

THE INTELLECTUAL STRUCTURE OF HALAL  
RESEARCH BASED ON ISLAMIC EPISTEMOLOGY  
AND BIBLIOMETRICS

BY

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## ABSTRACT

This doctoral dissertation aimed to achieve three main objectives; defining Halal Research Comprehensive Index based on bibliometric study, constructing collection of halal food related Quranic commandments, and conducting a bibliometric study of halal food themes from online databases. This research is essentially, a descriptive study that emphasized subject epistemological origin in which definitions of halal from the Islamic knowledge were explored and exploited in the document retrieval process. In the subject analysis, a combination of reviews and bibliometric analysis was applied to explore the meaning and to extract research data. The mapping review defined halal concept epistemologically, in which translations of Quran verses were chosen to trace the origin of halal research according to the Islamic primary source of revealed knowledge. Concept definitions from halal governing bodies were also compared to gain insights into the governance of halal verifications and endorsements at the International level. The systematic literature review focused on the original concept, ‘halalan toyyiban’ where research papers from Scopus were extracted and analysed systematically. State-of-the-Art review collected the latest research works in halal and analysed the latest research themes. Al-Qaradawi (2001), ‘The Lawful and Prohibited in Islam’ was the main source of reference in the thematic citation analysis that corresponded to Al-Qaradawi’s categorization of halal with research data from Scopus. Citation network analysis on findings from Al-Qaradawi revealed halal business and halal social as the top themes. Data collections are from EBSCohost (1,400 documents), Emerald (307 documents), IEEE Xplore (48 documents), ProQuest (1,155 documents), and ScienceDirect (125 document), Scopus (1,492 documents), and Web of Science (1,217 documents) totalling 5,744 documents. All data are extracted between December 2018 to June 2019. Co-word or co-occurrence of terms from all collected data are identified and clustered. The research output is the Halal Research Comprehensive Index that was collectively a list of high impact halal research publications from the research analysis. This research utilizes several instruments namely, VOSviewer, GEPHI, and Microsoft Excel in data analysis. The research findings were mainly reviews and bibliometric analysis. Mapping review of halal definitions revealed similar descriptions of halal concept, conceptually and operationally. Systematic literature review identified ‘halal business’ and ‘halal social’ as the top two halal research topic in Scopus. Halal supply chain research topics were the main findings in the state-of-the-art review. The thesis output is the Halal Research Comprehensive Index to high impact halal research topics. Five major themes were identified in the co-word analysis; halal industry, halal forensics, halal slaughter, animal and meat sciences, halal consumerism and marketing, and halal gelatine.

## خلاصة البحث

أطروحة الدكتوراه هذه إلى تحقيق ثلاثة أهداف رئيسية ؛ تحديد الفهرس الشامل للبحوث الحلال بناءً على الدراسة الببليومترية ، وبناء مجموعة من الوصايا القرآنية المتعلقة بالطعام الحلال ، وإجراء دراسة ببليومترية لموضوعات الطعام الحلال من قواعد البيانات عبر الإنترنت. هذا البحث هو في الأساس دراسة وصفية أكدت على الأصل المعرفي للموضوع حيث تم استكشاف واستغلال تعاريف الحلال من المعرفة الإسلامية في عملية استرجاع الوثائق. في تحليل الموضوع ، تم تطبيق مجموعة من المراجعات والتحليل الببليومتري لاستكشاف المعنى واستخراج بيانات البحث. حددت مراجعة الخرائط مفهوم الحلال من الناحية المعرفية ، حيث تم اختيار ترجمات آيات القرآن لتتبع أصل البحث الحلال وفقاً للمصدر الإسلامي الأساسي للمعرفة التي تم الكشف عنها. كما تمت مقارنة تعريفات المفاهيم من الهيئات الحاكمة الحلال لاكتساب رؤى حول حوكمة عمليات التحقق والتأييد الحلال على المستوى الدولي. ركزت مراجعة الأدبيات المنهجية على المفهوم الأصلي ، "halalan toyyiban" حيث تم استخراج الأوراق البحثية من Scopus وتحليلها بشكل منهجي. جمعت المراجعة الحديثة أحدث الأعمال البحثية في مجال الحلال وحللت أحدث موضوعات البحث. القرضاوي (2001) ، "الشرعي والمحظور في الإسلام" كان المصدر الرئيسي للمرجعية في تحليل الاقتباس الموضوعي الذي يتوافق مع تصنيف القرضاوي للحلال مع بيانات بحثية من سكوبس. كشف تحليل شبكة الاقتباسات على نتائج القرضاوي عن الأعمال الحلال والشبكات الاجتماعية الحلال كموضوعين رئيسيين. مجموعات البيانات مأخوذة من EBSCohost (1938 مستنداً) ، Emerald (813 مستنداً) ، IEEE Xplore (58 مستنداً) ، ProQuest (1449 مستنداً) ، ScienceDirect (2،737 مستنداً) ، Scopus (973 مستنداً) ، وشبكة العلوم (778 مستنداً) بإجمالي 8746 وثيقة. يتم استخراج جميع البيانات بين كانون الأول (ديسمبر) 2018 وحزيران (يونيو) 2019. يتم تحديد الكلمات المشتركة أو التواجد المشترك للمصطلحات من جميع البيانات المجمعة وتجميعها. ناتج البحث هو المؤشر الشامل للبحوث الحلال الذي كان مجتمعة قائمة بالمنشورات البحثية الحلال عالية التأثير من تحليل البحث. يستخدم هذا البحث عدة أدوات وهي VOSviewer و GEPHI و Microsoft Excel في تحليل البيانات. كانت نتائج البحث بشكل رئيسي مراجعات وتحليل ببليومتري. كشفت مراجعة خرائط تعاريف الحلال عن أوصاف مماثلة لمفهوم الحلال من الناحية المفاهيمية والتشغيلية. حددت مراجعة الأدبيات المنهجية "الأعمال الحلال" و "الحلال الاجتماعي" كأول موضوعين بحثيين عن الحلال في Scopus. كانت موضوعات أبحاث سلسلة التوريد الحلال هي النتائج الرئيسية في المراجعة الحديثة. ناتج الأطروحة هو المؤشر الشامل لأبحاث الحلال لموضوعات البحث الحلال عالية التأثير. تم تحديد خمسة مواضيع رئيسية في تحليل الكلمة المشتركة ؛ صناعة الحلال ، الطب الشرعي الحلال ، الذبح الحلال ، علوم الحيوانات واللحوم ، الاستهلاك والتسويق الحلال ، والجيلاتين الحلال.

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## DECLARATION

I hereby declare that this dissertation is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 BACKGROUND OF THE STUDY**

The collective scientific advancement of a given research field relies not only on the research skills and abilities of individual researchers, rather also on continuous communication among them. This is in turn helpful in improving the research performance of individuals and of the whole scientific community. Although there are other equally important ways of spreading academic ideas through monographs, conference proceedings, book chapters, and web pages, scholarly journals remain one of the most important media for scientists to communicate with their (invisible) colleagues. Whenever scholars write scientific documents, they need to cite the scholarly work of others. Earlier research outputs that are frequently cited collectively constitute the intellectual base of a knowledge domain, (Liu et al., 2015).

Halal food sector is a global market valued at more than USD 2 trillion in 2017 and forecasted to exceed 3 trillion in the next five years, (Thomson Reuters, 2018). In the perspective of scholarly publications, research topics on halal has been the gateway toward understanding, reinforcing, and protecting a specific value of highest importance for Muslims. Research in halal were mostly diversified involving multi-disciplinary topics such as consumerism (Wilson & Liu, 2011), forensic science (Ali et al., 2012), integrity network (Ali, Kim, & Ismail, 2017), and supply chain, (Tieman, 2011). Online digital format of researches has opened many opportunities particularly for subject analysis. Subject analysis has been considered as one of the fundamental activities in Library and Information Science (LIS) field, (Hjørland, 1998). Hence, this research is intended to develop a rigorous comprehensive index to halal research

publication based on bibliometric analysis of research developments and evolutions over the years. Comprehensive index of literature is potentially useful information for researchers interested in advancing future knowledge in a specific area, (Gil-Doménech, Berbegal-Mirabent, & Merigó, 2020; pg 204).

Bibliometric is a field of study that accounts citation as an indicator that can describe a subject in a specific field. For instance, citation analysis is a method that can identify frequently used term in research through co-word analysis, (Leung, Sun, & Bai, 2017). Such analysis is useful in mapping themes and subject clusters that provide insights into halal research domain. Halal industry community also can benefit from this research analysis in which insights can be drawn into the current development and technology in the halal industry. In addition, and more importantly, Muslims and non-Muslims can discover the meaning of halal based on the research's literature review, which revealed the conceptual definitions of halal. This is also a positive step toward addressing the misconception of halal. Indeed, misconceptions about Islam were not uncommon all over the world such as the boycotts of halal, (Hirschman & Touzani, 2016) and Islamophobia, (Erie, 2018).

Natively, Islamic knowledge is in Arabic language and the emotive nature of languages is that sometimes are 'lost in translation'. From LIS perspective, information retrieval (IR) of Islamic topics through search engines and online databases are important studies. Globally, Islamic terminologies which are literally translated into English did not necessarily convey the appropriate level of social and religious meanings the Arabic terms denote. For example, 'halal' and 'haram' in the English equivalents is permissible and forbidden, respectively. In actuality, the words 'halal' and 'haram' in the Islamic culture referred to a wide number of permitted or forbidden practices and customs under the Islamic law. Much more than just religious



customs, the concept of ‘halal’ and ‘haram’ referred to specific Islamic laws governing food and drinks, (Kashgary, 2011). In the context of research publications indexed in online databases, bibliometric study is one of the efficient methods to understand the content of scientific literatures on halal topics. Nowadays, scholarly publications are rapidly indexed and made available in online databases accessible through universities’ subscriptions. With the advancement in the use of comma separated value file format (.csv) and Research Information Systems (.ris) formatted files, many bibliometric studies have described and reported sciences using mapping and visualization in different areas; in mapping of medical science, (Zhao, Du, Zhang, & Xu, 2019), in mapping of stem cells, (Wei et al., 2019), in mapping of genetically modified organism, (Elisabetta, Macari, Massimo, Sofia, & Giuseppe, 2019), in visualization of self-service technology, (Shin & Perdue, 2019), visualization of wealth inequality, (Korom, 2019), and secondary education digital competencies, (Stopar & Bartol, 2019).

Therefore, this research was aimed to conduct a bibliometric study of halal research literatures and to construct a comprehensive index that is informative and timely for researchers, practitioners, halal business and industry communities. Islamic subjects are distinctively unique and require references within the Quranic text. Research data visualization software was used to analyse the present themes of halal topic and to identify emerging technology in the industry. Discussions on practical and theoretical contributions are elaborated in Chapter 5 of this thesis.

## **1.2 PROBLEM STATEMENT**

Understanding and knowledge of a subject is a complex task in Library and Information Science (LIS) field. The question of what a subject is actually is an ever-

debated question, (Hjørland, 2001; Mai, 2005; Tsay, 2014). Islamic subject, particularly halal is an utmost importance issue for Muslim scholars, academicians, researchers, businesses, scientists, and the general Muslim public. Thus far, Mostafa (2020) conducted a comprehensive review of the halal food research intellectual structure based on Web of Science (WoS) core collection documents over three decades (1990–2019). Mostafa (2020) analysed all halal food documents indexed in the WoS since 1990, the research represents the first comprehensive knowledge domain analysis and visualization of halal research. The data collection made it possible to pinpoint the most influential scholars, core journals and current major trends, and emerging themes of halal multidisciplinary research field.

Askomi, Yusop, and Kamarulzaman (2018) conducted a review on halal online information media, which analysed research papers. The analysis involved several papers from ERIC, Google Scholar, and Web of Science. The review focused on the use of mobile application that provided information about halal. Insufficient insights to the extra level of meaning of halal are common in specialized research such as in halal forensics, (Abdul Karim & Muhamad, 2018; Al Bakri Abdullah, 2011). In terms of bibliometric study on halal topic, a query conducted in Scopus as the following, (TITLE-ABS-KEY (halal)) AND (bibliometric) returned 1 result only. The result showed a bibliometric study on Kosher literature and halal was mentioned as a comparison, (Della Corte, Del Gaudio, & Sepe, 2018). Business opportunity is the main element in halal industry and covers issues such as logistic (Ab Talib, Hamid, & Zulfakar, 2015; Ali, Kim, & Ismail, 2017; Tieman, 2011), marketing (Harahsheh, Haddad, & Alshorman, 2019), business sustainability (Ali & Suleiman, 2016), and product branding (Ya, Nor, Noor, & Ahmad, 2017). Literatures mentioned above were missing the broader picture of halal research topic which could enhance a better

understanding and be useful for researchers, academicians, businesses, and information technologists.

At the top list of software and research instrument, VOSviewer is one of the state-of-the-art software for bibliometric analysis. This free to use software is the product of Nees Jan van Eck and Ludo Waltman, who are the researchers at the Centre for Science and Technology Studies of Leiden University in the Netherlands. Their research focused on the analysis and visualization of bibliometric networks and aimed to contribute to an improved understanding of the structure and dynamics of science, (Eck & Waltman, 2019). In the Malaysia research context, the use of VOSviewer is relatively a novelty even though bibliometric method existed in the last 100 years ago. Search result in Scopus using the following search strategy, retrieved a combined result of sixteen documents as shown in Table 1.1.

- 1- TITLE-ABS-KEY ( bibliometric ) AND ( LIMIT-TO ( AFFILCOUNTRY , "Malaysia" ) )
- 2- TITLE-ABS-KEY ( bibliometrics ) AND ( vosviewer ) AND ( LIMIT-TO ( AFFILCOUNTRY , "Malaysia" ) )
- 3- TITLE-ABS-KEY ( vosviewer ) AND ( LIMIT-TO ( AFFILCOUNTRY , "Malaysia" ) )

The first level of query was meant to conduct a general and informative search for bibliometric papers researched in Malaysia, which returned 167 results. The second level query returned 14 results, and the third level query returned 10 results. Among the collective results, only 16 bibliometric papers used VOSviewer as their research instruments. Table 1.1, shows that majority of the papers were written by Md Nadzar, Bakri and Ibrahim from Faculty of Computing, Universiti Teknologi Malaysia. Their topic was mostly centred on Malaysian research publication, (Md

Nadzar, Bakri & Ibrahim, 2017, 2018, 2019a, 2019b). The other five papers were individually written by authors with two of them from University Malaya. The other three were from Universiti Teknologi Petronas, Universiti Utara Malaysia and Universiti Sains Malaysia. In terms of document type, five items are journal articles and four are conference proceedings. In terms of journal ranking, three journals were in Q1, one in Q2 and one in Q4 as shown in Table 1.2. Note that none of the cited papers here were about halal in particular.

Table 1.1 Malaysian Scholarly Published Using VOSviewer

<b>ID</b>	<b>Authors</b>	<b>Year</b>	<b>Title</b>	<b>Affiliation</b>	<b>Document Type</b>	<b>Publication Title</b>
1	Ang, Wahab Mohammad, Johnson, & Hilal	2019	Forward Osmosis research trends in desalination and wastewater treatment	Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia	Journal	Journal of Water Process Engineering
2	Ahmi, Elbardan, & Raja Mohd Ali	2019	Bibliometric Analysis of Published Literature on Industry 4.0	Tunku Puteri Intan Safinaz School of Accountancy Universiti Utara Malaysia (UUM)	Conference Proceeding	ICEIC 2019 - International Conference on Electronics, Information, and Communication
3	Athar, Shariff, & Buang	2019	A review of inherent assessment for sustainable process design	Chemical Engineering Department, Universiti Teknologi Petronas (UTP)	Journal	Journal of Cleaner Production
4	Md Nadzar, Bakri & Ibrahim	2019a	The Study of Co- occurrences Index's Keywords for Malaysian Publications	Faculty of Computing, Universiti Teknologi Malaysia (UTM)	Conference Proceeding	3 <sup>rd</sup> International Conference of Reliable Information and Communication Technology, IRICT 2018

<b>ID</b>	<b>Authors</b>	<b>Year</b>	<b>Title</b>	<b>Affiliation</b>	<b>Document Type</b>	<b>Publication Title</b>
5	Khan et al.	2019	Methodological research on partial least squares structural equation modelling (PLS-SEM): An analysis based on social network approaches	Monash University Malaysia	Journal	Internet Research
6	Ale Ebrahim, Ashtari, Zamani Pedram, & Ale Ebrahim	2019	Publication Trends in Drug Delivery and Magnetic Nanoparticles	Institute of Management and Research Services (IPPP), University of Malaya (UM)	Journal	Nanoscale Research Letters
7	Md Nadzar, Bakri, & Ibrahim	2019b	Mapping research theme for Malaysia's publication	Faculty of Computing, Universiti Teknologi Malaysia (UTM)	Conference Proceeding	2018 IEEE Conference on Big Data and Analytics, ICBDA 2018
8	Hew, Lee, Ooi, & Lin	2019	Computer Science in ASEAN: A Ten-Year Bibliometric Analysis (2009–2018)	Universiti Tunku Abdul Rahman & UCSI University	Journal	Journal of Computer Information Systems

<b>ID</b>	<b>Authors</b>	<b>Year</b>	<b>Title</b>	<b>Affiliation</b>	<b>Document Type</b>	<b>Publication Title</b>
9	Elaheh, Md Nor, Abbas, Nader, & Nasrin	2018	Five decades of scientific development on "attachment theory": Trends and future landscape	Faculty of Education, University of Malaya (UM)	Journal	Pertanika Journal of Social Science and Humanities
10	Mohamad, Bakri, & Ahmad	2018	Visualising Research Data in Dentistry	Faculty of Information Management & Faculty of Dentistry Universiti Teknologi MARA (UiTM)	Conference Proceeding	2018 4th IEEE International Conference on Information Management
11	Vahed, Gavvani, Jafarzadeh, Tusi, & Erfanmanesh	2018	Visualization of the Scholarly Output on Evidence Based Librarianship: A Social Network Analysis	Faculty of Computer Science & Information Technology University of Malaya (UM)	Journal	Evidence Based Library and Information Practice
12	Zyoud, Sweileh, Awang, & Al-Jabi	2018	Global trends in research related to social media in psychology	National Poison Centre, Universiti Sains Malaysia (USM)	Journal	International Journal of Mental Health Systems

<b>ID</b>	<b>Authors</b>	<b>Year</b>	<b>Title</b>	<b>Affiliation</b>	<b>Document Type</b>	<b>Publication Title</b>
13	Md Nadzar, Bakri, & Ibrahim	2018	Potential implementation of subject areas in Malaysia's research assessment	Faculty of Computing, Universiti Teknologi Malaysia (UTM)	Conference Proceeding	2017 IEEE Conference on e-Learning, e-Management and e-Services, IC3e 2017
14	Md Nadzar, Bakri, & Ibrahim	2017	A Bibliometric Mapping of Malaysian Publication using Co-Word Analysis	Faculty of Computing, Universiti Teknologi Malaysia (UTM)	Journal	International Journal of Advances in Soft Computing and its Applications
15	Hashem et al.	2016	MapReduce: Review and open challenges	Faculty of Computer Science and Information Technology, University of Malaya (UM)	Journal	Scientometrics
16	Kumar & Markscheffel	2016	Bonded-communities in HantaVirus research: a research collaboration network (RCN) analysis	University of Malaya (UM)	Journal	Scientometrics