Halal and Digitalization: A Bibliometric and Content Analysis

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Abstract

Research on halal has been conducted in various disciplines and on various topics. Bibliometric analysis on halal related studies has also been conducted several times. As the information technology and computer-based applications developing rapidly, digitalization on halal industry has become emerging concern. This study aims to analyse the articles indexed by Google Scholar on the topics of halal and digitalization. This index is used to allow for wider coverage and to include articles in Bahasa Indonesia. This is important since halal certification has now become mandatory in the country. This has attracted researchers to conduct more studies on halal related research. The keywords used are limited to halal and digital. Bibliometric and content analysis are used to structure the discussion and answer the research question. Result for articles in Bahasa Indonesia and articles in English are separated to see whether there is any difference. The result shows that the research topics in Bahasa Indonesia is dominated by Muslim friendly tourism and digital marketing for almost all halal industry sectors. Papers in English have more varied topics including cryptocurrency but are dominated by cases in Indonesia and Malaysia. Therefore, research in Bahasa Indonesia related to halal and digitalization may cover uncovered topics such as halal bitcoin and cryptocurrency. Research in English may adopt cases from the two most mentioned cases, but with implementation in other countries.

Keywords: Halal, Digitalization, Bibliometric, Google Scholar

Introduction

Halal is topics to various inter and intra related disciplines including natural sciences and social sciences. Number of research related to halal worldwide has increased significantly, especially for cases in Indonesia. Since Indonesia announced the halal certificate to be mandatory in 2014, interest to study on halal has attracted researchers more than before.

There are at least twelve academic journals based in Indonesia dedicated to halal research. Four of them are indexed by Science and Technology Index (SINTA) under Ministry of Education. They are Indonesian Journal of Halal Research (IJHAR), Journal of Digital Marketing and Halal Industry, Journal Agroindustri Halal, Indonesia Journal of Halal. Those four journals and another eight journals are listed under Garba Rujukan Digital (Garuda: Digital Reference Platform) under Ministry of Education. The eight names are: Ar Rehla: Journal of Islamic Tourism, Halal Food, Islamic Traveling, and Creative Economy, Food Technology and Halal Science Journal, Halal Research Journal, IJMA: International Journal Mathla'ul Anwar of Halal Issues, Journal of halal product and research (JHPR), Journal of Halal Science and Research, Journal of Industrial Engineering and Halal Industries, and Jurnal Bisnis Ekonomi Halal.

The worldwide increasing use of computer and internet, combined with the impact from Covid-19 Pandemic have disrupted manual and traditional economic and business activities. Improvements and innovations are needed to survive and to win the competition. Among others, solution adopted globally is the further acceleration of digitalization. The use of information technology has spread to the entire value chain, from consumers to producers. The role of digitalization has enabled global Muslim spending on halal food industry to reach market value of USD 1.27 trillion, Islamic finance to USD 3.6 trillion, Muslim friendly tourism to USD 58 billion, modest fashion into USD 295 billion, halal pharmaceutical into USD 100 billion, halal cosmetics into USD 70 billion, and Muslim friendly media into USD 216 billion (Dinar Standard, 2022).

As the information technology and computer-based applications developing rapidly, digitalization on halal has now become emerging concern. The discussion on the use of digitation has expanded from halal food, halal tourism, halal cosmetics, halal healthcare, halal media, and halal finance. To examine the research that has been conducted and how far the initiative to digitise halal goes, it is important to review previous research on this topic.

In the next part of this study, the definition of digital is explained to clarify the scope of the study. The importance of the study stems from the discussion of previous studies on halal that used bibliometric analysis, such as the one conducted in this paper. Next, the methodology of data collection, data filtering, and data analysis is explained in detail. The results and interpretation of the data analysis, followed by a discussion and recommendations for further studies, conclude the study.

Definition of Digital

According to Thesaurus Dictionary, "digital" means "pertaining to, noting, or making use of computers and computerized technologies, including the internet". Oxford Learners Dictionary defines "digital" as "connected with the use of computer technology, especially the internet". Digitalization or issues related to halal and digitalization will therefore highlight how computer or internet as part of information technology is used on halal related disciplines.

Halal and Bibliometric Studies

Bibliometric studies related to halal has covered various topics. Harzing Publish or Perish shows that there are more than twenty studies published, by Scopus and Google Scholar indexed publications. Some researchers study on halal issues in general such as Hashim et al. (2022) and Haleem et al. (2020), and some other researchers' study on specific part of halal industry.

Most of halal related bibliometric studies discuss on halal tourism. Among others are Bayuny (2022), Mas'ud & Hamim (2022), Abdullah (2021), Hidayat et al. (2021), Rusydiana et al. (2021), Suban et al. (2021), and Yagmur et al. (2020). The second most studied by bibliometric analysis is halal food. Some researchers such as Agrawal & Tripathi (2021), Rejeb et al. (2021), Handayani et al. (2022), Priantina & Sapian (2021), Antonio et al. (2020), Omar et al. (2020), and Wahyuni et al. link the study from supply chain perspective. Next on the list is studies related to halal cosmetics. Suryani et al. (2022), Zakaria et al. (2022), and Azmi et al. (2021) are among studies published. Izza (2022) used bibliometric analysis for halal fashion research.

Research that may be closely related to halal and digitalization are like Masudin et al. (2022) discussing on halal traceability system and Yanti et al. (2022) on halal blockchain. So far, research specifically mentioning halal and digitalization on the title has not been found.

Data Collection and Filtering

Google Scholar database is chosen for wider coverage and to include papers in Bahasa Indonesia. The list of keywords or combination of keywords chosen for this study is as follows:

1. "halal" AND "digital" to be found on the title. This combination of keywords results in 85 papers
2. "halal" to be found on title and "digital" to be found on the body of the text. This combination of keywords results in 997 papers
3. "halal" AND "online" to be found on the title. This combination of keywords results in 119 papers

Note: AND is written by capital letters as filter tool for searching code on the used application.

After searching, the next step is filtering. The second combination of the keywords result in variety of contents. It turns out that the word "digital" may be found on the body of text or even on the reference. Papers in language other than English and Bahasa Indonesia are also excluded for this study. Redundancy is also checked. The total number used for the analysis is 279 Bahasa Indonesia articles and 481 English articles.

Method

Bibliometric and content analysis are used to structure the discussion and address the research objective. This method was chosen because it is used to identify information about the selected articles. The bibliometric data used for the discussion include the author(s)'s name, title and abstract, name and year of publication, and number of Google Scholar citations. This study refers to and modifies the steps of bibliometric analysis as introduced by Fahimnia, Sarkis, and Davarzani (2015). The discussion is then started by descriptive statistics on the number of articles per year, prominent articles based on the number of citations, and prominent publications based on the number of articles.

For the analysis of the network of keywords in abstracts using VOSviewer software, this research adopts Dessouky and Dessouky (2017). The Vosviewer Visualization of the abstracts is elaborated to show the keywords clustering, and the Overlay Visualization is also applied to show the trend of the keywords used in recent years. To enrich the discussion and confirm the visualization of the keyword network, a wordmap analysis using Atlas.ti is added to capture the full texts of all selected articles.

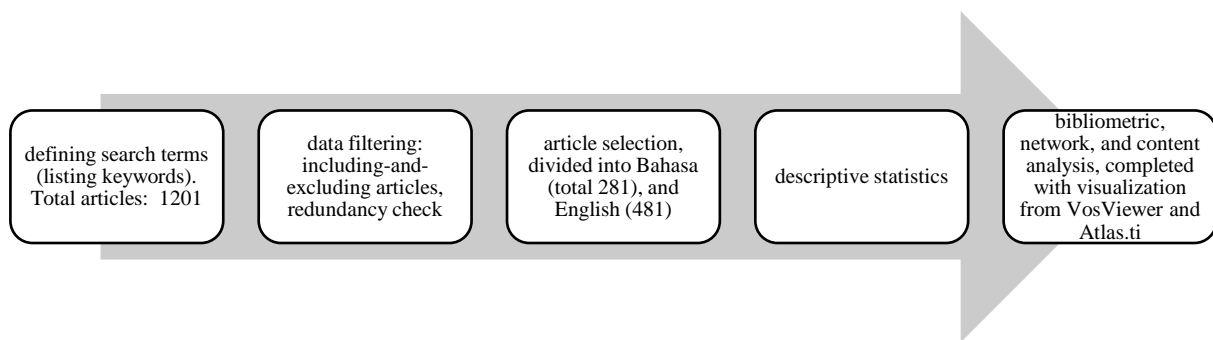In summary, the stages of research method for this study are:

Figure 1. Stages of Research
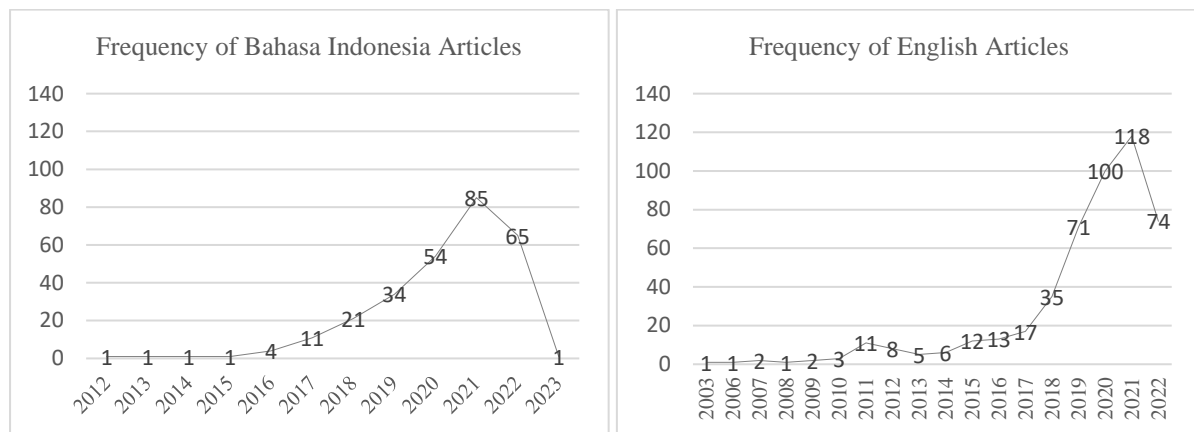
Descriptive Statistics

Figure 2. Frequency of Bahasa Indonesia (Left) and English (Right) Articles

The earliest article in bahasa Indonesia was published in 2012 while it was in 2003 for English article. Both line charts show increasing trend with the peak in 2021, with each 85 articles in Bahasa and 118 articles in English.

Table 1a. Bahasa Papers with Highest Citation

Cites	Authors	Title	Year	Source	Indexed by
26	Nugraha	Analisis potensi promosi pariwisata halal melalui e-marketing di Kepulauan Riau (Analysis of the potential for halal tourism promotion through e-marketing in the Riau Islands Province)	2018	Jurnal Penelitian dan Karya Ilmiah Lembaga Penelitian Universitas Trisakti (Journal of Research and Scientific Work of Trisakti University Research Institute)	Sinta 5
24	Mahardika	Strategi Pemasaran Wisata Halal (Halal Tourism Marketing Strategy)	2020	Mutawasith: Jurnal Hukum Islam (Journal of Islamic Law)	Google Scholar
23	Hermawan	Strategi Kementerian Pariwisata Indonesia Dalam Meningkatkan Branding Wisata Halal (Strategy of the Indonesia Ministry of Tourism in Improving Halal Tourism Branding)	2019	Jurnal Ilmu Manajemen dan Akutansi (Journal of Management and Accounting Sciences)	Sinta 6
23	Zahrah & Fawaid	Halal Food di Era Revolusi Industri 4.0: Prospek dan Tantangan (Halal Food in the Era	2019	Hayula: Indonesian Journal of Multidisciplinary Islamic Studies (Indonesian	Sinta 2

		of the Industrial Revolution 4.0: Prospects and Challenges)		Journal of Multidisciplinary Islamic Studies)	
22	Kamila	Peran Industri Halal Dalam Mengdongkrak Pertumbuhan Ekonomi Indonesia Di Era New Normal (The Role of Halal Industry in Boosting Indonesia's Economic Growth in the New Normal Era)	2021	LIKUID: Jurnal Ekonomi Industri Halal (Journal of Halal Industrial Economics)	Google Scholar

For Bahasa Indonesia article, highest Google Scholar citation are Nugraha (2018), Mahardika (2020), Hermawan (2019), Zahrah & Fawaid (2019), and Kamila (2021). Three of the papers discuss on digitalization as solution for halal tourism, especially for marketing purpose. Each of the rest discuss on digitalization for halal food and for halal industry in general.

Table 1b. English Papers with Highest Citation

Cites	Authors	Title	Year	Source	Indexed by
240	Butt and Aftab	Incorporating attitude towards Halal banking in an integrated service quality, satisfaction, trust and loyalty model in online Islamic banking context	2013	International Journal of Bank Marketing	Scopus-Q2
206	Bohari et al.	An analysis on the competitiveness of halal food industry in Malaysia: an approach of SWOT and ICT strategy	2013	Malaysia Journal of Society and Space	Web of Science
191	Yousaf & Xiucheng	Halal culinary and tourism marketing strategies on government websites: A preliminary analysis	2018	Tourism Management	Scopus-Q1
186	Nurjuliana et al.	Rapid identification of pork for halal authentication using the electronic nose and gas chromatography mass spectrometer with headspace analyzer	2011	Meat Science	Scopus-Q1
156	Akyol & Kilinç	Internet And Halal Tourism Marketing.	2014	Electronic Turkish Studies	Scopus-Q1

English papers on the context of digitalization have more citations, probably because they have wider coverage of readers. The coverage of the top cited articles is also more varied. Butt and Aftab (2013) discusses on online Islamic banking service. Bohari et al. (2013) and Yousaf & Xiucheng discuss on digitalization for halal food industry. Akyol & Klininc and Yousaf & Xiucheng study on digital marketing and halal tourism. Nurjuliana et al. (2011) is the only science paper from the top cited papers who discuss on halal authentication method.

Table 2a. Publication with Frequent Bahasa Articles on Halal and Digitalization

Source	Indexed by	Authors	Title	Year
Jurnal Ilmiah Ekonomi Islam	Sinta 3	Azizuddin et al.	Industri Pariwisata Halal: Pendorong Inovasi Untuk Halalpreneurs (Halal Tourism Industry: Innovation Drivers for Halalpreneurs)	2022

		Komariah et al.	Pengaruh Inovasi dan Media Sosial terhadap Kinerja UMKM Makanan Halal di Kota Bekasi Utara (The Influence of Innovation and Social Media on the Performance of Halal Food MSMEs in North Bekasi City)	2022
		Lubis & Izzah	Faktor Penentu Gaya Hidup Halal Generasi Z di Sumatera Utara (Determinants of Generation Z Halal Lifestyle in North Sumatra)	2022
		Ma'rifah & Normasyhuri	Daya Tarik Halal Tourism Pada Minat Wisatawan di Indonesia Ketika Era Covid-19 (The Attraction of Halal Tourism to Tourist Interest in Indonesia During the Covid-19 Era)	2022
		Nugroho & Rahman	Digitalisasi dan Keberlangsungan UMKM Kuliner Halal Selama Pandemi Covid-19 (Digitalization and Sustainability of Halal Culinary MSMEs During the Covid-19 Pandemic)	2022
Sewagati	Sinta 4	Gunawan et al.	Merajut Ekosistem Industri Halal dalam Menumbuhkembangkan Usaha Kompetitif Melalui Merdeka Belajar (Linking the Halal Industry Ecosystem in Enhancing Business Competitiveness through Independent Learning Program)	2022
		Savitri & Putra	Sosialisasi Sistem Jaminan Halal Bagi Pelaku Usaha Mikro, Kecil dan Menengah (UMKM) (Socialization of Halal Assurance System for Micro, Small and Medium Enterprises (MSMEs))	2022
		Gunawan et al.	Pendampingan Berkelanjutan Sistem Jaminan Halal Bagi Usaha Mikro, Kecil, dan Menengah (UMKM) (Sustainable Assistance Program for Halal Assurance System for Micro, Small, and Medium Enterprises (MSMEs)	2021
Halal Research Journal	Google Scholar, Moraref	Adinegoro	Relasi media sosial dan pasar dalam perubahan nilai publik mengenai pengaruh dakwah di media sosial terhadap pandangan gaya hidup halal (The relationship between social media and the market in changing public values regarding the influence of Islamic preaching on social media on the view of halal lifestyle)	2022
		Qoni'ah	Tantangan dan strategi peningkatan ekspor produk halal Indonesia di pasar global (Challenges and strategies to increase exports of Indonesia halal products in the global market)	2022
		Ashari	Pengembangan sistem logistik produk halal di Indonesia (Development of halal product logistics system in Indonesia)	2021

There are three publications which have at least three Bahasa articles on halal and digital. They are Jurnal Ilmiah Ekonomi Islam (JIEI), Sewagati, and Halal Research Journal. All of them are academic journal and are homebased in Indonesia. JIEI has five articles related to this issue with varied topics. Azizuddin et al. (2022) and Ma'rifah & Normasyuhi discuss on halal tourism, Komariah et al. (2022) and Nugroho & Rahman (2022) discuss on halal food, and Lubis & Izzah (2022) discuss on usage of internet related to halal industry in general.

Sewagati is an academic journal which publish empowerment project reports. Therefore, articles published here are related to how to use computer or internet to empower halal related economic activity, such as how to apply for halal certification (as discussed by Savitri & Putra, 2022 and Gunawan et al., 2021) and how to educate on halal industry (Gunawan et al., 2022).

Adinegoro (2022), Qoni'ah (2022), and Ashari (2021) published their article under Halal Research Journal. The topics are related to digital marketing for halal industry and digitalization for halal logistics system.

Table 2b. Publication with Frequent English Articles on Halal and Digitalization

Source	Indexed by	Authors	Title	Year
Journal of Digital Marketing and Halal Industry (JDMHI)	Sinta 3	Peristiwo	Impact of the covid-19 pandemic on Indonesia halal tourism transportation	2021
		Purwanto et al.	Policy Analysis of Enforcement of Halal Product Guarantee Regulations Through the Regulatory Impact Analysis (RIA) Approach	2021
		Fataron & Rohmah	Effect Analysis of Trust, Ease, Information Quality, Halal Product on Online Purchase Decision of 2016-2018 Batch Students of Islamic Economics Study Program in UIN Walisongo at Shopee Marketplace.	2019
Halal Cryptocurrency Management	Springer Link Book	Habib & Adekunle	Case Study of Bitcoin and Its Halal Dimension	2019
		Beik et al.	Waqf Led Halal Cryptocurrency Model	2019
		Beik et al.	Zakat Standard Framework of Halal Cryptocurrency	2019
		Zulkhibri	Halal Cryptocurrency and Financial Stability	2019
		Billah	Halal Cryptocurrency: Its Establishment and Operational Mechanisms	2019
		Billah	SWOT analysis of halal cryptocurrency structure	2019
		Billah	Cryptocurrency? Its Halal Alternative Model	2019
		Billah	Innovative Action of Halal Cryptocurrency Management	2019
		Kakkattil	Blockchain Technology in Managing Halal Cryptocurrency	2019
Annual International Conference on Islamic Economics and Business (AICIEB)	Google Scholar	Apriliani et al.	The Influence of Brand Image, Halal Label, and Product Quality on Kentucky Fried Chicken (KFC) Purchase Decisions	2021
		Siswoyo	Strengthening Halal Industry in Increasing Competitiveness and Economic Opportunities in Industrial Revolution Era 4.0	2021
		Trimulato	Linkage Sharia Banking and Sharia Fintech to Support Halal Industry in Indonesia	2021
		Trishananto et al.	Halal Culinary Tourism Promotion Strategy in Improving Performance Small and Medium Enterprises Through Digital Marketing in Batam City	2021
		Nurohman & Qurniawati	The Intention to Use E-Money: An Empirical Study of Halal Food SMEs In Surakarta	2021

Publications with significant number of papers related to halal and digitalization are dominated by Indonesia based publications. JDMHI and Proceeding of AICIEB 2021 are based in Indonesia. Halal Cryptocurrency Management is a book or compilation of book chapters, as the name says it covers halal finance.

Published in JDMHI, Peristiwo (2021) discuss on halal tourism, Purwanto et al. (2021) discuss on halal assurance, and Fataron & Rohmah (2019) discuss on on halal purchase. Proceeding of AICIEB also has quite similar coverage. Apriliani et al. (2021) discuss on online halal food purchase, Trimulato (2021) and Nurohman & Qurniawati (2021) discuss on halal finance, Trishananto et al. (2021) discuss on halal culinary tourism, and Siswoyo (2021) discuss on using digitalization to strengthen halal industry in general.

As a compilation of book chapters published by Springer Link, Habib & Adekunle (2019), Beik et al (2019), Zulkhibri (2019), Billah (2019), and Kakkatil discuss on various sides of halal cryptocurrency. The topics covers both conceptual and empirical approach.
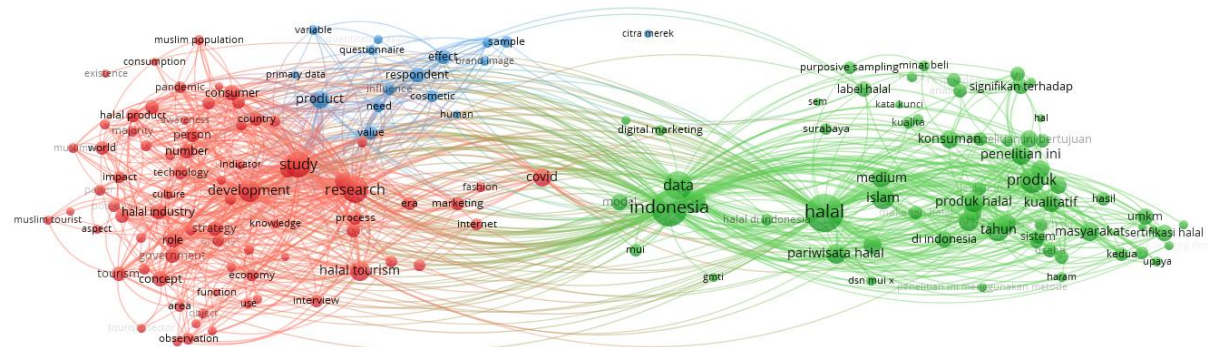
Vosviewer Analysis

Figure 2a. Vosviewer Visualization for Bahasa Indonesia Articles

The clustering result from Bahasa Indonesia articles abstracts is as follows:

Cluster 1 (159 items): activity, application, area, article, aspect, attention, awareness, challenge, communication, concept, consumer, consumption, country, covid, culture, data collection, data technique, depth interview, development, documentation, economy, effort, effort, era, existence, factor, fashion, food, form, function, government, halal certification, halal food, halal industry, halal product, halal tourism, impact, indicator, information, internet, interview, knowledge, library research, majority, marketing, msmes, muslim population, muslim tourist, muslims, number, object, observation, opportunity, order, pandemic, paper, person, population, potential, process, qualitative approach, research, research method, researcher, role, secondary data, sector, service, social medium, stakeholder, strategy, study, technology, tourism, tourism sector, type, use, world.

Cluster 2 (64 items): analisis data, berdasarkan, data, deskriptif, di Indonesia, digital marketing, dsn mui, dunia, gmti, hal, halal, halal awareness, halal di Indonesia, haram, harga, hasil, hasil penelitian ini menunjukkan, hasil penelitian menunjukkan, Indonesia, islam, kata kunci, kedua, konsumen, kualitif, label halal, makanan halal, masyarakat, medium, mengenai, metode, minat beli, model, mui, muslim, pariwisata halal, penelitian ini, penelitian ini bertujuan, penelitian ini dilakukan, penelitian ini menggunakan, penelitian ini menggunakan metode, produk, produk halal, purposive halal, purposive sampling, responden, sem, sertifikasi halal, signifikan terhadap, system, sjh, strategi, Surabaya, syariah, tahun, teknologi, tentang jaminan produk halal, uji, umkm, undang undang nomor, upaya, usaha, wawancara, wisata, wisata halal, Yogyakarta.

Cluster 3 (16 items): brand image, citra merek, cosmetic, effect, halal label, human, influence, need, primary data, product, quantitative approach, questionnaire, respondent, sample, value, variable.

Some of the keywords are in English because some publication also requires authors to provide abstract in English. There are several tourism related keywords on some cluster such as "halal tourism", "muslim tourist", "pariwisata halal" (halal tourism), "tourism", "tourism sector", "wisata" (tourism), and "wisata halal" (halal tourism). The third cluster has keywords which indicate that there is numerous empirical papers using quantitative analysis.

Figure 3a. Overlay Visualization for Bahasa Articles

Overlay visualization shows trending keywords on the abstracts the last four periods. We can see that "covid", "pandemic", and "consumer" are among keywords highlighted yellow, indicating the major research interest focus of research since the middle of 2021.

Figure 4a. Atlas.ti Word Map for Bahasa Articles

As Vosviewer analyse abstracts, Atlas.ti word map is resulted from the full texts. From the size of some keywords, it can be concluded that there are a significant amount of research discussing on halal tourism, as the words "wisata"/ "pariwisata" (tourism), and "tourism" are among words with biggest size. As the articles were all in Bahasa Indonesia, it is just natural that Indonesia is the only country mentioned, probably as the study case or as the origin of the author(s).
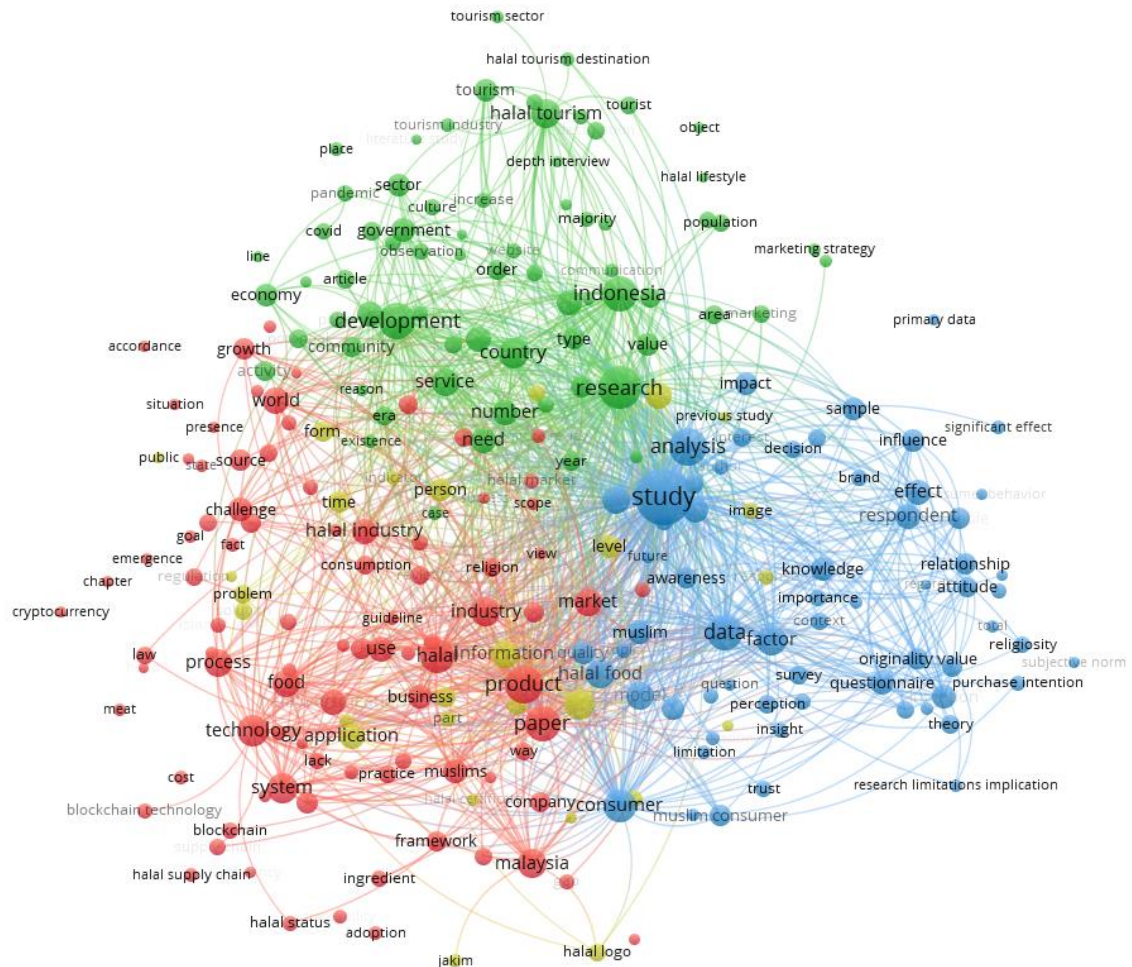
Figure 2b. Vosviewer Visualization for English Articles

The clustering result from English articles abstracts is as follows:

Cluster 1: (89 items) accordance, addition, adoption, benefit, beverage, blockchain, blockchain technology, business, case study, certification, challenge, chapter, company, competitiveness, concern, consumption, cosmetic, cost, cryptocurrency, demand, distribution, efficiency, emergence, fact, field, food, food industry, food product, framework, gap, global halal industry, goal, growth, guideline, halal, halal certification, halal concept, halal food industry, halal industry, halal market, halal status, halal supply chain, hand, health, identification, implementation, industry, ingredient, innovation, internet, islam, Islamic law, issue, lack, law, literature review, Malaysia, market, meat, muslim population, muslims, overview, paper, perspective, practice, presence, process, product, production, regulation, religion, review, scholar, scope, situation, smes, source, state, success, supply chain, system, technology, thing, traceability, transaction, use, view, way, world.

Cluster 2 (70 items): activity, area, article, aspect, case, communication, community, concept, contribution, country, covid, culture, depth interview, destination, development, digital marketing, economy, education, effort, era, existence, government, halal lifestyle, halal tourism, halal tourism destination, increase, Indonesia, interview, line, literature study, majority, marketing, marketing strategy, muslim community, muslim tourist, need, number,

object, observation, opportunity, order, pandemic, place, policy, population, potential, promotion, qualitative approach, reason, recommendation, region, research, research method, secondary data, sector, service, social medium, stakeholder, strategy, term, tourism, tourism industry, tourism sector, tourist, trend, type, value, website, year

Cluster 3 (63 items): analysis, approach, attitude, author, awareness, brand, consumer, consumer behavior, context, customer, data, decision, design methodology approach, effect, entrepreneur, factor, future, halal awareness, halal cosmetic, halal food, impact, implication, importance, influence, insight, intention, insight, intention, interest, knowledge, limitation, literature, marketer, methodology, model, muslim, muslim consumer, organization, originality value, perception, practical implication, primary data, purchase intention, quality, question, questionnaire, regard, relationship, religiosity, research limitation implication, researcher, respondent, role, sample, satisfaction, significant effect, study, subjective norm, survey, theory, topic, total, trust, understanding, variable

Cluster 4 (27 items): application, attention, business actor, condition, ease, form, halal certificate, halal label, halal logo, halal product, image, indicator, information, jakim, level, part, performance, person, previous study, problem, public, response, solution, technique, time, today, user.

Among the difference between English and Bahasa articles is that there are some keywords related to halal finance issues such as "blockchain", "blockchain technology", and "cryptocurrency". As "Indonesia" and "Malaysia" are the only countries mentioned on all clusters, it seems that studies on halal and digitalization issues are dominated by cases or author based in Indonesia.

Figure 3b. Overlay Visualization for English Articles

The overlay visualization shows quite similar result on increasing trend, the difference is that the trend in Bahasa Indonesia has lag of approximately one year. What was trending in the middle of 2021 for Bahasa Indonesia articles was actually trend one year before for English articles. Other than that, English articles has increasing trend of discussing issues related to cryptocurrency.

Figure 4b. Atlas.ti Word Map for English Articles

The word map shows similar result with figure 4a as "tourism" is among the most mentioned word. "Food", "marketing", and "technology" are next on the biggest size word indicating that research on halal and digitalization has also significant number of research interest on halal food, digital marketing, and how to use technology to boost the halal industry. There are now more countries mentioned; "Indonesia" and "Malaysia" indicating that case studies or authors affiliations from these two countries lead the publication on halal and digitalization.

Conclusion and Recommendation

The result shows that the research topics in Bahasa Indonesia is dominated by Muslim friendly tourism and digital marketing for almost all halal industry sectors. Papers in English have more varied topics including cryptocurrency but are dominated by cases in Indonesia and Malaysia. Therefore, research in Bahasa Indonesia related to halal and digitalization may cover uncovered topics such as halal bitcoin and cryptocurrency. Research in English may adopt cases from the two most mentioned cases, but with implementation in other countries.

Limitation of Study

This study is limited only to articles containing words, "halal", "digital", and "online". In fact, there might be papers with content related to this topic which do not mention the word but instead uses the synonyms. Therefore, it is highly possible that this paper does not cover all papers with similar or interrelated topics.

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