

An exploration of research on halal manufacturing: a review of literature

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Abstract

Malaysia had adopted Islam as its official religion and the majority of the Malaysian population are Muslims. Halal and Islam are two concepts that cannot be separated. With the Muslim population around the world growing in tandem with the growth of the global population, so does the halal manufacturing industry and halal acceptance. This study aims to find out the development trend of literature regarding halal manufacturing specifically. The study utilises the Scopus database wide collection of literature to extract the literature on halal manufacturing. The keywords 'halal' and 'manufacturing' were used in the search protocol for this study. The search on the Scopus database had yielded 16 articles from the year 2013 to 2021, which were then further analysed in terms of their year of publication, themes, main issue(s)/problem(s), method(s) used, main finding(s) and suggestion(s). The findings showed that there is a growing trend of number of publications on studies on halal manufacturing, with the main themes being improving halal manufacturing practices, halal assurance system adoption and halal operational capabilities. The findings from this study are hoped to contribute to the limited but growing collection of literature that is available regarding halal manufacturing, and thus contributing to the advancement of the halal industry in general.

Keywords: *Halal Manufacturing, Review of Literature, Malaysia*

Introduction

Background

Halal and Islam had been inseparable since the time of Prophet Muhammad (PBUH) and even before that according to the Islamic tradition. Malaysia, which is populated mostly by Muslims and had adopted Islam as the official religion of the country, had put halal as one of the most important factors to consider in its planning of the nation's economic growth. In Malaysia and globally, as the Muslim population grows and the benefits of halal foodstuff and non-foodstuff had been more widely acknowledged, especially in terms of the cleanliness and the quality of halal products, the demand for halal manufacturing and halal products had seen growth day-by-day (Kadirov et al, 2020). In Malaysia, the halal recognition had established itself as the default standard when it comes to consumer products, especially for foodstuff (Aziz, 2015).

The Muslim population in the world is ever increasing and therefore so does the issue of halal consumerism (Kadirov et al, 2020). The foundation of a sustainable marketing system is the strong adherence to the guiding value (Kadirov, 2010). According to the official Malaysian government portal, (halal.gov.my), the definition of halal in terms of language, which originates from the word halal means something that is permissible or allowed by Islamic Law. In turn, the Islamic Law that is defined by the government of Malaysia is the Islamic Law according to the Syafie' school of thought, or the Hanafi, Maliki or Hambali schools of thought, in accordance with the decree of the King of Malaysia and enforced in the Wilayah Persekutuan or decreed by the Royal Head of State of any state and enforced in that respective state.

Malaysia had been at the forefront of halal industry of the Muslim world. This can be seen in the development of robust institutions in Malaysia which safeguards the halal industry in the country such as the Department of Islamic Development Malaysia (JAKIM) and the Halal Development Corporation Berhad (HDC). The Halal industry, especially in terms of foodstuff in Malaysia, had been systematically monitored and promoted by the HDC.

HDC was established by the government of Malaysia in 18 September 2006 with the main objective of developing the Malaysian halal industry in terms of expanding it globally, innovating the halal products and services as well as organizing international events pertaining to halal such as the World Halal Forum (WHF) and the World Halal Research (WHR) every year. In addition to that, the geographical location of Malaysia in the ASEAN region has its upsides such as being near to the major area of production and halal consumption which in turn created a sustainable operating ecosystem, with the help of the right policies, robust and productive institutions and infrastructure which provides the scaffolding for the further development of the halal industry in Malaysia. These criteria had manage to give benefits to the development and promotion of Malaysian halal products and services. Halal manufacturing players in Malaysia had been subjected to adhere to the Malaysian Halal Standards established by JAKIM. This not only helps the halal industry players to distribute their products and services domestically but also increase their exporting capabilities to Muslims majority countries.

The next institution that is crucial in the halal industry in Malaysia is JAKIM. JAKIM had been established by the government of Malaysia on 1st January 1997. Since then, JAKIM had been responsible for the issuance of the halal certification for all products, either domestically distributed products or import and export products. There are three types of halal standard which had been created by JAKIM which are the examination of management practices, the

scrutiny of the process in the preparation, disinfecting, handling, processing, transporting of halal products, as well as the halal producers are required to operate in a responsible manner. The Malaysian government had been striving towards making Malaysia a halal centre or a 'halal hub' if you will, that is visioned to serve the whole of the Muslim halal market of the world. Therefore, the halal certification by JAKIM had been made compulsory to any products that is deemed to be halal by the manufacturers, in order for it to be sold domestically to Muslims in Malaysia, or even for it to be exported to the international market. According to Widyanto & Sitohang (2021), in terms of cosmetics, the number which have been certified as halal had been increasing in tandem with the growth of global cosmetic market share. Therefore, the growth of the Malaysian economy is significantly fuelled by the very halal products which also influence the Muslim population's lifestyle.

With halal certification, there is a certain degree of certainty which enables consumers to purchase halal products confidently and with a peace of mind. The JAKIM halal certification had been behind the halal certification in Malaysia, which had now become a marketing selling point for competing players in a market where halal products beat the non-halal products by the sheer scale of the Muslim consumer base. This halal certification also gives the overall population of Malaysia, which includes the non-Muslim population, a degree of confidence in terms of the cleanliness of the halal product as a significant component of the complete halal requirements. According to Bux et al. (2022) the halal certification can be enhanced by blockchain technology. This enhancement can be in terms of the trustworthiness and traceability of halal products despite the limitations presented by the halal certification internationally, such as lack of a standardized framework and the lack of a universally accepted and reliable certifying body. According to Bux et al. (2022), the halal certification with the enhancement of blockchain tools can promote fair trade, green livestock breeding, ethical corporate practices, environmentally friendly economic development, and therefore enhance the overall sustainability of the halal industry specifically and the global consumer market in general.

Halal products, especially halal cosmetics' purchases, had been driven by the religious knowledge, religious commitment and most importantly, halal certification (Shahid et al., 2022). The majority of the halal manufacturers as well as halal consumers require the raw material suppliers to have halal certification. As for the Malaysian market, the halal certification is their main focus while the consumer base knows that the halal quality assurance is not adequate to enhance the manufacturing activities for halal cosmetics (Aziz, 2015).

The data presented in Table 1 represents the number of successful applications for the Malaysia halal certification from the year 2007 until the year 2019. The data which had been recorded by the Department of Statistics Malaysia had shown that the total number of successful applications had been increasing year by year. However, the latest statistics for the year 2020 to 2022 is still not been made available. This data indicates that the supply side of the halal consumer market is accepting the fact that halal certification is a must in order to penetrate the Malaysian Muslim market.

Table 1 Statistics of halal certification issuance in Malaysia by year
(Retrieved from data.gov.my (Department of Statistics Malaysia))

STATISTICS OF HALAL CERTIFICATION ISSUANCE IN MALAYSIA BY YEAR
(COMPANY STATUS & TYPE OF INDUSTRY)

YEAR	BUMI			NON-BUMI			TOTAL			
	SE	SME	MULTI	SE	SME	MULTI	SE	SME	MULTI	TOTAL
2007	96	42	41	215	175	286	311	217	327	855
2008	157	73	87	277	251	439	434	324	526	1284
2009	142	61	86	305	249	413	447	310	499	1256
2010	255	105	112	467	326	566	722	431	678	1831
2011	252	73	82	353	268	506	605	341	588	1534
2012	681	239	176	1159	724	1018	1840	963	1194	3997
2013	766	213	154	1074	610	779	1840	823	933	3596
2014	1088	271	218	1645	833	1218	2733	1104	1436	5273
2015	1205	263	225	1605	956	1186	2810	1219	1411	5440
2016	1243	215	302	1761	1035	1355	3004	1250	1657	5911
2017	1506	213	331	2258	1288	1461	3764	1501	1792	7057
2018	1663	251	357	2359	1317	1598	4022	1568	1955	7545
2019	1913	275	374	2917	1591	1774	4830	1866	2148	8844
TOTAL	10967	2294	2545	16395	9623	12599	27362	11917	15144	54423

SE - Small Enterprise

SME - Small and Medium Enterprise

MULTI - Multinational

Scope and Limitations of the Study

The main objective of this paper is to review the existing literature on halal manufacturing that is available on the Scopus database. The reason for which the Scopus database is chosen is because of its extensive collection that it has on the database which amounts to 36,377 titles, of which 22,794 are active titles and 13,583 are inactive titles. This study is hoped to provide future directional guidance for research where the findings of this study is hoped to be of benefit. For the reason of completion of this study, the past research is needed to be collected and information from them need to be extracted in a semi-systematic manner. The global halal industry encompasses a large collection of industries which need to be sort through. This includes halal industries in product manufacturing, raw material sourcing, and halal service provider such as halal tourism and hospitality. However, this study focuses on the term ‘halal manufacturing’ per say, and thus narrowing the scope of the search keyword. Through the whole period of preparation for this study, the researchers had encountered a number of limitation and constraints. The search results for this study had only yielded 16 articles with the applied search keywords on the Scopus database. The study will thus only include the 16 journal articles which is found to be on a 9-year time horizon, which includes the year 2013 to 2021.

Problem Statement

There is an abundance of studies done on halal and halal dimension of things. There are also a variety of ways academicians can spread their knowledge, opinions, and research findings on a plethora of issues regarding the subject of halal. Many of the research had been put out in the

form of conference proceedings, book chapters, books, reports, and journal articles. However, even though it is found that there is a wide scope of studies on halal, but there is still many areas to study pertaining to halal manufacturing per say. This paper is to review journal articles that focuses on halal manufacturing that can be found on the Scopus database. Based on the term halal manufacturing, this paper had been constructed in a way which addresses the research questions below:

- 1) What are the trends in terms of year published on halal manufacturing on the Scopus database?
- 2) What are the themes that had been applied by the articles on halal manufacturing?

Hence, this study has a focus on the readiness or availability of related works on halal manufacturing on the Scopus database. Therefore, this study will bring up the progress and innovative changes of halal manufacturing studies which encompasses a variety of different concepts and themes.

Literature Review

The growth of research on halal manufacturing is mostly because of the demand is huge for halal products from the Muslim community. This analysis of literature is conducted in four categories, namely the main issue(s)/problem(s), the method(s) used, the main finding(s) and the suggestion(s) presented at the end of each study. This section is a further analysis of the summaries that is tabulated in Table 2 and will be discussed based on the four categories mentioned earlier. A comparative analysis between the studies will be presented below based on the Table 2.

For this first section, the main issues or problems, the first study that had been analysed in the table above is Giyanti et al. (2021) and the study's main issue is regarding the depth of halal manufacturing standard implementation in SME. The halal standard issue had been shared by a few other articles, especially in terms of halal food manufacturing (Lestari et al. 2021; Indrasari et al. 2020; Tamam et al. 2020; Dewantara et al. 2018; Jayakrishnan et al. 2018a), which includes drinking water (Fahma et al. 2020). The issue of halal manufacturing standard had been studied in many more industries other than of food manufacturing. The issue of halal standard had been studied in the manufacturing of vaccines (Zulkarnain et al. 2021), in halal pharmaceuticals and cosmetic products manufacturing (Peng & Abdul Karim, 2013), in halal logistics and supply chains (Azmi et al. 2018; Elias et al. 2019) and halal assurance systems (HAS) (Giyanti et al. 2020). Hence, there is a wide range of topics that had been discussed in terms of halal manufacturing.

Secondly, in terms of the methodologies used in the 16 studies included in this review of literature, we can find that it is also varied, encompassing studies utilising the qualitative approach, quantitative approach, mixed method, or even just the content analysis of certain legal documentation or law, be it the conventional law or Shariah Law. Using the qualitative approach, the studies that used this approach includes Lestari et al. (2021); Fahma et al. (2020); Indrasari et al. (2020); Tamam et al. (2020); and Dewantara et al. (2018). There are also a large portion of the studies included in this literature review that utilises the quantitative approach (Giyanti et al. 2021; Masudin et al. 2021; Giyanti et al. 2020; Elias et al. 2019; Jayakrishnan et al. 2018b; Azmi et al. 2018), and mixed method (Jayakrishnan et al. 2018a). As for the rest of the studies, the method that they had used is not clear, and therefore, what can be concluded concretely stated about the method used in these few studies is that they utilised a form of

content analysis, be it from religious text such as the Quran, Hadith, or from standards, such as the Malaysian Standard (MS) 2424:2012. The studies that used this method of content analysis includes Zulkarnain et al. (2021); Mohamed et al. (2016); Fischer (2016) and Peng and Abdul Karim (2013).

Thirdly, we will now analyse the main findings of these studies. Giyanti et al. (2021) had found that the internal motivations and organizational commitment effects positively the depth of halal implementation in an organization. In terms of halal food manufacturing, Lestari et al. (2021) had found that there is an urgent need for Halal Goods Manufacturing Practices (HGMP). This is also supported by Dewantara et al. (2018) which also stress the importance of knowledge of standards and the compliance to the respective standards in order to lift the halal food manufacturing industry. Aside from the halal food manufacturing industry, the halal manufacturing standards need to be improved in the manufacturing of vaccines (Zulkarnain et al. 2021) and halal logistics (Azmi et al. 2018; Elias et al. 2019). Tamam et al. (2020) had found that the important dimensions to consider when contemplating improvements to the halal food manufacturing industry are innovation, reconfiguration, cooperation, customization, responsiveness, and process management. In addition to that, there is also a need to improve the halal assurance system (HAS) to provide better halal compliance environment. (Giyanti et al. 2020). Mohamed et al. (2016) had theorized that the better the incorporation of halal into the manufacturing industry, the better the whole ecosystem of stakeholders surrounding the halal manufacturing industry will be. This is due to the wholistic approach of halal or 'Halalan Toyybiban' concept, which emphasized the wellbeing of all stakeholders rather than just focusing on the bottom-line aspects or just the halal aspect.

Fourthly, the suggestions that can be extracted from these high-quality articles obtained from the Scopus database are broad and covers a multitude of facets of the manufacturing ecosystem. Among the suggestions that had been made from these studies are that in order for the halal implementation into the manufacturing process to be more effective, the manufacturing organization must figure out how to convert external pressures, such as halal compliance demand from consumers, and turn that into internal motivations that can be realized through staff incentives and organizational missions, among other things (Giyanti et al. 2021). Masudin et al. (2021) and Fischer (2016) from their findings suggested that educational initiatives among staff members should be prioritized. Fahma et al. (2020) had pointed out that organizational awareness of halal needs to be improved, even by using obvious mediums of communications such as posters, banners, talks, and solidified through the formation of a halal committee which oversees the implementation of halal assurance in the manufacturing process. Tamam et al. (2020) had suggested that halal manufacturing can be improved by improving the interaction between different organizational capabilities which could have a significant impact on the company's performance. Elias et al. (2019) had suggested that the SMEs which dabbles in halal manufacturing should utilise the Halal Logistics Service Providers (HLSP) in order to gain the trust of consumers by ensuring that their whole end-to-end process complies to the halal standards and the Shariah Law.

Table 2 A summary of literature review on halal manufacturing articles from 2013 to 2021 from the Scopus database

Author(s)	Main Issue/problem	Method(s)	Main Finding(s)	Suggestion(s)
Giyanti et al. (2021)	What drives the depth of halal standard implementation in SMEs.	Quantitative – Structured questionnaire	Internal motivation and organizational commitment affect positively halal implementation	Success in halal implementation depends on the capabilities of SMEs to convert external pressures into internal motivation.
Masudin et al. (2021)	The readiness of employees to adopt technologies and its influence on its application on halal logistic perspective in halal meat retail and manufacturing industries.	Quantitative research using random sampling data of 75 respondents	The halal logistic performance in the halal meat retail and manufacturing industry is influenced by the readiness of employees to adopt the technologies.	Management should have new standard of educational level of staff and conduct regular training with updated technology in the workplace
Lestari et al. (2021)	Halal goods manufacturing practices in Indonesia is still limited and need to be promoted to improve quality.	Qualitative – focused group interviews with eight halal committee members and 73 SMEs	Six elements and 40 indicators were found. The urgency to increase the implementation of Halal Goods Manufacturing Practices (HGMP)	Business process policy need to be improved. There are other significant elements need to be looked into such as buildings, employees, storage and maintenance process.
Zulkarnain et al. (2021)	The doubtful (mashbooh) and impermissible (haram) ingredients in vaccine production has raised hesitancy to the vaccine among Muslim.	Content analysis search from Google and Google Scholar databases using related search terms including using Malay language	Only some of impermissible ingredient could be replaced with halal alternatives, while other ingredients are still unavailable or unsuitable to be replaced.	As for now host cells and growth media may not obey sharia laws fully, but they are the best and closest options available today. More study should be carried out in order for a better sharia compliant option reserved in future.
Fahma et al. (2020)	Drinking water had not received a	Qualitative – Observation and content	The company needs to replace some materials,	The company need to get halal policy posters, halal-haram

	positive response due to not having halal certificate	analysis of documents followed by interviews by management teams	production process and documentation process if it wants to apply the halal assurance system	posters and halal assurance system posters to create awareness To form halal committee To have internal and external training for staff To have SOPs regarding halal management
Indrasari et al. (2020)	Demand of halal product is increasing, therefore, the knowledge of the link between halal assurance and food manufacturing performance need to be investigated	Qualitative, content analysis of literature review	Qualitative model was developed through Causal Loop Diagram (CLD) to describe inter-relationship between identified variables	It is suggested to use this causal model as a framework to study the dynamics of halal assurance.
Giyanti et al. (2020)	There is still very limited research assessing organizational readiness before halal practice implementation	Quantitative case study – using closed ended questionnaire, interview at SMEs	SME is not ready to implement the halal standard.	SME must concentrate the dimension of human resource SME managers can evaluate their strength and weakness regarding their Halal Assurance System (HAS) implementation in their organization
Tamam et al. (2020)	To establish dimension of halal operational capabilities in halal food manufacturing industry	Exploratory Qualitative research - focus group interview in eight manufacturing companies, using structured	The dimension of halal are innovation, reconfiguration, cooperation, customization, responsiveness, and process management.	Halal manufacturing should focus on the interaction of capabilities and identify which capabilities/dimension have significant impact on companies' performance.

		open-ended in-depth interview		
Elias et al. (2019)	What are the driving factors from the perspective of SMEs in order for them to utilise the Halal Logistic Service Providers (HLSP).	Quantitative study – through 86 respondents via email	The factors that pressures SMEs to practice halal logistic services are high demand from international halal logistics, halal collaboration between the F&B industrial sector and government agencies and high awareness of halal interest by consumers.	SMEs are encouraged to utilise Halal Logistic Service Providers in order to gain the Muslim consumer's trust. The government facilitation of Halal Service providers can be increased by increasing financial loaning, technology transfer and strengthening institutions like JAKIM and HDC.
Dewantara et al. (2018)	The respondent's company need to have Good Manufacturing Practices (GMP) licences in order to supply their product to enter the modern market. Besides GMP, the respondent's company also need to have a halal licence in order for the product to enter the modern market. Therefore, they need to make improvement and determine the critical point.	Qualitative observation, comparison	It was found that the respondent's condition is still insufficient and still not comply to the requirement of halal licence due to lack of awareness and knowledge of the owner in implementing halal	To make improvement, respondent's company needs to map critical points in every production process

Jayakrishnan et al. (2018a)	What is the relationship between the adoption of Business Intelligence and Malaysian Halal Food Manufacturing Industry.	Mixed methodology study – initial research was done through Qualitative interviews followed by Quantitative validation protocols	The Business Intelligence data analytic, action plan and conceptual framework could improve the financial performance by the adoption and adaption of the conceptualized strategy among Malaysian Halal Food Manufacturing Industry	Future research must focus on decision making processes and on strategized financial decision-making process for an organization
Jayakrishnan et al. (2018b)	The assimilation of environmental factors that persuade the knowledge integration between IT professional and decision-makers in business need to be clarified	Quantitative – regression analysis using 103 respondents	Result indicates that halal market demand important role in forecasting business performance of halal manufacturers. The new framework contributes an integrative perspective of functional practices for both theoretical structure and practical functionality within Malaysian halal food manufacturing	This integrative framework can be sued for prospecting and scrutinizing the environmental factors to foster business performance and will be a powerful instrument for the next empirical research.
Azmi et al. (2018)	There are difficulties to improve performance due to the complexity	Quantitative method – using survey questionnaire with 103 respondents were analysed	It shows that the technological organizational and environmental context play a crucial role to	Future research can focus on other industries to see the indicator or predictor on halal manufacturing business performance

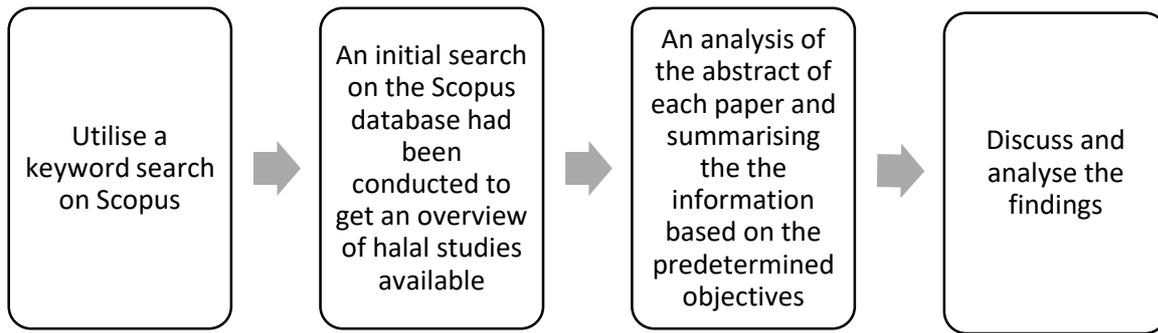
	present in halal supply chain	using regression analysis and content analysis from Halal Development Council Directory	improve business performance of halal manufacturing	
Mohamed et al. (2016)	The current manufacturing practices in Malaysia were introduced by the West and purely aimed for materialism and lead to the degradation of humanity, create environmental pollution and exploitation of labour.	Content analysis involving inductive and comparative analysis of Islamic sources such as Al-Quran, Hadith and scholars writing.	It shows that the principles of halal in Islam are associated with owner's capitalisation, equipment, materials, staff, premises, work processes and documentation which it is more holistic.	Halal manufacturing is balanced and integrated which is compliant to Shariah, Taharah and Barakah, and the elimination of Syubahah for the welfare of the community and the world.
Fischer (2016)	To understand the practice of halal to comply to halal certification standards and technoscience. Much research previously focuses on micro-social aspects of everyday consumption among Muslim, whereas the bigger institutional picture and that frame the production and regulation are	A content analysis of halal related papers and websites	The scholar provides an ethnography of production techniques, technologies and regulation that deemed a product as halal and therefore help to reformat the market.	The technoscience regulation is open to negotiation between JAKIM and the company. Therefore, halal understanding, and practices are open to discussion between the state and market and that is how companies should understand and practice halal requirements as social organization. It is also recommended for companies to provide halal training for their staff

	not well understood.			
Peng & Abdul Karim (2013)	Malaysia as a member of the Pharmaceutical Inspection Cooperation Scheme (PICS) has become the first country in the world to develop a national standard on halal pharmaceutical products. This leads to another significant step towards addressing the increasing demand from Muslim consumers.	A review of Malaysian Standards of Halal 2424:2012	According to MS 2424:2012, halal pharmaceuticals and required to comply to Shariah Law as the religious law of Islam. It cannot be considered in the same class as food because the principles governing the use of haram ingredients in these pharmaceutical products has some exceptions especially for the preservation of life of human being and the knowledge and trustworthiness of Muslim physician to recommend the medicine containing haram ingredients.	The need for participation as respondent from major multinational pharmaceutical manufacturers needs to be addressed to progress in this area.

Methodology

This particular study had utilised the systematic literature search method. There are 16 journal articles that had been chosen for this study. The literature review had been chosen from 1 database; Scopus from the year 2013 to 2021. The researcher had conducted a systematic read through in order to help with the review on past research. The researcher had utilised the search string “TITLE (halal AND manufacturing)” on the Scopus platform. The secondary data that had been utilised by this study consists of articles, conference papers and reviews. The summary are as follows:

Figure 1 The steps in collecting data



Findings

The Table 3 below had listed the articles that had been published on halal manufacturing that can be accessed from the Scopus database. As mentioned before, the Scopus database had been chosen because of its wealth of sources and due to the quality of materials present in the database. Therefore, there is a high degree of certainty that these articles are of high quality and merit. In the Table 3 below, there are 16 articles that is found from the Scopus database based on the year 2013 to 2021. It can be observed that there is not much research on halal manufacturing studies that can be found on the Scopus database.

Table 3 Halal manufacturing articles published in Scopus in the past 9 years (2013-2021)

Year	Number of articles	Theme	Name of Journal
2021	4	Halal standard implementation	Journal of Islamic Marketing
		The effect of Halal retail and manufacturing technology readiness	International journal of Logistics System and Management
		Halal good manufacturing practices	Journal of Islamic Marketing
		Halal status assessment	Human Vaccines and Immunotherapeutic
2020	4	Implementation of Halal assurance system in SMEs	AIP Conference Proceedings
		Halal assurance system implementation and performance in SMEs	AIP Conference Proceedings
		Measurement model of Halal practice	AIP Conference Proceedings
		Halal operational capabilities	Academy of strategic management Journal
2019	1	Improving Halal local service providers	International Journal of Supply Chain Management

2018	4	Assessment on SME readiness to enter Halal assurance system	AIP Conference Proceedings
		Implementation of business intelligence framework for Malaysian Halal food	Management Science Letters
		Adoption of business intelligence of Malaysian Halal food	Management Science Letters
		Adoption of Halal food supply chain in Malaysia	Management Science Letters
2016	2	A review of key principles in halal manufacturing	International Journal of Applied Business and Economic Research
		Manufacturing Halal in Malaysia	Contemporary Islam
2013	1	Good manufacturing practices for Halal pharmaceuticals	Pharmaceutical Engineering

RO 1: To identify the trends in terms of year published on halal manufacturing on the Scopus database?

As per table 4 below, an increasing number of articles published regarding halal manufacturing can be seen. The number of research conducted from the year 2013 to 2017 is relatively small ranging from zero to two articles only. However, this range had risen quite substantially in 2018 to 2021 where three out of the four years there are four articles published regarding halal manufacturing. This could be attributed to the increase in halal product demand in the market and the acceptance of halal product by non-Muslim consumers. According to Wilkins et al. (2019), which had conducted a survey on halal product acceptance in non-Muslim countries, namely the UK, Canada and Spain, the halal food products manufacturers may switch their product lines to halal produce as a successful market segmentation strategy targeting Muslim consumers. In addition to that, according to Farhan & Sutikno (2022), the halal acceptance among non-Muslims in Indonesia is regulated by halal knowledge, the perceived quality of halal products, the credibility of the halal logo and religious motives.

Table 4 Number of articles according to year

Year	Number of articles
2021	4
2020	4
2019	1
2018	4
2017	0
2016	2
2015	0
2014	0
2013	1

RO 2: To identify the themes that had been applied by the articles on halal manufacturing?

As a continuation from the previous section, the themes that had been focused by authors on halal manufacturing published in Scopus database from the year 2013 to 2021 does not have specific or common themes. It shows a variety of themes that had been researched by the previous researchers. Among others, the themes can be listed as good manufacturing practices for halal pharmaceuticals, manufacturing halal in Malaysia, six articles on halal manufacturing practices, halal food supply chain in Malaysia, adoption of business intelligence of Malaysian halal food, three article on SME readiness to enter halal assurance system, improving halal local service providers, and halal operational capabilities. Although limited, but these halal manufacturing research help provide the basis for the future of halal manufacturing.

Conclusion

This paper had taken into consideration a limited number of articles published on the Scopus database regarding halal manufacturing. Nevertheless, it is hoped that this paper could contribute towards the enrichment of literature review of studies on halal manufacturing. Based on the findings, it can be concluded that there is no coherent or major theme when it comes to halal manufacturing. However, of the articles included in this study, 37.5% of them are on matters related to halal manufacturing practices. With the growing demand from the global halal consumers, there is also an increasing need for studies and innovative ideas on halal manufacturing to be conducted and produced. Research on halal manufacturing is still limited to certain manufacturing industries especially food industry. There are many other areas of halal manufacturing that need to be looked into such as the usage of big data and data analytics to enhance the halal manufacturing process and halal assurance, the integration of blockchain technology and halal logistics and research on whether there is a cyclical trend in terms of compliance to the halal industry in general. In a nutshell, it is hoped that the trend of increasing number of halal manufacturing studies done by academic institutions can provide a substantive contribution towards the development of the halal industry and halal consumerism in general.

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