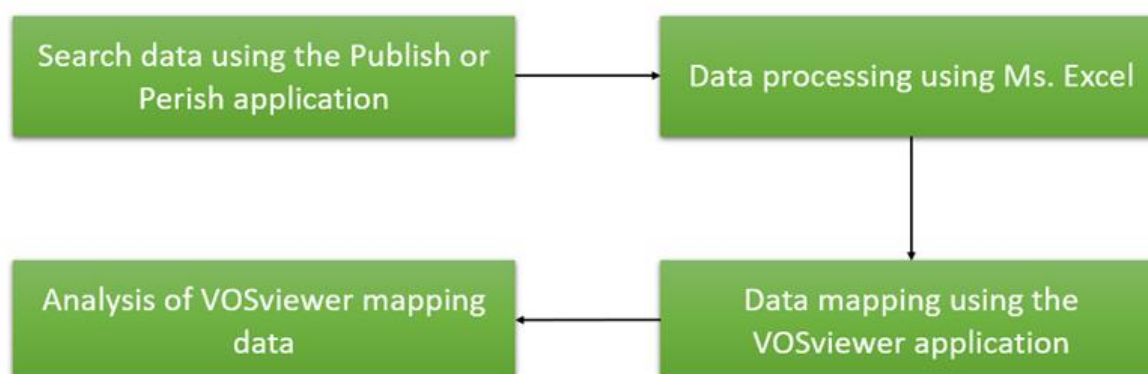


**Figure 1.** Stages of bibliometric analysis.

### 2.1. Publication Data Search

The search for publication data in this study uses 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 year range of the last 5 years. The article data used in this study is the data of articles that have been published and indexed by Scopus with a range of years from 2012 - 2022. The keywords used in the data search are "Science", "Islam", and "Islamic" with the maximum number of results obtained. will get as many as 1000 articles. The number of articles obtained from the publish or perish search results are 200 articles. After the data search is complete, the data will be saved in 2 file forms, namely *.ris and csv formats. *.ris format is used to map data using VOSviewer, while csv format is used for data processing using Microsoft Excel.

### 2.2. Processing of Publication Data

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

### 2.3. Publication Data Mapping

VOSviewer application is used to map search result data using publish or perish. Data stored in *.ris format is used in data mapping using VOSviewer.

### 2.4. Mapping Result Data Analysis

The data that has been mapped is then analyzed to see the development of research on "Science", "Islam", and "Islamic". The data from this mapping were analyzed to obtain existing research trends and the results of terms that are often used as study material to find novelty for further research.

## 3. RESULTS AND DISCUSSION
## 3.1. Number of Research Citations

**Table 1** shows the 20 publications on science and Islam with the highest number of citations. Based on **Table 1** article with the title "Islamic marketing - a challenger to the classical marketing canon?" is a Scopus-indexed journal article that has the highest number of citations, namely 132. The average number of citations for articles on science and Islam from 2012-2021 is 296.20 per year and the average citation per article is 14.18. The number of citations for all publications is 2962. The H-Index of all papers with related themes is 25 and the g-index is 39.

**Table 1**. Publications on science and Islam with the highest number of citations.

| No | Cites | Authors | Title | Year | Source | Ref |
|---|---|---|---|---|---|---|
| 1 | 132 | J. Wilson | Islamic marketing – a challenger to the classical marketing canon? | 2013 | Journal of Islamic Marketing | Wilson and Grant (2013) |
| 2 | 102 | J. Wilson | The new wave of transformational Islamic marketing: Reflections and definitions | 2012 | Journal of Islamic Marketing | Wilson (2012) |
| 3 | 73 | M. Atia | "A Way to Paradise": Pious Neoliberalism, Islam, and Faith-Based Development | 2012 | Annals of the Association of American Geographers | Atia (2012) |
| 4 | 63 | T.B. Pepinsky | Testing Islam's Political Advantage: Evidence from Indonesia | 2012 | American Journal of Political Science | Pepinsky et al. (2012) |
| 5 | 53 | M. Adawi | Ramadan fasting exerts immunomodulatory effects: Insights from a systematic review | 2017 | Frontiers in Immunology | Adawi et al. (2017) |
| 6 | 52 | M. Joshanloo | A Comparison of Western and Islamic Conceptions of Happiness | 2013 | Journal of Happiness Studies | Joshanloo (2013) |
| 7 | 46 | F. Borhani | Commitment to care: A qualitative study of intensive care nurses' perspectives of end-of-life care in an Islamic context | 2014 | International Nursing Review | Borhani et al. (2014) |
| 8 | 41 | A.C. Miller | Brain death and islam: The interface of religion, culture, history, law, and modern medicine | 2014 | Chest | Miller et al. (2014) |
| 9 | 40 | A. Sahin | Critical issues in islamic education studies: Rethinking islamic and western liberal secular values of education | 2018 | Religions | Sahin (2018) |
| 10 | 39 | A. Saniotis | Muslims and ecology: Fostering Islamic environmental ethics | 2012 | Contemporary Islam | Saniotis (2012) |

### 3.2. Publication Progress Per Year

**Figure 2** shows the development of research on science and Islam published in Scopus-indexed journals tends to decline. The highest research occurred in 2012 with 39 publications. In 2022 there will be no publications on science and Islam published in Scopus-indexed journals. The number of publications on science and Islam per year is 39 publications in 2012, 2013 is 38 publications, 2014 is 33 publications, 2015 is 11 publications, 2016 is 23 publications, 2017 is 17 publications, 2018 is 12 publications, 2019 is 12 publications, 2020 has 9 publications, 2021 has 6 publications, and 2022 there are no publications. This shows that the trend of research on science and Islam is no longer popular.
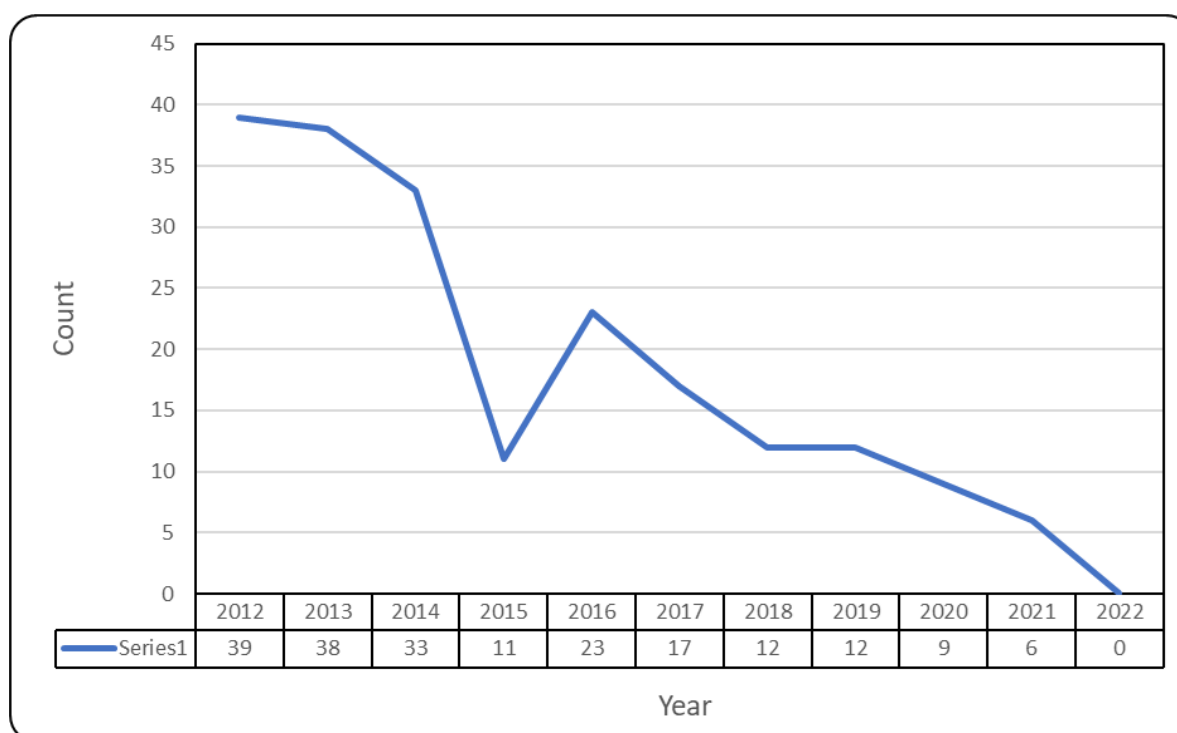
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Series1 | 39 | 38 | 33 | 11 | 23 | 17 | 12 | 12 | 9 | 6 | 0 |

**Figure 2.** The development of publications on science and Islam.

### 3.3. Map of Publication Development Based on Keywords

Each node in the network represents an entity (for example, articles, authors, countries, institutions, keywords, journals) (Donthu *et al.*, 2021), and in the case shown in **Figure 3** there are several descriptions, including:
(i) Cover color measures indicate keyword occurrence (i.e., how many times the keyword occurs),
(ii) Relationships between nodes represent co-occurrence between keywords (that is, keywords that occur together or occur together),
(iii) Link thickness indicates co-occurrence between keywords (i.e., the number of times keywords co-occur or occur together),
(iv) The bigger the node, the bigger the keywords appear, and
(v) The thicker the links between nodes, the greater the co-occurrence between keywords.
  Each color represents a thematic cluster, where the nodes and links within the cluster can be used to explain the scope of the topic (node) of the theme (cluster) and the relationship (link) between the topics (nodes) that materialize under that theme (cluster) (Donthu *et al.*, 2021). The number of clusters found based on **Figure 3** is 7 clusters. A more

detailed explanation of the division of the keyword clusters "Science", "Islam", and "Islamic" can be seen in **Table 2**.

In **Table 2** the term Islamic is in cluster 1 which is marked in red. Whereas Islam and science are in cluster 6 which is marked with a blue light color. In **Table 2** we can also see that the data mapping using VOSviewer produces 31 terms which are divided into 7 clusters.

**Figure 4** shows the shape of the overlay visualization. The use of overlay visualization aims to identify the words that are closest to the keywords of interest (Brown, 2020). In this visualization overlay, we can see the range of years and months, and the frequent terms of the keywords used for research. Based on the picture, 3 terms of "Science", "Islamic", and "Islamic" were widely used in the 2015 - 2016 research year range.
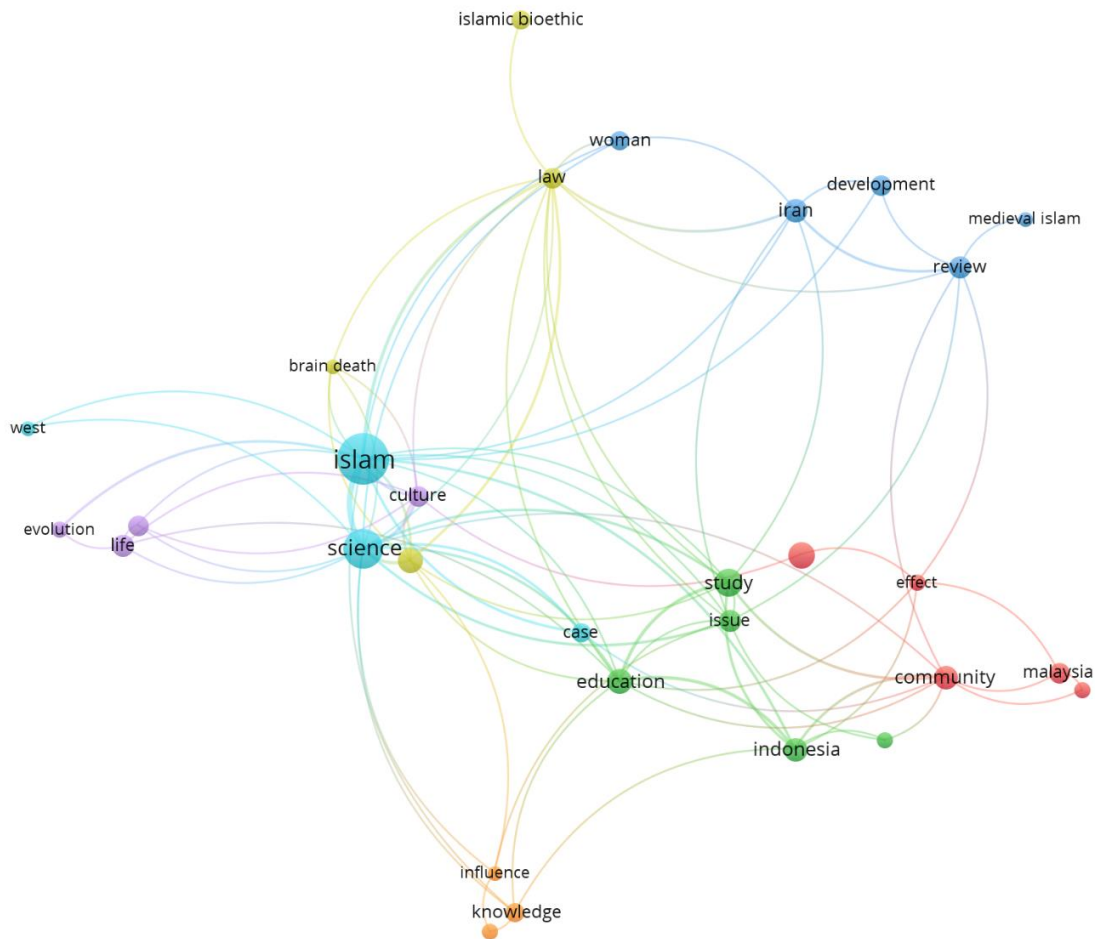


**Figure 3**. Network visualization from co-word.

**Table 2**. VOSviwer mapping cluster distribution.

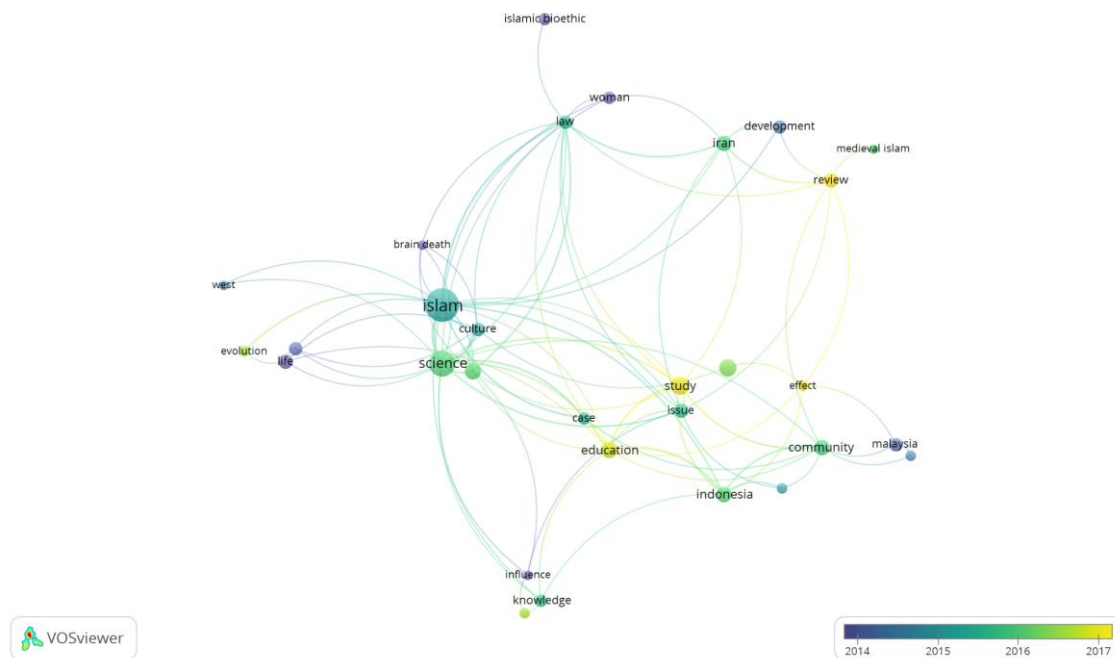| Cluster | Items | Color |
|---------|-------|-------|
| 1 | Child, Community, Effect, Islamic Perspective, Malaysia | Red |
| 2 | Education, Indonesia, Islamic Education, Issue, Study | Green |
| 3 | Development, Iran, Medieval Islam, Review, Woman | Blue |
| 4 | Brain death, Islamic bioethics, law, religion | Yellow |
| 5 | Culture, evolution, life, Muslim | Violet |
| 6 | Case, Islam, science, west | Blue light |
| 7 | Influence, Islamic economic, knowledge | Orange |

**Figure 4**. Overlay visualization from co-word.

## 4. CONCLUSION

The research objective is to analyze bibliometrics within the scope of Islamic scholarship and research by visualizing the results of the analysis on the VOSviewer data mapping. 200 articles total are displayed in the search results as being relevant. The findings revealed that from 2012 to 2021, articles on science and Islam received an average of 14.18 citations per piece and 296.20 citations annually. Islamic and scientific research progress is deteriorating year after year. With 39 articles, 2012 saw the most research, while 2022 saw none. The phrases most frequently used to describe scientific and Islamic research are Islam, science, the Islamic worldview, education, and study. The two nations with the strongest connections to this study are Malaysia and Indonesia.

## 5. AUTHORS' NOTE

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

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