

Submission date: 19 Jan 2022

Acceptance date: 23 May 2022

Publication date: 01 June 2022

MAPPING HALAL COSMETICS RESEARCH: A BIBLIOMETRIC ANALYSIS

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DOI: <https://doi.org/10.33102/mjssl.vol10no1.384>

ABSTRACT

The study of halal cosmetics has been growing exponentially in the last few years. Numerous studies pertaining to halal cosmetics have been conducted. The main objective of this study is to visualize trends in halal cosmetics research from 2006 to 2020. This encompasses the assessment of halal cosmetics research, collaboration networks, and publication patterns across various fields. We aim to provide a systematic overview and historic context, as well as distinguish future trends in research on consumers' perception of halal cosmetics. This study conducted a bibliometric analysis of research related to halal cosmetics. Data from 2006 to 2020 related to halal cosmetics were extracted from the Scopus database, providing a sample of 104 documents. The documents were then examined using the bibliographic network visualization instrument VOSviewer and R for text mining and the findings were presented in the form of a conceptual structure map and word clouds. We identified the most productive authors, journals, institutions, and countries. The results showed that Malaysia and Indonesia are the overall leaders in publications. These findings will provide scholars a comprehension of the halal cosmetics field and act as a guide for future research. Finally, it enables us to identify the extent of globalization in the field, leading topics, and potential gaps.

Keywords: *Halal cosmetics, bibliometric analysis, SCOPUS database.*

Introduction

The study of halal cosmetics has been growing exponentially in the last few years. Numerous studies pertaining to halal cosmetics have been conducted. The Arabic word halal means “permissible” or “lawful,” while its opposite, haram, means “prohibited” or “unlawful” (Hanapi and Khairuldin, 2017). The general understanding is that halal products (especially foods) should not be contaminated with pork or alcohol and that livestock should be slaughtered following Islamic Shariah law. However, as stated in other literature Alzeer et al. (2017) halal does not solely refer to foods but may extend to all consumables, such as toiletries, pharmaceuticals, cosmetics, and services, including finance, investments, and business.

A cosmetic product is “any substance or preparation intended to be placed in contact with various external parts of the human body (epidermis, hair system, nails, lips, and external genital organs) or with teeth and the mucous membranes of the oral cavity, with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, correcting body odours, protecting them, or keeping them in good condition” (NPRA, 2017). A cosmetic product is considered halal if the following conditions are met: (a) does not comprise or contain any human parts or ingredients derived thereof; (b) does not comprise of or contain any parts or substances derived from animals forbidden to Muslims by Shariah law to use or to consume or from halal animals which are not slaughtered according to Shariah law; (c) does not contain any materials or genetically modified organisms (GMO) which are decreed as najis according to Shariah law; (d) is not prepared, processed, manufactured, or stored using any equipment that is contaminated with things that are najis according to Shariah law; (e) during its preparation, processing, or manufacturing, the product is not in contact and physically segregated from any materials that do not meet the requirements stated in items (a), (b), (c), or (d); and (f) does not harm the consumer or the user (Jusoh *et al.*, 2016).

Halal cosmetic products must be certified as halal by the relevant certification bodies. In Malaysia, for example, the Department of Islamic Development Malaysia (JAKIM) is responsible for providing halal certification. For halal products coming from outside Malaysia, the department requires reputable and credible foreign halal certification bodies to act as JAKIM representatives and verify the halal status of raw materials and finished products with responsibility and integrity. In addition, JAKIM has published a list of “The Recognised Foreign Halal Certification Bodies and Authorities.” This list is renewed according to the latest updates based on JAKIM audits. (At the time of writing, the list was last updated December 1, 2020.) The list is important as a recognition of the capability of the foreign halal certification bodies that comply with Malaysian procedures and guidelines.

Halal certification is important because it allows members of the public to be confident that cosmetic products are halal. According to Ali *et al.* (2016) halal-certified products are more ethical, eco-friendly, organic, and green, with a non-exploitative and humanitarian approach. This viewpoint is further substantiated by Bhatia and Jain (2013) who expressed that halal products are more natural and eco-friendlier. Aoun and Tournois (2015) stated that halal certification and ingredient certification increase ethical standards and support brands that, through halal certification, are fighting against cruelty and environmental pollution and are establishing green marketing. Thus far, reviews have rarely taken stock of halal cosmetics research.

The main objective of this study is to visualize trends in halal cosmetics research from 2006 to 2020. This encompasses the assessment of halal cosmetics research, collaboration networks, and publication patterns across various fields. We aim to provide a systematic overview and historic context, as well as distinguish future trends in research on consumers’ perception of halal cosmetics. Furthermore, this analysis allows us to identify the most impactful articles; the most productive authors, journals, sources, countries, and institutions; and patterns of cooperation among them. Finally, it enables us to identify the extent of globalization in the field, leading topics, and potential gaps (van Nunen *et al.*, 2018).

Materials and Methods

Source of data

This study considers data derived from the publications indexed in the Scopus database to perform the bibliometric analysis. The Scopus database offers a greater selection of journals than other scientific databases, such as the Web of Science (WoS). The Scopus database provides access to more than 21,500 peer-reviewed journals, 83,000 conference events, 530 book series, and 120,000 books (To and Yu, 2020). To create a representative set of documents for analysis, the following search string was used: TI-TLE-ABS-KEY: (“halal cosmetic”).

Analytical Method

This study analyzes all documents on the subject of halal cosmetics found in the Scopus database. The resulting 104 scientific documents indexed in the Scopus database include articles, books, book chapters, conference papers, notes, reviews, and short surveys dating from 2006 to 2020. The dataset was built in three stages. First, we conducted a descriptive analysis of the data. Second, following earlier bibliometric surveys e.g., Batistič *et al.* (2017) we looked for the term “halal cosmetic” in the title, abstract, or keywords for content analysis. Third, we visualized clusters using VOS viewer and R for text mining and presented density maps or network visualizations where the size of the circle for each data point indicates the number of citations, the color indicates the cluster the publication belongs to, and the lines between the circles indicate the relative link strength (van Eck and Waltman, 2010).

Results

Descriptive analysis

Table 1 shows that from 2006 to 2020, there were 104 documents pertaining to halal cosmetics. Articles are the most common document type with 80 results, followed by conference papers with 10 results.

Table 1. Showing the descriptive analysis of halal cosmetics publication (2006–2020)

Description	Results
Documents	104
Sources (Journals, Books, etc.)	67
Keywords Plus (ID)	248
Author's Keywords (DE)	322
Average citations per documents	7.913
Authors	312
Author Appearances	342
Authors of single-authored documents	11
Authors of multi-authored documents	301
Single-authored documents	11
Documents per Author	0.333
Authors per Document	3
Co-Authors per Documents	3.29
Collaboration Index	3.24
Document types	104
Article	80
Book	1
Book Chapter	5
Conference Paper	10
Note	1
Review	6

Analysis by year

Figure 1 shows trends of yearly growth, where it can be observed that the number of articles on halal cosmetics has increased since 2018. Previously, the number of publications about the topic was relatively low, indicating a growing interest in halal cosmetics among researchers. Further analysis revealed that starting in 2018, the number of publications was relatively higher at the end of each year, with 7.913 citations per document on average. The highest total number of annual publications was recorded in 2020 with 25 articles. Total publications on the topic have increased over time, from 7 in 2015, to 8 in 2016, 9 in 2017, 17 in 2018, 22 in 2019 and 25 in 2020.

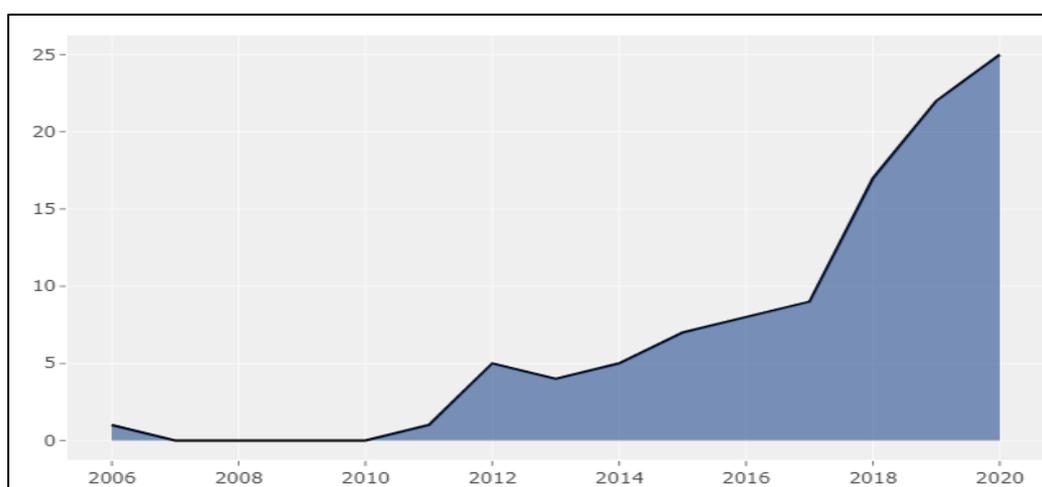


Figure 1 Total number of publications: 2006–2020

Author analysis

Table 2 indicate the most published and impactful authors on halal cosmetics. The progressively intensive review given in Table 2 shows that there are 20 most productive authors in this field. 2011 marked the first year of publication in the field, with a gap of six years before the next publications.

While the majority of authors have produced two publications, A. Rohman topped the list with four articles that received 21 citations. However, in terms of the highest number of citations, A.H. Ngah ranks first with 63 citations from his 3 published articles, followed by P. Garg and R. Joshi, who both received 34 citations. M.A.M. Hossain and M.E. Ali followed the number with 18 citations, and N.A.B. Abdullah, S. Ainin, and M.H. Ali are also influential authors with 12 citations each.

The co-authorship and collaboration network is shown in Figure 2. This figure presents the authors most often co-cited and sheds light on the collaboration network of authors. According to the connection network, A. Rohman has the most extensive and wide-ranging network and is also one of the most cited authors after A.H. Ngah, followed by N.A.B. Abdullah, S. Ainin, M.E. Ali, and P. Gag.

Table 2 The Most Published and Impactful Authors

Name of Author	h_index	Total Citation	Total Publication	Year Started
Rohman A	3	21	4	2011
Ngah Ah	3	63	3	2017
Abdinagoro Sb	0	0	2	2018
Abdullah Nab	1	12	2	2019
Ainin S	1	12	2	2019
Al Rasyid H	0	0	2	2019
Ali Me	2	18	2	2018
Ali Mh	2	12	2	2019
Anuar Nb	1	12	2	2019
Arbak S	0	0	2	2019
Bojei J	2	9	2	2016
Erwanto Y	2	5	2	2016
Feizollah A	1	12	2	2019
Firmansyah Aa	1	3	2	2018
Garg P	1	34	2	2018
Hossain Mam	2	18	2	2018
Islam R	0	0	2	2019
Joshi R	1	34	2	2018
Khan Mi	2	12	2	2019
Mohamed Rhn	1	2	2	2017

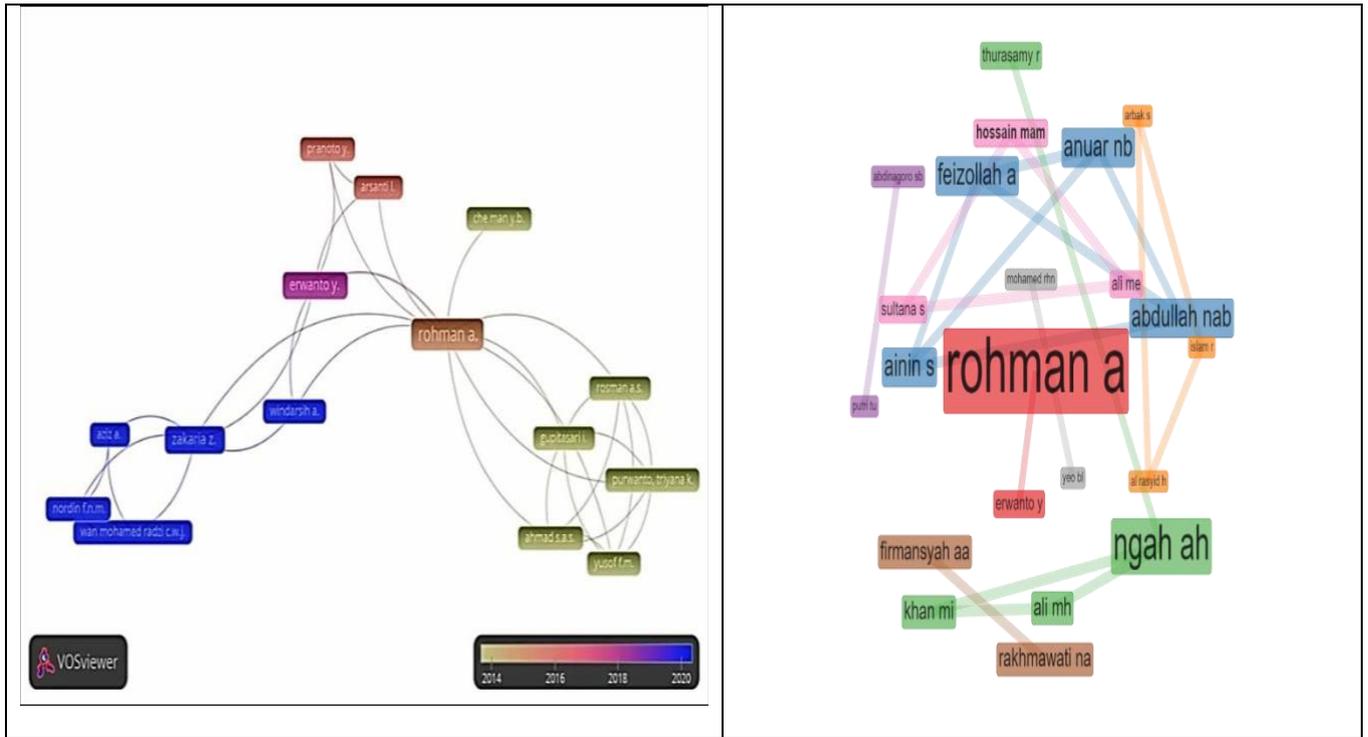


Figure 2 Co-authorship and Collaboration Network by Author

Analysis by journal or source

The journals or sources that most often publish halal cosmetic research is summarized in Table 3. From Table 3, Journal of Islamic Marketing is the top journal, with 23 articles published starting in 2012 and cited 511 times, followed by the International Journal of Supply Chain Management with 5 articles. The Malaysian Journal of Consumer and Family Economics published 3 articles, followed by Advanced Science Letters, Food Research, and the Global Journal Al-Thaqafah, publishing 2 articles each.

Table 3 Journals or sources publishing that published most often on halal cosmetics

Source	PY_start	NP	TC	h_index
Journal of Islamic Marketing	2012	23	511	8
International Journal of Supply Chain Management	2016	5	5	1
Malaysian Journal of Consumer & Family Economics	2018	3	0	0
Advanced Science Letters	2017	2	1	1
Food Research	2020	2	1	1
Global Journal Al-Thaqafah	2016	2	8	1
Humanities And Social Sciences Reviews	2019	2	0	0
International Food Research Journal	2016	2	3	1
International Journal of Innovation, Creativity & Change	2019	2	0	0
International Journal on Advanced Science, Engineering & IT	2018	2	2	1
Pertanika Journal of Social Sciences & Humanities	2016	2	3	1

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International Conference on Industrial Engineering and Operations Management	2018	2	2	1
The 5th International Conference on ICT for The Muslim World	2014	1	1	1
8th International Conf. on Cyber & IT Service Management	2020	1	0	0
Academy Of Entrepreneurship Journal	2019	1	1	1
Al-Jami'ah	2015	1	3	1
Applied Biological Chemistry	2018	1	3	1
Asia Pacific Management Review	2017	1	27	1
Asian Social Science	2014	1	6	1
British Food Journal	2019	1	7	1

Note: PY = Publication year, NP= Number of publications, TC =Total citations

Analysis by Country

Figure 3 shows the leading countries in single and multiple country publications. Among the countries that published papers on halal cosmetics, Malaysia leads with 46 published articles from 2006 to 2020. It is followed by Indonesia with 25 articles, India with 5 articles, Turkey and the United States with 3 articles each, Iran with 2 articles, and Brunei, Canada, China, Japan, Korea, Pakistan, Singapore, Thailand, and the United Kingdom with 1 article each. From the figure, it is clear that Malaysia and Indonesia dominate the field.

Figure 4a show country collaboration networks (using R). While figure 4b show country collaboration networks (using VOSviewer). From Figure 4a, it can be seen that the international collaboration between countries on halal cosmetic research is significant. The network with nodes demonstrates that the strongest links are between Malaysia and Indonesia. Notable new contributions to the field come from India, the Netherlands, the US, Thailand, the United Arab Emirates, etc. Through authorship patterns, collaboration networks across countries are shown in Figure 4b. There are four main clusters with nodes indicated by light turquoise, purple, yellow, and dark blue. The size of the node indicates the relative frequency of publication. Among the collaborating countries, Malaysia has a strong collaboration with India, the Netherlands, and Bangladesh. Indonesia has a strong network with New Zealand and Norway. The countries in the third cluster include Japan, the Philippines, and Thailand. The UAE has a strong network in cluster four with Brunei and France.

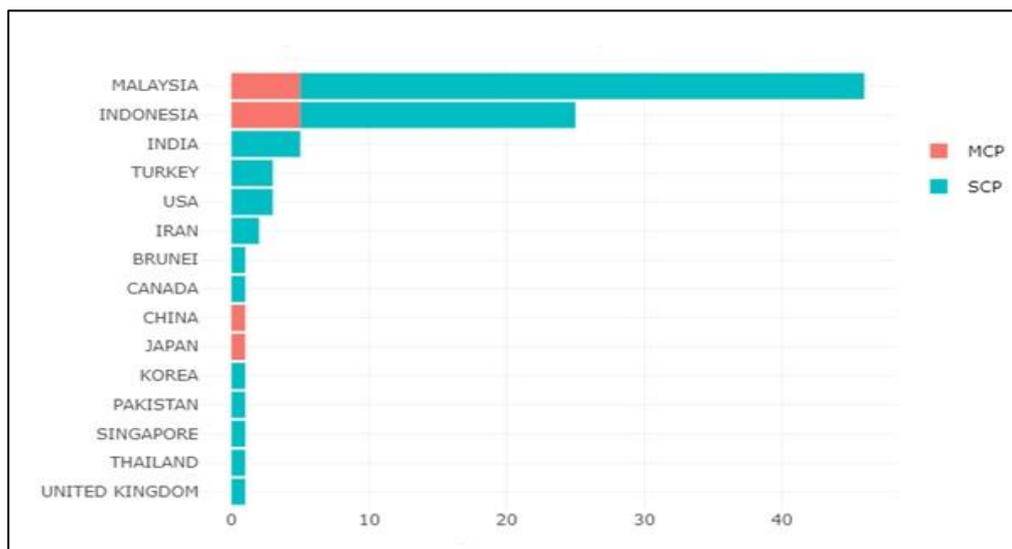


Figure 3 Single vs multiple country publications

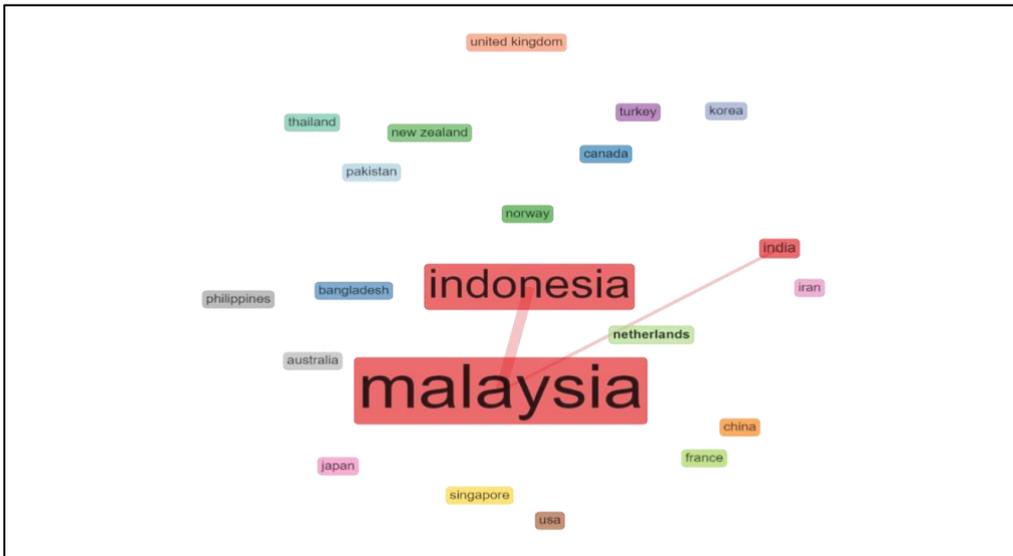


Figure 4a Country collaboration network using R

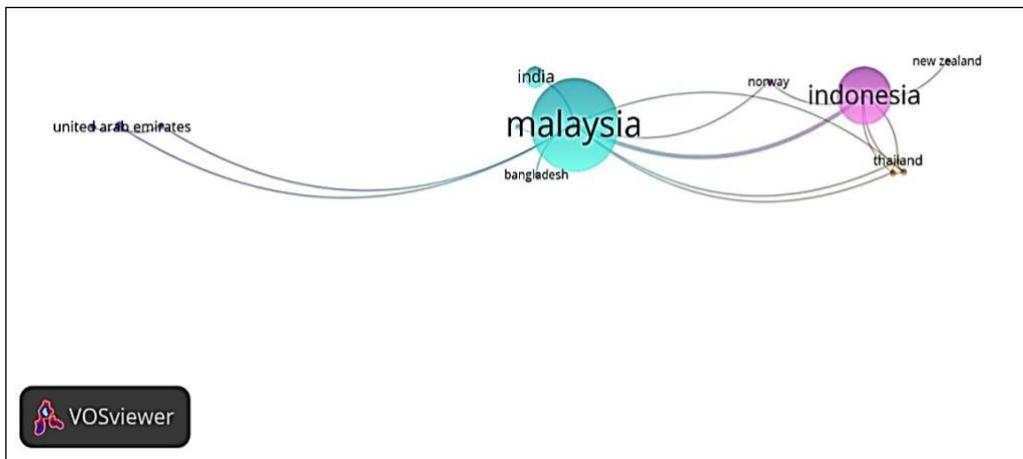


Figure 4b Collaboration network using VOSviewer

Analysis by Organization

The most productive organizations in the field of halal cosmetic research are shown in Figure 5. The leading organizations are Universiti Malaya and Universiti Putra Malaysia with 13 and 11 articles, respectively, followed by Universitas Gadjah Mada and Universiti Kebangsaan Malaysia with 6 articles each. The International Islamic University Malaysia and Universiti Sains Malaysia are next most productive with 5 articles each.

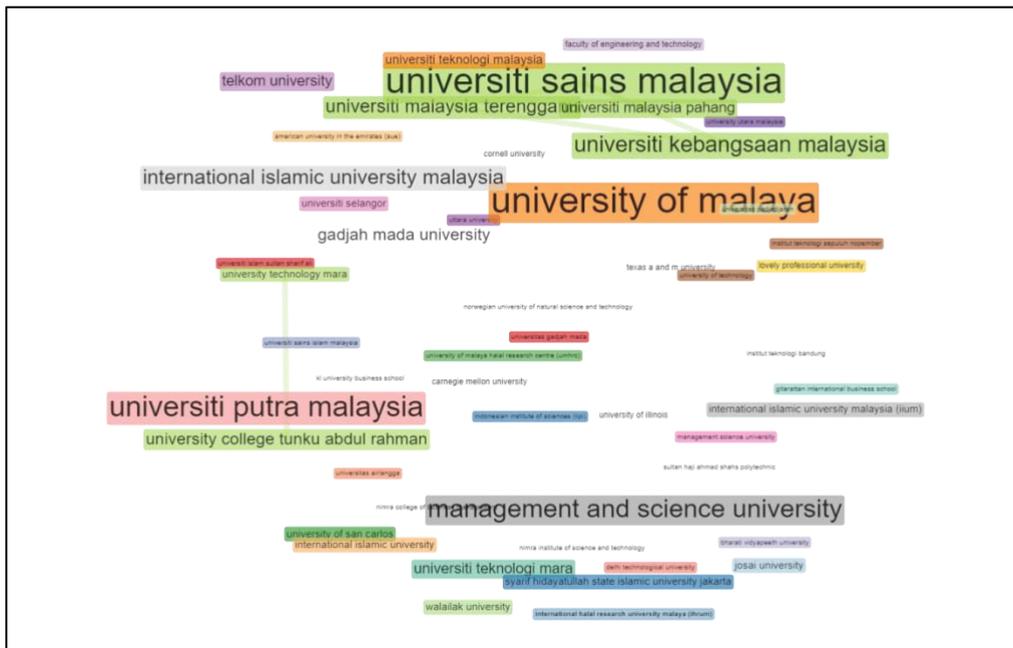


Figure 5 Productiveness of organizations

Keyword Co-occurrence Analysis

To identify developing themes and cutting-edge research frontiers in halal cosmetics over time, we used keyword co-occurrence analysis. It is important to note that this analysis shows the frequency with which certain keywords appear next to others in published documents. Considering a wide perspective, Figures 6a and 6b show the word treemap and word cloud resulting from R text analysis.

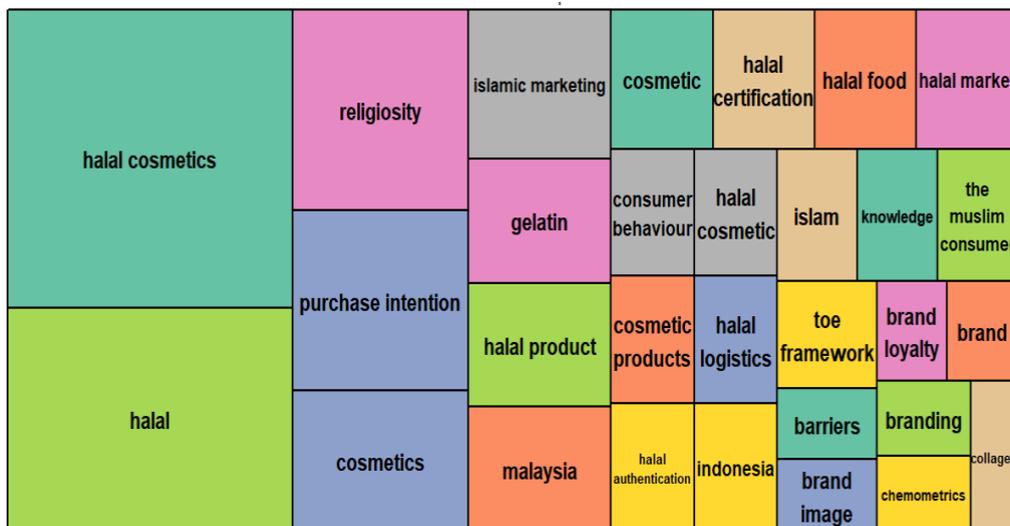


Figure 6a Word tree map

Major topics in halal cosmetics research during the study period are represented by the nodes with high co-occurrence frequencies. Figure 6a depicts the most important keywords used in the articles through a treemap displaying data as a set of nested rectangles. It reveals the hierarchical datasets within the data, revealing natural groupings of words in halal cosmetics research. The node size and color patterns represent correlation and relevance, respectively. From Figures 6a, and 6b, it can be seen that the most common keyword is “halal cosmetics,” followed by “halal,” “religiosity,” “purchase intention,” and “cosmetics.”

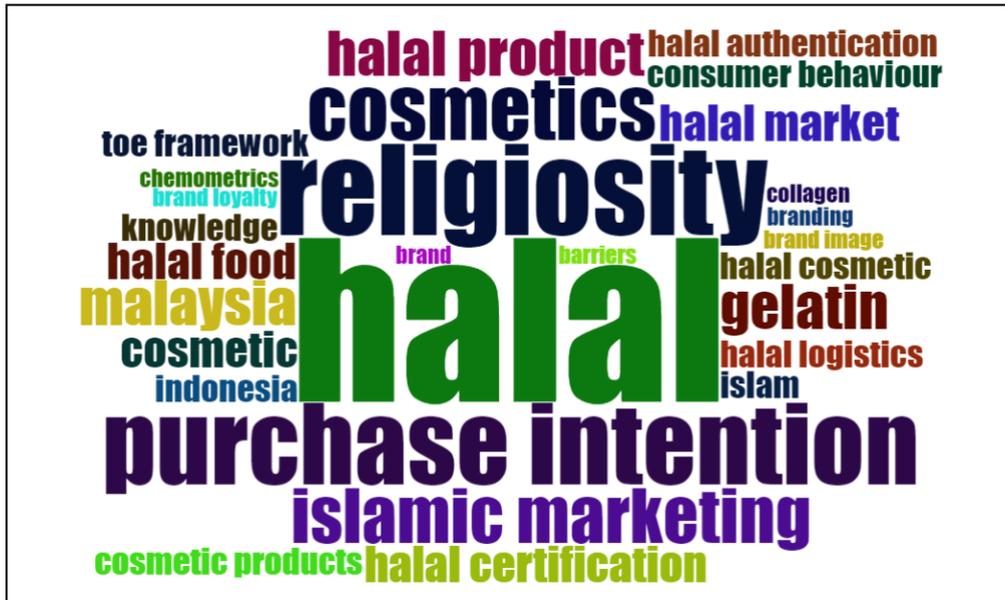


Figure 6b Word cloud of most frequently used keyword

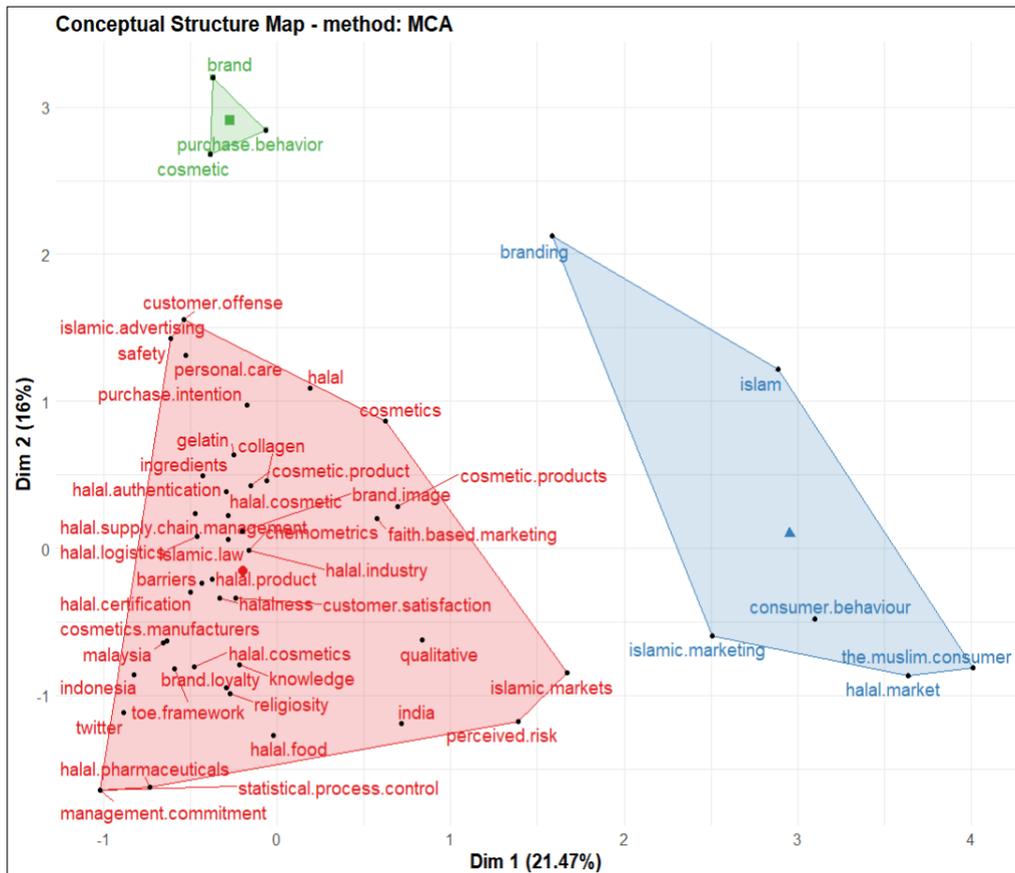


Figure 7 Conceptual Structure (Multiple Correspondence Analysis)

Figure 7 Conceptual Structure (Multiple Correspondence Analysis)

Conceptual Structure Mapping

A conceptual framework was developed through textual analysis utilizing the co-occurrence of words. Words for analysis can be selected by extracting terms from abstracts or titles, author keywords, and KeyWords Plus. To draw a conceptual structure map of the field the analysis was carried out using R software. Figure 7 shows the conceptual structure map with three clusters marked in green, red, and blue. The red cluster contains the most keywords (e.g., halal cosmetic, cosmetic products, personal care, halal authentication, halal certification, Islamic markets, and others), followed by the blue cluster (e.g., consumer behavior, branding, the Muslim consumer, Islamic marketing, halal market, and Islam).

Discussion

In terms of document type (Table 1), it was found that nearly 77% of the publications on halal cosmetics were in journals. This is probably driven by higher learning institutions' emphasis on publication in academic journals rather than other types of documents, such as conference proceedings or chapters in books. This may be due to the assumption that a journal article goes through a more rigorous peer review process than the other types of documents.

Figure 1 illustrates the increase in the number of publications on halal cosmetics after 2015. This number has grown by approximately 35% (from 7 publications in 2015 to 25 in 2020). The rise in the number of publications may be due to rising interest in halal cosmetics among researchers and practitioners of Islam, as the global halal cosmetics market has seen growth over the past few years (Research and Markets, 2021). Moreover, most of the previous publications on halal-related issues were on halal food; however, there have been studies Sugibayashi *et al.* (2019) highlighting that halal is not only about food. Because of globalization, urbanization, health concerns, and religious concerns, interest in halal cosmetics in general has increased Marican *et al.* (2021) thus the increase in publications.

A. Rohman is the author with the highest number of publications (Table 2). This is because Rohman has been publishing on issues related to halal cosmetics since 2011, while the other authors studied, such as Ngah, first published on the topic in 2017; Abdinagoro started in 2018, and Ainin in 2019. Table 2 also show that Ngah was the author with the highest number of citations. This may be due to his area of focus. He focused on halal transportation and the adoption of halal warehousing practices among pharmaceutical and cosmetics manufacturers, whereas Rohman's work is mostly related to halal authentication.

The analysis in Table 3 shows that the greatest number of publications related to halal cosmetics are in the Journal of Islamic Marketing. This is not surprising, as the name of the journal reflects that the contents are related to Islamic principles such as halal. Besides this journal, there are two other journals, the Global Journal Al-Thaqafah and Al-Jami'ah, whose titles demonstrate their focus on Islamic issues. It can be concluded that future work on halal cosmetics should refer to articles in the Journal of Islamic Marketing.

In addition, Table 3 also illustrates that an increasing number of researchers have begun to publish on halal cosmetics in journals that are not focused on Islamic issues, such as the International Journal of Supply Chain Management and the Malaysian Journal of Consumer and Family Economics. The articles in these journals discuss halal cosmetics, but the contexts of these studies are the supply chain and consumer perspectives, respectively.

It is not surprising that Malaysia and Indonesia have the highest number of publications (Figure 3). Both countries have extended halal research into the area of halal cosmetics in tandem with the introduction of halal cosmetic standards, namely the Malaysia Standard 2200-1:2008-Islamic Consumer Goods Part 1, Cosmetic and Personal Care, and the introduction of new laws under Regulation 13/2019 in Indonesia. Hence, both countries have become more involved in publications on halal cosmetics over the years. Besides publications from Muslim countries, such as Malaysia and Indonesia, there are also publications from non-Muslim countries, such as India, the US, and Canada. This illustrates that halal

cosmetics is a global issue and research is not only undertaken by Muslim-dominated countries, but also by non-Muslim-dominated countries. In addition, the interest in publication on halal cosmetics in non-Muslim countries is because of the collaboration that takes place between researchers (Figures 4a and 4b). For example, some Malaysian researchers collaborate with researchers from India and Netherlands, and some Indonesian researchers collaborate with those in New Zealand and Norway.

Figure 5 shows that the two institutions with the greatest number of publications on halal cosmetics are Universiti Malaya and Universiti Putra Malaysia. This finding is not unexpected, as both universities are categorized as research universities by the Ministry of Higher Education of Malaysia. Moreover, both universities have halal research centers.

As the keyword used to extract the data was “halal cosmetics,” it was expected that the highest occurrence among the nodes shown in Figures 6a and 6b would be “halal cosmetics.” This was true, and the keyword was followed by the terms “halal,” “religiosity,” “purchase intention,” and “cosmetics.” This shows that, in discussing halal cosmetics, more researchers are focusing on religiosity as a contributing factor in consumers’ purchase intentions regarding halal cosmetics. In addition, the structure map of the field analysis (Figure 7) illustrated that in discussing halal cosmetics authors tend to focus on issues related to marketing (such as consumer behavior, branding, Muslim consumer, Islamic marketing, halal market) and halal standard (such as halal authentication and halal certification). These results imply that halal cosmetics have been studied from various perspectives and subject areas hence the increasing number of publications related to it.

Conclusion

Research on halal cosmetics shows fairly defined trends that continue to grow into various disciplines in several countries. Halal cosmetics research has come a long way over the last decade in developing a shared body of thought to serve as the basis for the future consideration of halal cosmetics as an academic discipline. This study discloses some outcomes from the perspective of academic thought that can guide scholars in the field of halal cosmetics to observe underlying dynamics in a more refined way, with substantial implications on many related areas of research. By using bibliometric analysis on research in the field of halal cosmetics, we were able to visualize and trace the evolution of the field and distinguish the most productive authors, years, journals, articles, countries, and institutions. Compared with research on halal food, research on halal cosmetics is relatively new, hence it is no surprise that the field is still in its infancy (Sugibayashi *et al.*, 2019). The development of halal cosmetics research could also be attributed to the demand for halal cosmetic products among 2.4 billion Muslim consumers around the world. Existing literature on halal cosmetics provides essential guidance to researchers or academics seeking to explore this subject further, whether in material science, such as finding new production techniques, or in social science, such as in governance, consumer-based aspects, etc. As with any other study, this study has some limitations. First, the study focuses only on the keyword “halal cosmetics;” future studies might widen the scope to include synonyms, such as “Sharia-compliant cosmetics” and “Muslim-friendly cosmetics.” Two, the study reviews only articles published in journals contained within the SCOPUS database. Future studies should include other online databases to achieve more comprehensive outcomes and build on the contribution of this article to our understanding of the field.

Acknowledgement

We would like to thank Universiti Malaysia, 50603 Kuala Lumpur, Malaysia for the fund to conduct this research. Bantuan Khas Penyelidikan (BKP Special), (Grant No: BKS001-2019).

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