*Article*

# Unravelling Halal Bibliometric Research: Bibliometric Analysis and Systematic Literature Review

**Firmansyah[1,2], Luqman Hakim Handoko[1], Mariam Kamila*[1], Mohd Nazri Mohd Noor[2]**

[1] Department of Islamic Banking, Sekolah Tinggi Ekonomi Islam SEBI, Depok, Indonesia.
[2] Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia, 71800 Nilai, Negeri Sembilan, Malaysia.

**ABSTRACT -** This study delves into halal research trends through a bibliometric analysis of 69 articles from 2018-2023. The data was retrieved from the Google Scholar database. This study will analyse the co-authorship, co-citation, and co-occurrence using VOSviewer. In addition, it will employ a Systematic Literature Review (SLR) to unveil future research. The result reveals a surge in publications, with 2022 as the peak year, emphasizing English as the dominant language. Indonesia stands out as the most prolific source of research, contributing 42 articles and boasting the highest citation count (198). Author A.S. Rusydiana leads with nine publications, while the journal "Halal Tourism and Pilgrimage" claims the top spot with five articles. Notably, the most cited article (82 citations) by Secinaro and Calandra focuses on halal food research trends. Network, density, and overlay visualizations depict key research clusters, highlighting 18 themes requiring further exploration. Interestingly, ten themes remain relevant despite recent advancements, while 10 require extra attention. Furthermore, a SLR of recent research identifies 36 potential avenues for future investigation. Nevertheless, this study offers a valuable roadmap for navigating the ever-evolving landscape of halal research for future inquiry.

## INTRODUCTION

Based on data from the Global Islamic Economy Report 2022 (Dinar Standard, 2022), approximately 1.9 billion Muslims worldwide spent an equivalent of US$2 trillion in 2021 in the sectors of food, pharmaceuticals, cosmetics, fashion, travel, and media or recreation. All these sectors are influenced by consumption needs that consistently prioritize ethical principles inspired by Islamic teachings. In addition, the spending of the Muslim community is estimated to reach US$2.8 trillion by 2025 with a Cumulative Annual Growth Rate (CAGR) of 7.5% over four years (Dinar Standard, 2022). This indicates that the halal world has great potential. Evidently, in the last two decades, the halal market has experienced rapid growth. Initially limited to the food sector, its scope has expanded to include cosmetics, pharmaceuticals, logistics, and other service sectors such as marketing, packaging, branding, and financing.

However, in terms of literature, from the beginning of 1990 to the end of 2006, publications regarding halal were still relatively scarce and limited in the topics addressed. Early halal-related research mainly appeared in the form of laboratory tests. Such is the research conducted by Gregory et al. (1988) on the investigation of slaughterhouses and laboratory experiments on halal slaughtering

of young cattle, microbiological investigation on halal meat products and slaughter sites conducted by Little et al. (1999), and the analysis of raw meat and pork fat using polymerase chain reaction for halal authentication conducted by Aida et al. (2005).

As time passed, research on halal began to evolve and touch upon other areas, such as economics. Such is the research conducted by Abdul-Talib and Abd-Razak (2013) on fostering export-oriented behaviour in halal marketing and research on the economics of the halal industry conducted by Hassan and Mujar (2014). It also includes research on halal tourism as a new goldmine for tourism business operators by Chandra (2014), research on the significance of religion and economic value in Malaysian halal certification conducted by Shirin Asa (2017), and research on the growth prospects of the halal ecosystem in Bangladesh conducted by Nisha and Iqbal (2017).

Given the potential and development of the halal world in various countries, many researchers are interested in expanding halal literature. This can also be observed from the research and academic publications on halal, which increase each year (Has-Yun Hashim et al., 2022). To date, 1,990 documents indexed in Scopus and 536,000 in Google Scholar have been reported on halal. The substantial number of publications on halal certainly requires literature mapping. As such, one method that can be used for this mapping is bibliometrics.

Bibliometric analysis is a popular method commonly used to study and analyse scientific data in large volumes. This can help understand the evolution of a specific field and discover new areas within that field (Donthu et al., 2021). Furthermore, bibliometric mapping will benefit the scientific community and the general public as it can translate publication metadata into maps or visualizations (Tanudjaja & Kow, 2018).

Currently, the bibliometric method has become quite popular and is widely conducted by researchers worldwide. There are several studies that evaluate bibliometric articles in general, such as the research conducted by Patra et al. (2005) using the Library and Information Science Abstracts (LISA) database. Meanwhile, Khiste and Paithankar (2017) used the Scopus database, Anna et al. (2021) used the Library Philosophy and Practice (LPP) database, and Purnomo (2020) used the Scopus database but limited to researchers affiliated with Indonesian institutions.

The development of bibliometric research with a more specific context can be viewed from the study by Donthu et al. (2021), which utilizes the Scopus database, focusing their search on the fields of "business," "management and accounting," "economics," "econometrics and finance," and "social sciences." However, in addition to the general fields of economics and business, there have also been bibliometric studies conducted by academics in the field of Islamic economics. For instance, the bibliometric research related to Islamic finance and banking was conducted by Biancone et al. (2020) and Marlina et al. (2021). This includes the bibliometric studies on Islamic philanthropy conducted by Handoko et al. (2022) related to zakat and Uluyol et al. (2021) related to waqf.

The halal industry, as a part of the Islamic economic ecosystem, has also drawn special attention from researchers in bibliometric analysis. This can be observed from the emergence of several bibliometric studies on halal. Such as the bibliometric research related to the halal value chain conducted by Antonio et al. (2020), the bibliometric study on halal food by Mostafa (2022), the bibliometric analysis on halal cosmetics by Azrini et al. (2021), and the bibliometric research on halal tourism by Suban et al. (2021).
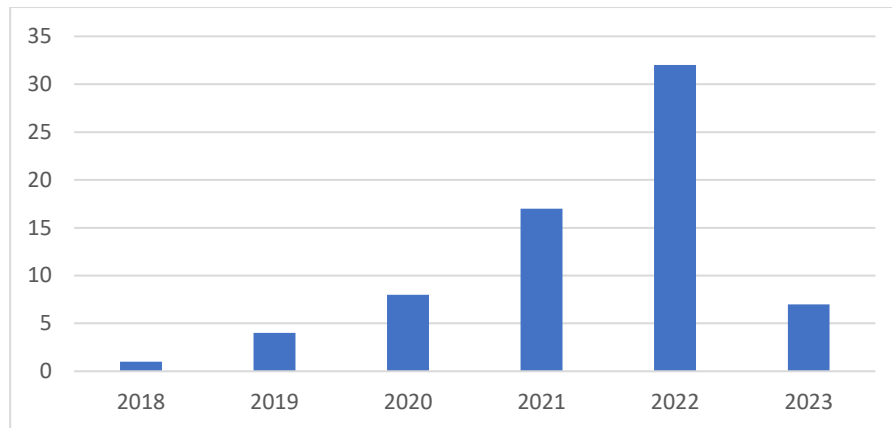
**Source**: Google Scholar, 2023 (Processed)

**Figure 1**: Halal bibliometric publications on google scholar

The growth of literature on halal bibliometrics is evident when the author searched Google Scholar using the keywords "Bibliometrik Halal" and "Halal Bibliometric." The number of publications on this theme has been increasing almost every year, as observed in Figure 1. The search results indicate many articles related to halal bibliometrics published from 2018 to 2023.

From the previous explanation, it can be inferred that even though these publications come from various database sources and cover varying sample scopes and themes, all trends indicate that bibliometrics has seen significant growth across all fields and is not confined solely to library science. Unfortunately, although bibliometrics has broadly developed across various fields, publications related to halal bibliometrics remain relatively limited compared to bibliometric publications in other areas.

This research is crucial and intriguing to investigate for the following reasons: Firstly, no studies have been discovered evaluating bibliometric articles concerning halal in Indonesian and English publications. To date, there are only a few studies that evaluate bibliometric articles in general, including research conducted by Patra et al. (2005), Khiste and Paithankar (2017), Purnomo (2020), and Anna et al. (2021). Furthermore, there are studies that only evaluate bibliometric articles in other fields not related to halal, such as those conducted by Donthu et al. (2021), Khan et al. (2022), and Ülker et al. (2023). Therefore, this research is expected to assist academics in identifying untouched niches in halal that have not been explored using bibliometrics.

Secondly, in this study, the author employs a combination of bibliometrics, which can visualize and map out research, with a Systematic Literature Review (SLR), a structured literature overview aiming to identify, evaluate, and interpret the findings of primary studies (Gurevitch et al., 2018). The researcher also thoroughly analyses relevant research data related to the topic in terms of the study content. Hence, both methods are deemed appropriate. Given these considerations, the author was motivated to undertake this study.

The rest of the paper is structured as follows. Section 2 explains the literature related to bibliometrics and halal. Section 3 describes the methods used in this study. Section 4 includes general statistics, the influential aspects of halal bibliometrics, and the visualization of the bibliometric analysis. Furthermore, it will present the cluster analysis and future research suggestions. Finally, Section 5 presents the conclusion of the study.

## LITERATURE REVIEW
### Bibliometric

There are several definitions of bibliometrics, according to researchers. For instance, Koo (2017) defined bibliometrics as studying and analysing citations from scientific publications. Meanwhile,

Nicola De Bellis interpreted bibliometrics as a set of methods used to quantitatively analyse scientific and technological publications (De Bellis, 2009). From the various definitions mentioned, it can be concluded that bibliometrics is the activity of analysing scientific and technological publications using quantitative and statistical methods in their analysis.

Bibliometrics aims to use quantitative analysis to describe a process, its characteristics, and the direction of development in detail (Basuki, 2002). Bibliometrics is highly useful in identifying, evaluating, improving, innovating, and making decisions (Naseer & Mahmood, 2009). Furthermore, bibliometrics can also be employed to analyse various hot topics (trends), the growth in the number of studies, and various publications (Tupan et al., 2020). Bibliometric analysis is conducted by examining the distribution of publications to assess the contribution of articles to the advancement of knowledge in various literature using statistical methods, thereby providing a broader understanding of science.

According to Donthu et al. (2021), bibliometric techniques for mapping a discipline include citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and co-authorship analysis. When combined with network analysis, these techniques are crucial in presenting both the bibliometric structure and the intellectual structure of the research field (Baker, Pandey, et al., 2020; Tunger & Eulerich, 2018).

**Systematic literature review**

The SLR method is frequently utilized by researchers in the fields of pharmacy and medicine. Barbara Kitchenham later adopted this method into the realm of technology and information in her scientific article titled "Guidelines in Performing Systematic Literature Reviews in Software Engineering" (Kitchenham, 2004). A SLR refers to a specific study or research method developed to collect, study, and evaluate relevant research on a specific topic focus (Biolchini et al., 2005). The benefits of using the SLR method, according to Kitchenham (2007), include enhancing the evidence from previous research and representing information from various research questions available in the study.

According to Petticrew and Roberts (2006) in their book "Systematic Reviews in the Social Sciences" (2006, p. 27), the steps involved in an SLR are as follows: defining the research question, designing the research protocol, conducting literature searches, selecting literature, assessing the quality of the literature, extracting data, analysing data, synthesizing findings, interpreting results, and writing the report.

**Halal**

The halal industry has several distinct characteristics that differentiate it from the conventional industry. First, the halal industry has strict requirements regarding the materials used in production. These materials must comply with halal provisions; for instance, they should not contain pork or alcohol. The halal industry must also adhere to certain standards and procedures for halal certification. Notably, organizations such as halal certification agencies, regulatory bodies, and Islamic financial institutions are involved in ensuring compliance with halal requirements (Haque et al., 2019). With these distinctive characteristics emphasizing strict production material requirements and halal certification standards overseen by various related institutions, the halal industry can grow more rapidly and compete with the conventional industry.

As stated in the Global Islamic Economy Report 2022 (Dinar Standard, 2020), the halal industry has experienced rapid growth in the last two decades. The halal industry began in the halal food sector but later expanded into non-food sectors and services. The scope of the halal industry now is vast, ranging from food, pharmaceuticals, cosmetics, fashion, tourism, and media to recreation. In addition, Islamic finance and insurance have also grown and become an integral part of the halal industry (Dinar Standard, 2022). This rapid growth is driven by the continuously increasing global demand for products and services that meet halal standards, allowing this industry to expand into diverse sectors.

Based on the Global Islamic Economy Indicator (GIEI), the top 15 countries have the highest scores. The GIEI is a composite weighted index that measures the overall development of the Islamic economic sector by evaluating its performance and its respective components in line with its social obligations. In addition, it consists of 52 metrics organized into five components for each of the seven Islamic economic sectors: halal food, halal tourism, halal fashion, halal media/recreation, halal pharmaceuticals, halal cosmetics, and Islamic finance (Dinar Standard, 2022). The countries occupying the top 15 positions in the GIEI can be observed in Table 1.

**Table 1**: Top 15 countries with top GIEI scores

| | | GIEI | Islamic Finance | Halal Food | Muslim-Friendly Travel | Modest Fashion | Pharma and Cosmetics | Media and Recreation |
|---|---|---|---|---|---|---|---|---|
| 1 | Malaysia | 207.2 | 426.9 | 123.4 | 193.5 | 46.0 | 83.9 | 97.3 |
| 2 | Saudi Arabia | 97.8 | 218.6 | 56.6 | 69.2 | 19.3 | 34.3 | 29.7 |
| 3 | UAE | 90.2 | 114.6 | 63.3 | 78.6 | 171.8 | 53.6 | 63.8 |
| 4 | Indonesia | 68.5 | 91.0 | 71.1 | 58.0 | 68.0 | 46.3 | 26.8 |
| 5 | Turkey | 67.3 | 51.0 | 69.8 | 106.7 | 95.1 | 55.0 | 53.5 |
| 6 | Bahrain | 66.7 | 121.9 | 44.5 | 89.3 | 18.6 | 29.4 | 30.1 |
| 7 | Singapore | 65.0 | 45.0 | 57.8 | 107.1 | 48.3 | 107.9 | 78.5 |
| 8 | Kuwait | 62.1 | 115.5 | 43.1 | 69.0 | 17.5 | 29.6 | 29.2 |
| 9 | Iran | 56.0 | 90.3 | 48.1 | 52.1 | 25.4 | 42.3 | 24.9 |
| 10 | Jordan | 51.8 | 72.1 | 51.3 | 58.4 | 19.3 | 44.6 | 25.7 |
| 11 | Oman | 47.8 | 74.5 | 46.1 | 43.2 | 20.2 | 26.9 | 25.9 |
| 12 | Qatar | 46.9 | 73.4 | 43.4 | 40.1 | 21.6 | 26.2 | 30.8 |
| 13 | United Kingdom | 46.1 | 49.0 | 47.4 | 31.4 | 41.9 | 45.2 | 52.9 |
| 14 | Kazakhstan | 45.2 | 46.0 | 59.2 | 60.8 | 26.6 | 22.7 | 26.4 |
| 15 | Pakistan | 44.9 | 65.7 | 48.3 | 38.7 | 26.4 | 30.9 | 11.0 |

**Source:** Dinar Standard (2022)

## METHODOLOGY

To provide a more accurate analysis of halal bibliometric articles and to follow the latest developments in bibliographic research, the author used a mixed methods approach. The mixed method combines a quantitative approach in presenting data using simple statistics with bibliometric techniques and a qualitative approach using the SLR research technique. Petticrew and Roberts, as cited in Oraee et al. (2017), stated that a mixed methods systematic review is a highly effective research method aimed at identifying knowledge gaps and analysing previously conducted studies.

Data collection took place between May and July 2023. This research analysed all halal bibliometric studies indexed by Google Scholar. The bibliometric stages in this study followed the steps undertaken by Fahimnia et al. (2015), which consist of four phases, namely:

1) Determining the search keywords: Literature searches were conducted using the Publish or Perish (PoP) software and data sources from Google Scholar to search for articles with the keywords "halal," "bibliometric," and "bibliometrik." These keywords were derived based on the topic or subject of this study, which is halal bibliometrics.

2) Obtaining the initial search results: The search results included full texts from journals and conference proceedings to name a few, with no restrictions on the year, up to a maximum of 1,000 search results. A search titled "bibliometric halal" on Google Scholar yielded 135 articles.

3) Refining the search results: Of the 135 articles, further identification was necessary to check for duplicates. This identification covered the title, year, and author's name. If there were similarities, it was concluded that the content of those documents was the same. After screening, 56 documents did not meet the selection criteria, leaving 79 documents that complied. The following step was to re-analyse the 79 documents to ensure they met the predetermined inclusion criteria, specifically their relevance to halal bibliometrics. As a result, only 69 documents met the inclusion criteria.

4) Downloading the data: The search results that met all criteria were entered into a spreadsheet

and then downloaded in CSV format for further analysis.
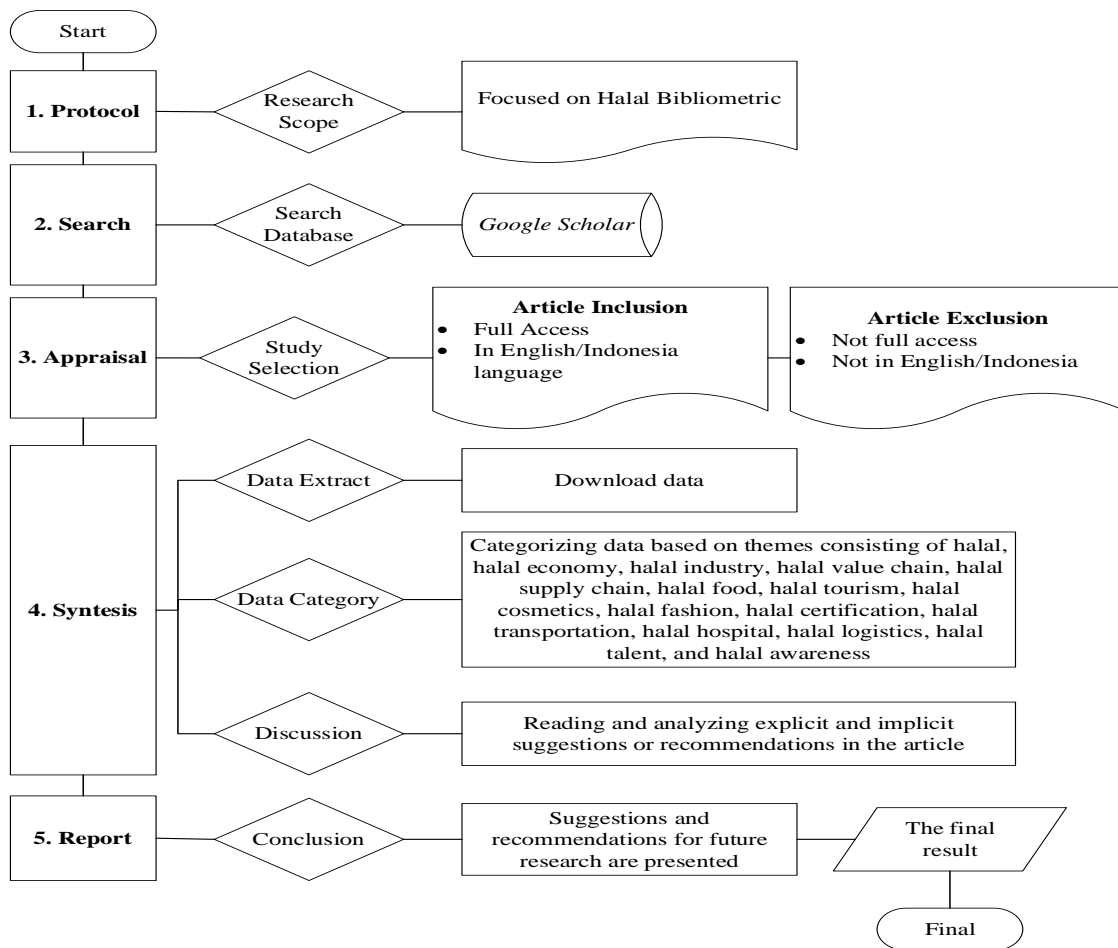
**Figure 2**: Systematic literature review research flow

Subsequently, the second analysis phase employed a qualitative approach through an SLR. The purpose of writing an SLR is not to produce a new theory (Oraee et al., 2017). Instead, it aims to provide a summary of recommendations for future research based on the review of suggestions or recommendations from the articles (Mengist et al., 2020). This research refers to the study by Linnenluecke et al. (2017), which focused on studies published in recent years. Therefore, this study limits the SLR to article publications within the time frame of 2019-2023. Notably, article selection was performed manually. The rationale for choosing recent articles for elaboration is that the latest articles tend to be less cited and not yet well-known, making it intriguing to present suggestions and recommendations based on their findings to guide future research directions (Linnenluecke et al., 2017). The SLR analysis process follows the steps outlined in Figure 2.

## RESULT AND DISCUSSION
### Distribution of halal bibliometric research
*Based on year of publication*
The distribution of bibliometric publications regarding halal was reviewed based on 69 data sources retrieved from Google Scholar. Overall, the first publication related to halal bibliometrics appeared in 2018 as depicted in Figure 3, authored by Olcay A., Karaçil G., and Sürme M., entitled

"Bibliometric Profile of Halal Tourism Area." In English, the article means "Bibliometric Profile in the Field of Halal Tourism." This study aimed to map out research on halal tourism published nationally and internationally and identify its general trends. This study focused on halal tourism to ensure that this article can also be regarded as the first bibliometric article on halal tourism.
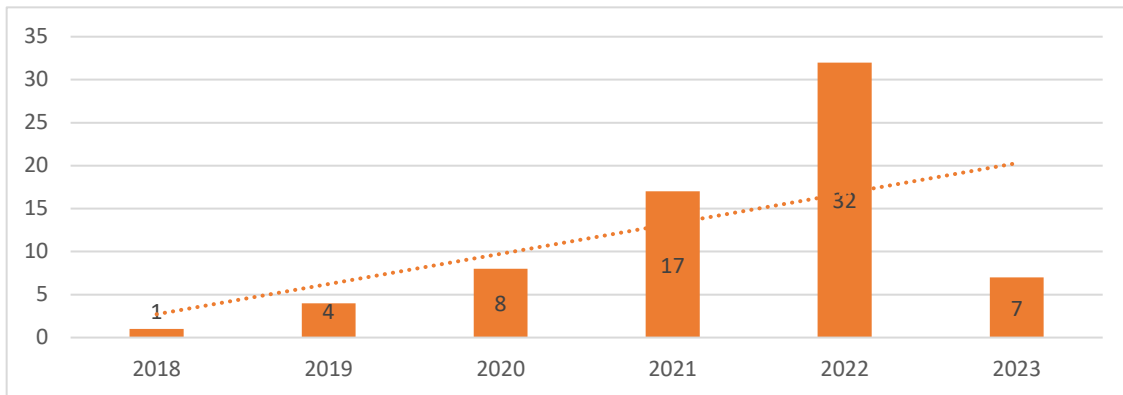


**Source**: Data processed by researchers with the help of Microsoft Excel (2023)
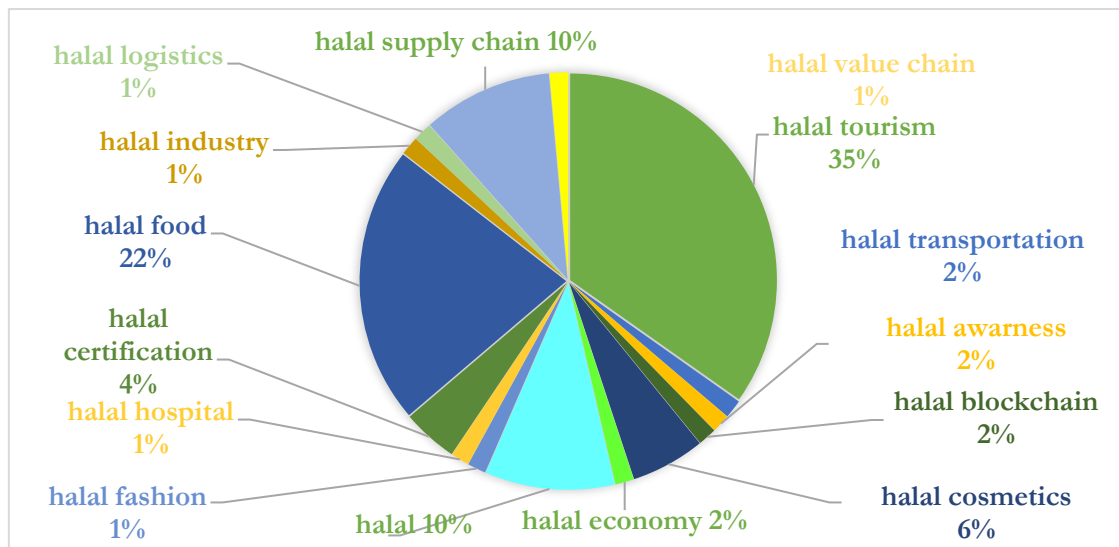
**Figure 3**: The Distribution of Halal Bibliometric Research by Years

As for the bibliometric research in the general context of halal, the first publication appeared the following year, a study conducted by Ismail et al. (2019). Broadly speaking, this research analysed the content of the three most productive journals in halal research publication, namely the Journal of Islamic Marketing, the British Food Journal, and Meat Science. The research results indicate that the British Food Journal primarily focuses on studies related to humans, such as consumer research, market research, elemental research, and food management. In contrast, the Journal of Islamic Marketing features research themes that are more specific and representative in the field of halal food science and the halal industry. Among the three journals examined, Meat Science has the highest citation count.

*Based on topic*
The research scope on halal bibliometrics is quite diverse. As observed in Figure 4, the most predominant scope is Halal Tourism bibliometrics, with 24 articles. The second most frequent is Halal Food bibliometrics, with 15 articles, followed by Halal and Halal Supply Chain bibliometrics, each with seven articles. The distribution of halal bibliometric research based on topics can be observed in the following diagram.

From the data obtained, several unique and less-represented research topics or scopes were found, such as bibliometrics related to Halal Transportation, Halal Awareness, Halal Blockchain, Halal Economy, Halal Fashion, Halal Hospital, Halal Industry, Halal Logistics, and Halal Value Chain. Based on this data, current research has a significant opportunity for growth if researchers can connect the various above-mentioned themes, which might be considered incompatible if combined in a single discussion.

**Figure 4**: The Distribution of halal bibliometric research by topic

## Productivity of halal bibliometric research

*Most productive authors*

Based on the 69 documents, there are 153 authors who have contributed to halal bibliometric research as shown in Figure 5. Each contributor has written at least one article. The most prolific author has produced as many as nine articles. When conducting research, researchers sometimes collaborate. However, there are no restrictions on choosing collaboration partners. Every researcher has an equal opportunity to determine their collaboration partners. The collaboration relationship between researchers can be analysed using co-authorship.
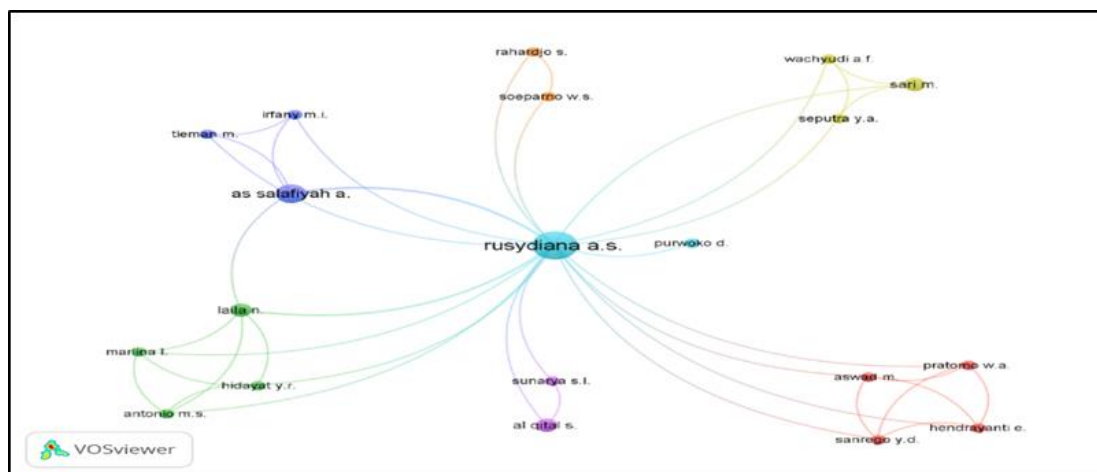
**Figure 5**: Network visualization of halal bibliometric research authors visualization

Until now, Rusydiana has collaborated with 19 authors, including Antonio M.S., Laila N., Hidayat Y.R., Marlina L., As Salafiyah A., Aswad M., Pratomo W.A., Hendrayanti E., Sanrego Y.D., Purwoko D., Rahardjo S., Soeparno W.S., Sari M., Seputra Y.A., Wachyudi A.F., Al Qital S., Sunarya S.L., Irfany M.I., and Tieman M. Authors who have strong connections are As-Salafiyah, A. and Rusydiana, A.S. This can be viewed from the network relationships that are closer and thicker than the others.

*Most productive institutions*
Five institutions from Indonesia and five from Malaysia are in the top ten nominations. The first and second rankings are occupied by institutions from Indonesia, namely SMART Indonesia and Tazkia Islamic University College. Meanwhile, the third to sixth positions are held by institutions from Malaysia, including Universiti Teknologi MARA, Universiti Sains Islam Malaysia, University of Malaya, and International Islamic University Malaysia. Additionally, IPB University ranks 7th, UIN Sunan Kalijaga is in 8th place, Universiti Putra Malaysia is in 9th, and Airlangga University is in 10th place.

*Most productive journal*
There are 49 journals that have contributed to the publication of halal bibliometric research. Each journal has published at least one article on halal bibliometric research. The most productive journal has published as many as five articles. Notably, the top three journals that have published the most articles on the theme of halal bibliometrics are Halal Tourism and Pilgrimage, Journal of Islamic Marketing, and LPP, each with five articles published. This can be attributed to several factors, including:

a) Topic Specialization: These journals focus on topics relevant to bibliometric aspects of halal. "Halal Tourism and Pilgrimage" and "Journal of Islamic Marketing" specifically examine halal aspects in the context of tourism and Islamic marketing. At the same time, "Library Philosophy and Practice" may provide room for articles discussing bibliometric methods across various fields, including halal.

b) Reputation and Recognition: These journals may enjoy a strong reputation in both academic and industry circles. This can attract more authors to submit their articles due to the potential for recognition and influence in the academic and practitioner communities.

c) Research Impact: These journals may have published research that has made significant contributions to the field of bibliometric aspects of halal. Such articles can serve as primary references for other researchers looking to explore similar topics.

d) Emphasis on Innovation: These journals may also encourage innovative and novel research in the realm of halal and bibliometrics. This can make these journals more appealing to researchers who want to develop new approaches or explore aspects that have not been extensively explored previously.

e) Network Relationships and Collaboration: These journals may have extensive collaboration networks with researchers from various institutions and countries. This can aid in obtaining more article contributions.

*Most productive countries*
Countries that have contributed to halal bibliometric research are spread across four continents. Specifically, there are three countries from Asia with a total of 64 publications, two countries from Europe with five publications, one from Africa with two publications, and one from Eurasia with three publications. As such, Asia dominates with the most significant contribution to halal bibliometric research, accounting for 86% of the total publications.

What is intriguing about the contributions from Asian countries is that the 64 scholarly works were produced by authors from predominantly Muslim countries, with several ranking in the top 15 of the GIEI for the year 2022. Most halal bibliometric research comes from Indonesia, which ranks fourth in the GIEI, contributing 56% of the total research output. This is followed by Malaysia, which holds the top rank in the GIEI, contributing 25% of the total halal bibliometric articles.

**Popularity of halal bibliometric research**
The popularity of halal bibliometric research can be gauged in two ways, namely, by examining the

number of citations received by a specific author or article. The more citations or references an author or article receives, the more it indicates that the author or article is recognized and acknowledged by many other writers. The most popular authors and articles in halal bibliometric research are explained as follows.

*Based on the most popular authors*
The most popular authors can be identified through the number of citations they receive. This number of citations indicates that the author is frequently referenced by other writers. Hence, the more citations obtained, the greater the recognition and popularity of the author among other writers.

**Table 2**: Most popular authors

| Author | Agensi | Document | Citation |
|---|---|---|---|
| Rejeb A. | Széchenyi István University | 3 | 88 |
| Rejeb K. | Higher Institute of Computer Science El Manar | 3 | 88 |
| Zailani S. | University of Malaya | 3 | 88 |
| Calandra D. | University of Turin | 1 | 82 |
| Secinaro S. | University of Turin | 1 | 82 |
| Rusydiana A.S. | SMART Indonesia | 9 | 80 |
| AgensCiptomulyo no U. | Institut Teknologi Sepuluh Nopember | 1 | 63 |
| Vanany I. | Institut Teknologi Sepuluh Nopember | 1 | 63 |
| Wahyuni H. | Institut Teknologi Sepuluh Nopember | 1 | 63 |
| Hand K.J. | Precision Strategic Solutions | 1 | 54 |

Based on Table 2, the top 10 most popular authors are from Hungary, Tunisia, Malaysia, Italy, Indonesia, and Canada. The first to third rankings are achieved by Rejeb A., a writer from Hungary, Rejeb K. from Tunisia, and Zailani S. from Malaysia. Rejeb A. and Rejeb K. obtained 88 citations from the three articles they co-authored. In general, these three articles discuss the results of bibliometric analysis and reviews on the topic of the halal food supply chain linked to technology and sustainability aspects.

From the available data, it can be observed that even though Rusydiana A.S. is the most prolific author in halal bibliometrics, he lags behind several other authors in terms of popularity. Rusydiana A.S. is in the sixth position with 80 citations he received. One significant factor is the GIEI score, which measures the performance of Islamic economies in various countries. In this regard, many researchers and practitioners tend to refer to authors from countries with high GIEI scores, such as Malaysia.

The GIEI score reflects the status of Islamic economics in that country, including in areas like Islamic finance, halal food, Muslim-friendly travel, and media and recreation. Malaysia performs well in these aspects and achieves a score higher than Indonesia. Therefore, researchers and practitioners tend to prefer citing works of authors from Malaysia related to these topics because their research quality and relevance are recognized in the global Islamic economic context.

*Based on the most popular articles*
The most popular articles can be identified by the number of citations they receive. The number of citations indicates that the article is frequently referenced in other articles. The top-ranked popular article was published by the British Food Journal in 2020 and received as many as 82 citations. The research article written by Secinaro S. and Calandra D. is titled "Halal Food: Structured Literature Review and Research Agenda." The study reviewed the literature on halal food and identified five

research clusters: halal food and certification, halal food and awareness, production and quality of halal food, halal food tourism management, and the halal food supply chain. The study also emphasized the significance of halal certification, the role of technology and innovation, and the relationship between halal food and sustainability.

*Based on the most popular countries*

The most popular countries can be evaluated based on the number of citations each country receives as depicted in Figure 6. The top nine popular countries are relatively diverse; among them are three countries from Asia, three from Europe, and one from Africa, America, and Eurasia. The three countries from Asia are Indonesia (198 citations), Malaysia (113 citations), and India (71 citations). From Europe, there is Hungary (87 citations), Italy (83 citations), and Austria (54 citations). From Africa, there is Tunisia (55 citations); from America, there is Canada (54 citations); and from Eurasia, there is Turkey (38 citations).
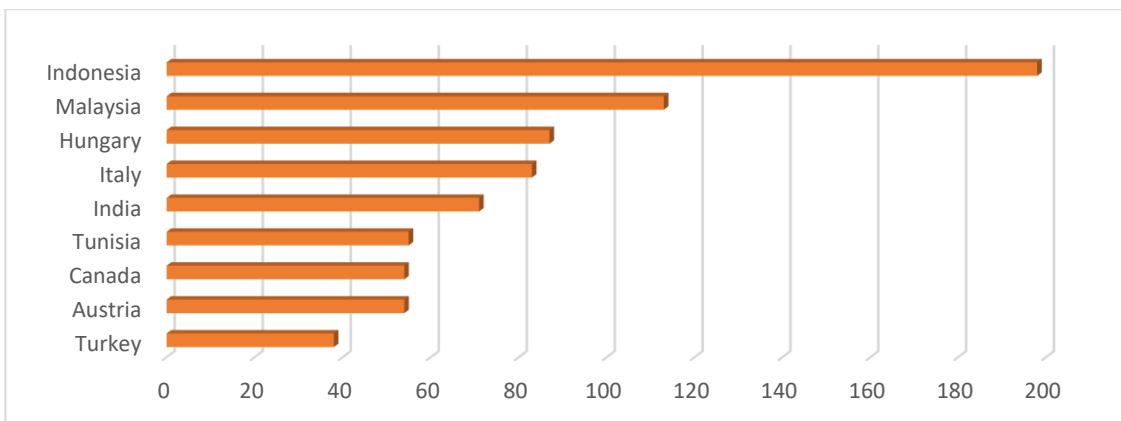


**Source**: Data processed by researchers with the help of Microsoft Excel (2023)

**Figure 6**: Network visualization of halal bibliometric research authors visualization
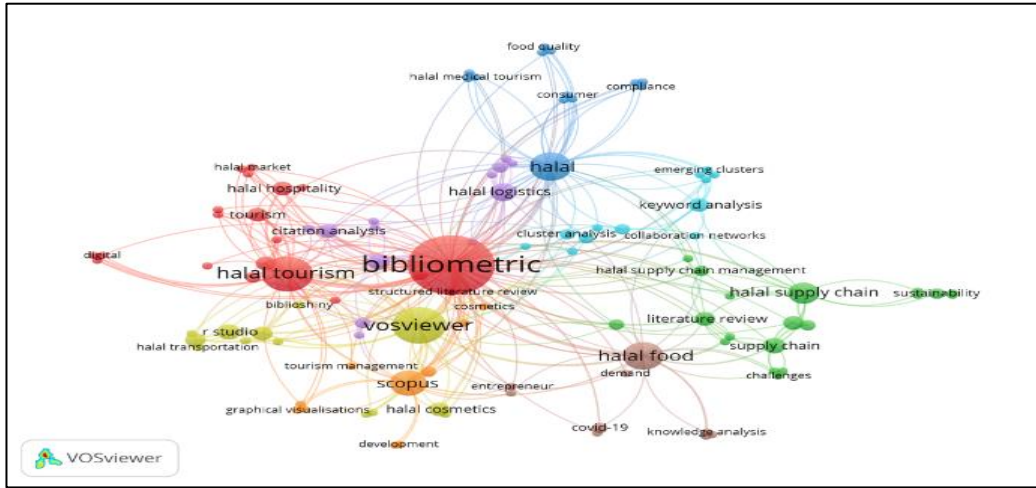
**Trends in halal bibliometric research**

The trends in halal bibliometric research can be identified by conducting a co-occurrence analysis using the authors' keywords. These research trends can be illustrated through network, density, and overlay visualizations.

*Based on network visualization*

Based on the keywords used by authors in halal bibliometric research, a network can be constructed to depict the relationships among these keywords.

Figure 7 displays the network visualization of co-occurrence, outlining the network or relationship from one term to another in halal bibliometric research. Based on 70 articles indexed by Google Scholar, there are 8 clusters comprising 112 interrelated words. Each cluster is represented by a node with different colours.

From the co-occurrence analysis through network visualization of halal bibliometric articles indexed by Google Scholar, the most frequently used keywords are "bibliometric," "VOSviewer," and "halal tourism." There are three significant nodes, the first being "bibliometric." The term "bibliometric" was used 56 times and is linked with 87 words. "Bibliometric" is the most frequently appearing term since this research uses bibliometrics as the main subject being studied.
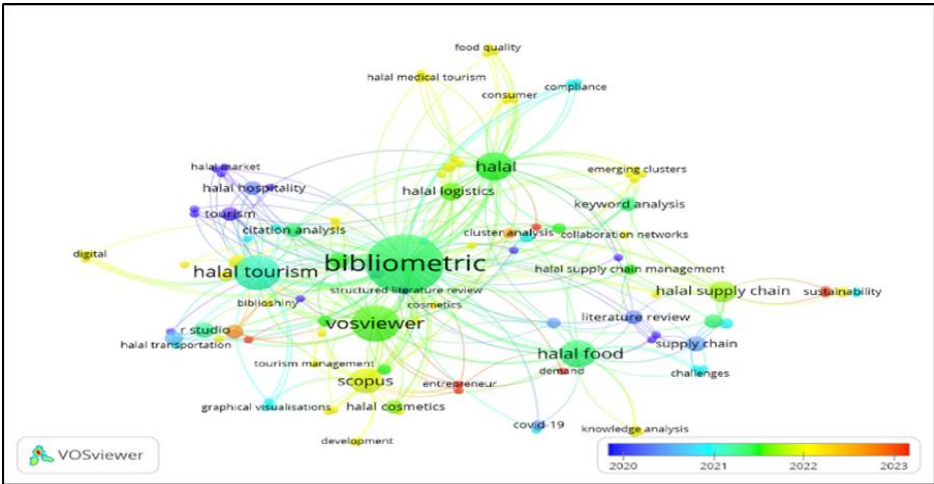
**Figure 7**: Network visualization of co-occurrence of halal bibliometric research trends

The second node is VOSviewer, which is used 21 times and is connected to 35 words. VOSviewer is connected to halal cosmetics, halal fashion, halal value chains, halal transportation, halal awareness, scientometric, and R Studio. The third node is halal tourism, which is used 19 times and connected to 34 words. Halal tourism is connected to bibliometrics, travel, Islamic tourism, spiritual tourism, Shariah hotels, hospitality, management, and service improvement. In a broader scope, here are the top 15 keywords commonly used by authors in halal bibliometric research.

*Based on overlay visualization*
If network visualization analyses the strength of relationships between each keyword, overlay visualization, on the other hand, analyses the occurrence of keywords over time. Overlay visualization is a network mapping that depicts keywords according to the year of publication of the work. Using overlay visualization, one can observe the evolving relationships between keywords over time and identify research trends in the relevant field. Here is an overview of the overlay visualization in halal bibliometric research as shown in Figure 8.

**Figure 8**: Overlay Visualization of co-occurrence of halal bibliometric research trends

The analysis of thematic development can be observed from the year 2020 by reviewing nodes in dark blue and the combination of dark blue and purple colours. Based on related keywords,

it can be concluded that the relationship between the halal supply chain and food safety, as well as the relationship between the halal market and Shariah marketing, has been recognized and explored in greater depth by researchers.

Turning to the year 2021, the development of halal bibliometrics can be examined from nodes in light blue and green. Based on related keywords, it can be noted that this year, some researchers are beginning to use various data analysis tools and techniques, such as VOSviewer, R Studio, and content analysis.

In 2022, research related to halal bibliometrics is increasingly expanding and touching on various other aspects of halal. Additionally, based on the existing keywords, it is evident that the techniques used for analysis are also becoming more diverse, ranging from keyword analysis, citation analysis, cluster analysis, main path analysis, knowledge analysis, keyword co-occurrence networks, collaboration networks, thematic maps, to three-field plots emerging clusters.

In 2023, it can be observed that the nodes in red and researchers are starting to focus on the themes of halal production and consumption, halal destinations, and connecting them with entrepreneurship, Small and Medium-Sized Enterprises (SMEs), demand, and sustainability in their research. In network visualization, the red-coloured nodes tend to have smaller node sizes. This indicates that these research topics could be opportunities for further study.

*Based on density visualization*
Co-occurrence analysis can also be presented through density visualization. As seen in Figure 9, there are areas in bright yellow and pale yellow. The brighter the colour, the more frequently the keywords appear, indicating that the topic or theme has been extensively researched. Conversely, if the colour becomes paler, it indicates that research on that topic is still relatively rare.
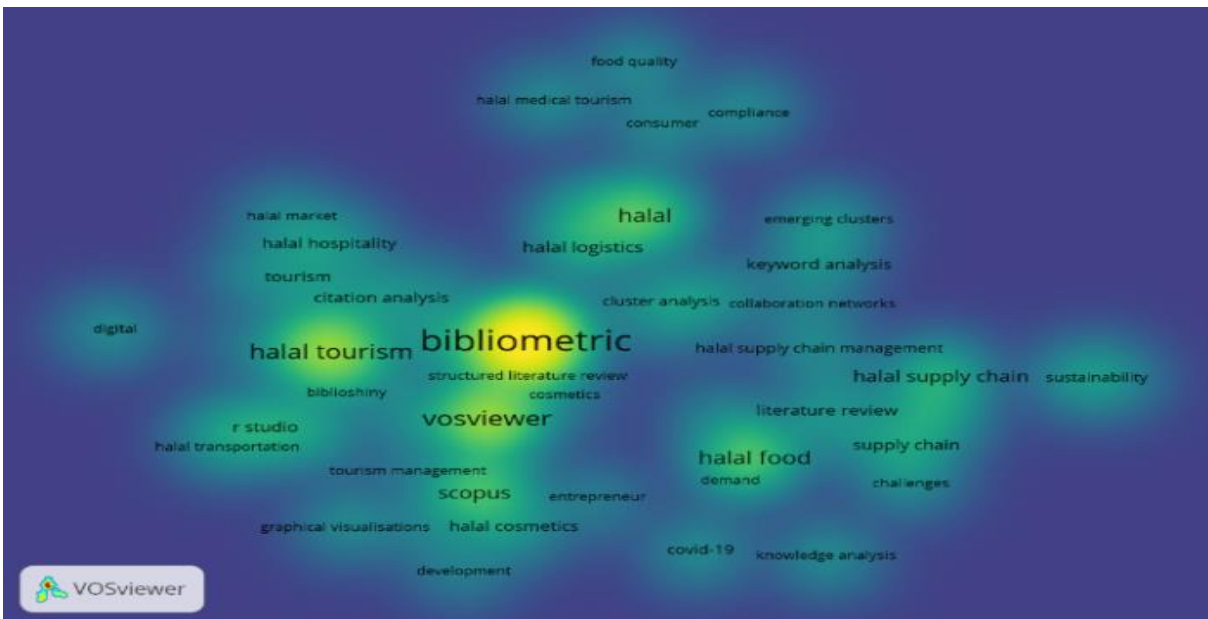


**Source**: Data processed by the author with VOSviewer (2023)

**Figure 9**: Density visualization from co-occurrence

Furthermore, in Figure 9, it can be observed that bibliometrics and halal tourism have brighter node colours compared to other nodes. This indicates that bibliometric research related to halal tourism, in general, has been extensively conducted by researchers in the past. Meanwhile, keywords with faded nodes, such as halal awareness, halal auditor, halal transportation, halal certification, sustainability, digital, compliance, hospital, consumer, and food quality, can be further examined for their relationships and may present interesting opportunities for future research.

**Direction of halal bibliometric research**

In this discussion, the direction of halal bibliometric research is explained through two approaches: keyword analysis and SLR. The future direction of halal bibliometric research can be identified through network, overlay, and density visualizations. This can be performed by paying attention to nodes and connecting lines that have relatively small sizes. The following is an exposition on the direction of halal bibliometric research.

*Direction of research based on keyword analysis*

Based on a total of 112 keywords that have been analysed and divided into 8 clusters in network visualization, there is variation in the sizes of nodes, ranging from large to small. Nodes with relatively small sizes indicate that these words have not been widely used in research literature. By focusing on the visualization of relatively small-sized nodes, it can be concluded that these topics have the potential to be explored as future research directions. Table 3 presents some specific topics that can be explored.

**Table 3**: Direction of Halal Bibliometric Research Based on Network Visualization

| Cluster | Next Research Topic |
|---|---|
| **Cluster 1 (Red)**<br>*Halal Hospitality, Halal Market, Halal Tourism, Islamic Marketing* | Islamic Marketing Strategy in the Halal Hospitality Industry<br>Consumer Behavior and Preferences in the Halal Tourism Market |
| **Cluster 2 (Green)**<br>*Halal Production and Consumption, Halal and Healthy Foods, Halal Blockchain, Economic Social* | The role of blockchain in the production and consumption of healthy halal products<br>The socio-economic impact of blockchain on the healthy production and consumption of halal products |
| **Cluster 3 (Dark Blue)**<br>*Food, Compliance, Framework Food Quality, Safety, SDG-3 Halal Medical Tourism, Hospital, Maqashid Syariah* | Compliance framework for the halal food industry<br>Challenges and opportunities in realizing sustainable food safety and quality<br>Evaluation of management and Shariah compliance in Halal hospitals |
| **Cluster 4 (Yellow)**<br>*Halal Transportation, Halal Value Chain Halal Fashion, Islamic Economics Halal Awareness, Digital Marketing* | Factors that influence consumers' willingness to pay for halal transportation<br>Factors that influence consumer interest in buying halal *fashion* products<br>Evaluating the Impact of Digital Marketing on Halal Awareness |
| **Cluster 5 (Purple)**<br>*Halal Certification, Thematic Map, Three-Field Plot Halal Supplier, Food Supply Chain, Traceability, Procurement* | The development of halal certification research through thematic mapping and *three-field plots*<br>The influence of halal *supplier* engagement and transparency in procurement practices on the halal food supply chain |
| **Cluster 6 (Light Blue)**<br>*Halal Science, Halal Curriculum* | Evaluate the global impact of halal research<br>Challenges and opportunities in halal curriculum development |
| **Cluster 7 (Orange)**<br>*Halal Industry, Development Cosmetics, Halal* | Comparison of halal industry in emerging economies<br>Comparison of halal and non-halal cosmetics from a global perspective |
| **Cluster 8 (Brown)**<br>*Entrepreneur, SMEs* | Trends, opportunities, and challenges in halal MSME businesses<br>Indicators and characteristics of success in halal MSME business actors |

**Source**: Data processed by the author (2023)

In overlay visualization, each colour represents the publication year of keywords used by authors. Based on this visualization, keywords with red-coloured nodes such as halal destination, halal production and consumption, SMEs, entrepreneur, demand, and sustainability indicate keywords from recent publications, specifically in the year 2023. Focusing on the red-coloured nodes suggests that these keywords still contain new elements or updates. Therefore, future research directions remain relevant if related to these words. Here are some suggested topics for further research in Table 4.

**Table 4**: Further halal bibliometric research directions based on overlay visualization

| No. | Next Research Topic |
| --- | --- |
| 1 | Sustainable practices in halal production and consumption |
| 2 | The evolution of halal tourism destinations |
| 3 | Innovation in halal MSMEs |
| 4 | Executive and business performance in the halal industry |
| 5 | The role of entrepreneurship in addressing the demand for sustainable halal products |
| 6 | The level of consumer demand for sustainable halal products |
| 7 | Competitiveness assessment of halal destinations |
| 8 | The role of MSMEs in the halal supply chain |
| 9 | The influence of halal production on sustainable business practices |
| 10 | Entrepreneurial strategies in halal MSMEs |

**Source**: Data processed by the author (2023)

Density visualization provides an overview of where frequently used words are marked with brighter colours, while less bright colours indicate that those words are rarely used. Keywords with faded nodes in density visualization suggest that those keywords have not been widely explored in the literature. Accordingly, this can be an opportunity for new research since there is a possibility of aspects or areas that previous researchers have not extensively explored.

The reasons for the limited use of these keywords can vary, including different research trends, topic changes, limitations of previous research, the need for more in-depth research, and the requirement for interdisciplinary approaches or new methods. Table 5 shows topics related to halal bibliometrics that can be explored and elaborated upon in more detail based on density visualization.

**Table 5**: Further halal bibliometric research directions based on density visualization

| No. | Next Research Topic |
| --- | --- |
| 1 | Supplier management in the halal food industry |
| 2 | Development and growth of the halal hospital sector |
| 3 | An assessment of the adoption of blockchain technology and its impact on halal supply chain management |
| 4 | The role of halal medical tourism in global health |
| 5 | Quality and compliance in the halal food industry |
| 6 | The influence of consumer halal awareness on halal market development |
| 7 | Digital transformation in the halal food industry |
| 8 | Market trends and consumer behaviour of halal products |
| 9 | Impact of digital technology on halal market sustainability |
| 10 | Educational curriculum for halal industry development |

**Source**: Data processed by the author (2023)

*Research directions based on systematic literature review*
Table 6 provides a broad range of research directions for the topic of halal studies as identified through a systematic literature review. This table identifies trends in topics of halal tourism, food supply chain management, corporate social responsibility, and sustainable production. Diverse disciplines and geographic contexts are highlighted in the table, illustrating how halal research is changing over time and highlighting key issues that require further investigation. This consolidated information will provide a useful resource for researchers interested in delving deeper into these themes and will help to advance our knowledge and understanding of halal industries on an international scale.

**Table 6**: Future directions of halal bibliometric research based on SLR

| Author | Next Research Topic |
|---|---|
| Ismail M.N., Othman R., Ismail M.S. (2019) | Halal tourism destinations in various countries<br>Differences in perceptions and preferences of Muslim tourists towards halal tourism<br>Factors influencing the decision of Muslim tourists in choosing halal tourism destinations |
| Ismail M.N., Othman R., Ismail M.S. (2019) | The influence of religion, religiosity, and Islamic business ethics on Muslim consumer behavior in the halal market.<br>Consumer satisfaction and trust in halal products and the factors that influence them |
| Secinaro S., Calandra D. (2020) | Halal food and corporate social responsibility (CSR)<br>Consumer perceptions of the sustainability of halal food products<br>Islam's role in increasing sustainable production<br>The effect of climate change on halal food<br>Innovation in business models of halal food and beverage companies in non-Muslim countries |
| Haleem A., Khan M.I., Khan S., Jami A.R. (2020) | Acceptable stunning methods in Islam and how to increase humanity in the halal slaughter process<br>Use of halal alternative gelatine and its application in the food industry<br>Compliance with halal standards in the hospitality sector and factors influencing hotels to obtain halal certification<br>Factors influencing the adoption of halal transportation services by halal pharmaceutical and cosmetic manufacturers |
| Rejeb A., Rejeb K., Zailani S., Treiblmaier H., Hand K.J. (2021) | Integration of IoT, blockchain, and AI technologies in halal food supply chain<br>Economic and social impact of IoT on halal food supply chain |
| Rejeb A., Rejeb K., Zailani S. (2021) | Use of recycled materials in the halal food supply chain to reduce the environmental impact caused by halal businesses<br>The influence of environmental awareness on halal food consumption behaviour<br>Environmental impact on halal food supply chain business performance and competitiveness |
| Al Qital S., Sunarya S.L., Rusydiana A.S. (2022) | Comparison of halal tourism policies, strategies, and implementation in various countries<br>Factors that influence the success of halal tourism management<br>Needs and preferences of Muslim travellers |

| | |
|---|---|
| | The impact of halal tourism on local communities |
| Handayani D.I., Masudin I., Haris A., Restuputri D.P. (2022) | The effect of halal supplier service quality and staff readiness in adopting halal technology on halal logistics performance<br>Muslim and non-Muslim perceptions of halal meat logistics<br>Multi-criteria decision-making in halal supplier selection<br>Halal logistics performance and customer loyalty |
| Izzah N., Lubis R.H., Sovia A.K. (2023) | Strategies for increasing the competitiveness of halal food in MSMEs<br>Factors affecting halal food business performance in MSMEs<br>Determinants that can optimize halal food business performance in MSMEs<br>The influence of Islamic business ethics in the MSME halal food industry<br>Halal market potential in non-Muslim countries |
| Nazaruddin L.O., Gyenge B., Fekete-Farkas M., Lakner Z. (2023) | Ethical and sustainable sourcing, responsible consumption, consumer sovereignty, and international trade in the context of halal food additives and ingredients<br>Food safety and food security in halal additives and ingredients<br>Economic and business aspects of halal additives and ingredients<br>Sustainable supply chains in the halal food industry |

**Source**: Data processed by the author (2023)


## DISCUSSION

The distribution of halal bibliometric research over the years provides valuable insights into the evolving landscape of this field. The fact that the first publication emerged in 2018 indicates a relatively recent interest in applying bibliometric analysis to the study of halal-related topics. The subsequent increase in publications, particularly in 2019 and onwards, suggests a growing recognition of the importance of bibliometrics in understanding various aspects of halal research.

The initial focus on halal tourism in the first publication is noteworthy. This focus may reflect the broader trend within academia to explore diverse dimensions of halal-related subjects. The subsequent emergence of broader halal-related bibliometric studies in the following years, including the analysis of prominent journals in halal research, signifies a maturing research landscape. This maturation is characterized by a shift from specific themes, such as halal tourism, towards a more comprehensive examination of the halal domain.

The relationship between the GIEI scores and the results demonstrating that Indonesia and Malaysia are among the top 10 most prolific and popular countries and authors in the field of innovation is a noteworthy aspect of this study. The GIEI scores, which evaluate a country's innovation output relative to its input, provide a quantitative measure of innovation efficiency. The fact that Indonesia and Malaysia emerge as key players in innovation, both in terms of productivity and popularity of authors, adds a layer of significance to their innovation landscape.

Firstly, the high productivity of authors from Indonesia and Malaysia aligns with the positive correlation often observed between innovation output and a country's economic development. Note that the GIEI scores may reflect the effectiveness of these countries in translating their innovation inputs into tangible outcomes, as evidenced by the prolific contribution of the authors. This suggests that not only are these nations investing in innovation, but they are also successful in generating impactful research output.

Secondly, the popularity of authors from Indonesia and Malaysia underscores the global recognition and influence of their contributions to the field. The GIEI scores, while capturing efficiency, may not fully encapsulate the international reach and impact of a country's innovation. The fact that authors from these nations rank prominently in terms of popularity suggests that their

work resonates widely within the global scientific community, contributing to their local innovation ecosystems and the advancement of knowledge on a global scale.

The interplay between GIEI scores and the prominence of Indonesia and Malaysia in innovation output raises intriguing questions about the factors contributing to their success. It could reflect a robust innovation infrastructure, supportive government policies, or a vibrant research community. Thus, understanding these dynamics can provide valuable insights for policymakers, researchers, and industry stakeholders seeking to enhance innovation ecosystems.

The study sheds light on innovation efficiency in various countries through GIEI scores and highlights the real-world impact by identifying Indonesia and Malaysia as leaders in both productivity and global recognition. This symbiotic relationship between quantitative assessment and qualitative influence enriches our understanding of innovation dynamics in these nations, emphasizing the need for a holistic approach to evaluating and fostering innovation globally. Furthermore, the direction of halal bibliometric research, as revealed through keyword analysis and SLR in Table 6, unveils nuanced insights into the evolving landscape of scholarly exploration within the halal domain. Hence, delving deeper into these findings, we discern patterns that reflect current research trends and anticipate future investigations' trajectories.

Keyword analysis, particularly through network visualization, acts as a dynamic lens through which we scrutinize the intricate relationships among halal bibliometric concepts. Clusters such as Halal Hospitality, Halal Market, Halal Tourism, and Islamic Marketing form distinct nodes, each presenting an avenue for deeper exploration. The identification of smaller-sized nodes within these clusters beckons researchers to untapped territories, suggesting that Islamic Marketing Strategy in the Halal Hospitality Industry and understanding Consumer Behaviour in the Halal Tourism Market merit heightened attention.

Overlay visualization, with its temporal dimension, unravels a narrative of emerging keywords marked by red nodes in the year 2023. This temporal lens directs our gaze toward topics like Sustainable Practices in Halal Production and Consumption, signifying an ongoing evolution in research priorities. It also underscores the need to investigate the contemporary dimensions of halal, weaving sustainability into the fabric of production and consumption.

Density visualization adds an additional layer to our understanding, highlighting the vibrancy of certain keywords while accentuating the muted tones of underexplored topics. The opportunity to delve into Supplier Management in the Halal Food Industry or the Growth of the Halal Hospital Sector emerges as an imperative, considering their limited exploration in the existing literature. As such, this calls for an in-depth inquiry into the dynamics, challenges, and potential innovations within these neglected domains.

Shifting our focus to the SLR, identifying highly cited articles propels us into the realms of influential research trajectories. Halal Tourism Destinations, Factors Influencing Muslim Tourists' Choices, and the Intersection of Religion, Religiosity, and Islamic Business Ethics all beckon for deeper investigations. These insights culminate in a mosaic of potential research avenues, from the economic and social impacts of IoT in the halal food supply chain to the intricate interplay between ethical and sustainable sourcing in halal additives and ingredients.

This in-depth discussion unravels the multifaceted tapestry of halal bibliometric research directions. It goes beyond the surface of results, inviting scholars to embark on journeys that traverse uncharted territories, address contemporary challenges, and contribute to the holistic understanding of halal within the global scholarly discourse. As the halal landscape evolves, these identified directions serve as beacons guiding researchers toward meaningful contributions that resonate with the dynamic intricacies of the halal industry and its broader societal implications.

The prospect for growth in halal bibliometric research becomes evident when considering the potential synergies between these diverse themes. Although some may initially appear incompatible, a comprehensive discussion could reveal interconnections and interdisciplinary intersections that enrich the overall understanding of halal bibliometrics. Nevertheless, researchers have an exciting opportunity to bridge these thematic gaps and pave the way for a more holistic and

nuanced exploration of the diverse dimensions encompassed by halal bibliometrics.

**CONCLUSION**

The study of halal bibliometric research reveals a substantial growth in scholarly output. This research field emerged in 2018 and has continued to grow until 2023, encompassing diverse topics such as halal tourism, halal transportation, and more. Journals like Halal Tourism and Pilgrimage, prolific authors like Rusydiana, A.S., and productive countries like Indonesia have shaped this research landscape. Notably, the article titled "Halal Food: Structured Literature Review and Research Agenda" and authors Rejeb A., Rejeb K., and Zailani S. have garnered significant attention with numerous citations.

Through keyword visualizations, potential research trends have been identified, with numerous topics of interest, including "Comparative policies, strategies, and implementation of halal tourism in various countries" from the recent SLR. This research domain holds substantial potential for continued growth by integrating and connecting various existing themes.

However, it is crucial to acknowledge the study's limitations, mainly its exclusive reliance on Google Scholar as the data source, potentially missing relevant literature from other databases. Therefore, future research should consider a more comprehensive approach by including data from multiple sources like the Web of Science and Dimensions. Additionally, broadening the research scope to encompass various topics within Islamic finance and halal practices would yield a more holistic understanding of the field, facilitating a more comprehensive examination of the subject matter.

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