

After Two Decades of Halal Consumer Research: Is There a Future for Aquaculture Discipline?

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Abstract

This paper aims to understand how scholarly research shaped the aquaculture field since the early 2000s, by taking into consideration the academic literature on halal consumers. We conducted a bibliometric analysis of halal consumer to the aquaculture research discipline by examining the types of documents, style of language used, subject areas, most-cited authors, papers and authors' keywords to draw a general picture of the field. Our results showed that the halal consumer research has been largely designed based on business, management, and accounting disciplines. Nevertheless, since 2019 these disciplines were approaching their maximum limit as evidenced from our findings. Thus, as the field of halal consumer research in these disciplines are 'matured', we view the next most influenced subject areas, the disciplines of agricultural and biological sciences, as the future potential winners in the halal consumer research. Our bibliometrics sets a baseline that will enable scholars to foresee how the field of aquaculture research and halal consumer could directly inform each other in establishing a new area of halal consumer-aquaculture research.

Keywords: Aquaculture research discipline, bibliometrics, halal consumer, Malaysia

Introduction

During the last two decades, interest in sustainable aquaculture has grown to worldwide proportions; various sectors of society are slowly realizing the occurrence of resource scarcity, environmental degradation, population growth, uncontrolled economic growth, and social marginalization (Ahmed, 2018; Jönsson, 2019; Wong & Yong, 2020). For a developing country like

Malaysia, there is a need to match aquacultural sustainability with the development of the halal industry. Tajuddin Abdul Rahman the former Deputy Minister of Agriculture and Agro-based Industry suggested that fish cage aquaculture should be prioritized for investment because it has the potential to be one of the significant income contributors to the economy, with a contribution of RM 2.2 million in July 2017 (The Star, 2017). The big potential investment in aquaculture requires a stable sustainability programme to maintain appropriate temperature, oxygen, pH, turbidity, nitrate, nitrite, ammonia, and phosphate (Baleta & Bolaños, 2016; Sriwahyuni, 2022).

Halal has been proposed as a new scientific discipline that defines, classifies, and studies consumers from an ecological and socio-economic perspective (Iqbal, 2015; Bashir, 2019). New perspectives on halal have allowed us to understand it better, in a more fully integrated manner, on the various factors that govern halal consumers and to develop new technological avenues for the halal industry in a more environmentally sound manner (Ab Rashid & Bojei, 2019). However, most halal works of literature are restricted on the ability to understand and address the fundamental reasons on consumers' trust (Bonne & Verbeke, 2008), concerns (Ireland & Rajabzadeh, 2011), and confidence (Mohamed et al., 2013). There is less emphasis on halal consumers and the direction of aquaculture research. The discussions are limited only to aquafeeds of impure animal wastes like carcass, blood, and pig (Jamaludin et al., 2011).

This limitation is mentioned in this current paper to determine the characteristics of the literature produced on halal consumers since the early 2000s in terms of type, influence, and impact. What are the influence and productivity levels of researchers within the halal consumer research community and the institutions? How would the halal consumer research shape the aquaculture field? To answer these questions, this study used bibliometric analysis techniques to analyze the literature on halal consumer research published between 2005 and 2020 and the community of researchers involved in the production. The methodology used to perform the analysis is discussed in the next section of the paper, followed by in-depth descriptions of the findings that shed light on the 15 years of research in the field of halal consumer. Finally, the paper is concluded with some recommendations in guiding future research on aquaculture that is in line with the findings in this study.

Bibliometric Analysis of Halal Consumer Research

The word 'halal' is not only used in the context of consumables or products used by Muslims. It has a wide scope of applications which covers from meat (Vanany et al., 2019; Fuseini & Knowles, 2020), cosmetics (Suhartanto et al., 2020), trade and financial services (Johan & Hussain, 2019), and food and animal feed (Saidin, 2019; Iqbal et al., 2020). Generally, halal has been understood concerning its absence when 'things go wrong'. From the context of consumerism, halal increases the system's

sustainability in terms of human relationships, clothing, manner, and social and business transaction that are parallel to the principles and guidelines specified by Islam.

To present the actual developments in the halal consumer field, the researcher searched the Scopus databases for the entire period for which these databases provide online coverage. It was found that the databases cover a period of more than two decades because the oldest paper was published in 2005. To date, the Scopus database is easy to navigate even for novice users (Burnham, 2006) and is considered as one of the widest coverage journal ranges (Falagas et al., 2008; Ahmi & Mohamad, 2019). This study used the following queries: (TITLE(halal consumption) OR TITLE (halal consumer) OR TITLE (halal customer) OR TITLE (halal user) OR TITLE(halal purchaser). The queries were conducted in July 2020. The words ‘consumption’, ‘consumer’, ‘customer’, ‘user’, ‘purchaser’, ‘buyer’, and ‘consume’ were grounded in the same discussions on halal, for instance, management issues, corporate product, certification, and authentication. Many studies have considered these aspects of halal to offer potential benefits to consumerism even though their main contribution is in fields other than business and society research. In these cases, it is difficult to draw a line on what is involved in halal consumers and vice versa. For this reason, this study did not conduct a separate search on terms relating to the halal consumer. The flowchart that explains the data collection process is depicted in Figure 1.

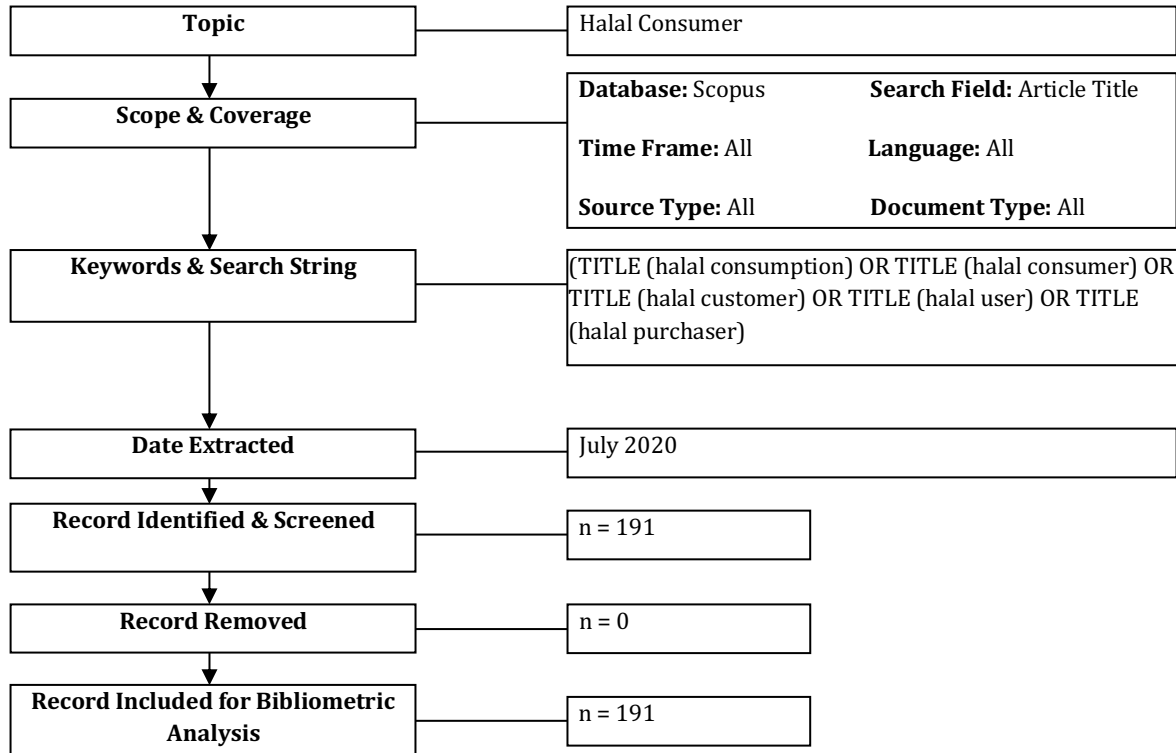


Figure 1. Flow diagram of the search strategy

In the end, this study ended up with a total of 191 academic contributions, including journal articles, conference papers, reviews, book, book chapters, short surveys, and notes. These academic contributions are grouped in Table 1.

Table 1. Academic contributions

Types of Documents	Total Publications (TP)	Percentage (%)
Journal Article	158	82.72
Conference Paper	17	8.90
Review	7	3.66
Book Chapter	5	2.62
Short Survey	2	1.05
Book	1	0.52
Note	1	0.52
Total	191	100.00

Scopus originated from in Europe (Falagas et al., 2008); therefore, the contributions are dominated by English, which is the most commonly spoken language in the world. Although halal represents the Islamic laws that govern every aspect of individual life, and the concept was first introduced by Muslim countries in their local languages, Table 2 reveals that the practice of local languages is less common for the specialization on halal consumer in the database. This situation might be due to the topic 'consumer' itself which is global; hence, the principles of modern and traditional consumers that are influenced by the view of Western writers (McCracken, 1987; Hernandez & Minor, 2010; Ardoin & Prinyawiwatkul, 2021).

Table 2. The use of languages for publications

Language	Total Publications	Percentage (%)
English	187	97.91
German	1	0.52
Italian	1	0.52
Serbian	1	0.52
Turkish	1	0.52
Total	191	100.00

Literature analysis through bibliometric tools is proven powerful for identifying established and emerging clusters of research (Fahimnia et al., 2015). Many researchers use bibliometrics to study the performance and impact of journals (Hall, 2011; Donthu et al., 2020) and the scholarly production of the subject domain (Ellegaard & Wallin, 2015), including the halal discipline (Wahyuni

et al., 2019; Yagmur et al., 2019; Haleem et al., 2020; Mostafa, 2020). The discussions on the concept of ‘halal consumer’ using bibliometric analysis were varied, with the majority focusing on tourism, food safety, and supply chain, but none of them reflected on the aquaculture industry.

Results

The findings in this study show that the largest percentage of contributions from halal consumers was via journals compared to other avenues (87.43%) and the journal rank. Based on the most active source title, the arrangement is as follows: Journal of Islamic Marketing, British Food Journal, International Journal of Supply Chain Management, Journal of Food Products Marketing, Advanced Science Letters, Journal of International Food and Agribusiness Marketing, International Food Research Journal, International Journal of Psychosocial Rehabilitation, Meat Science, and Pertanika Journal of Social Sciences and Humanities.

Table 3 shows the trend in the number of published articles. Although the halal consumer field is still in its early growth and expansion period from 2005 to 2009, the result shows a significant growth in the publication from 2011 onwards. As seen in Figure 2, the highest number of publications was in 2019, and it is expected that 2020 will double the amount from what can be seen in July 2019.

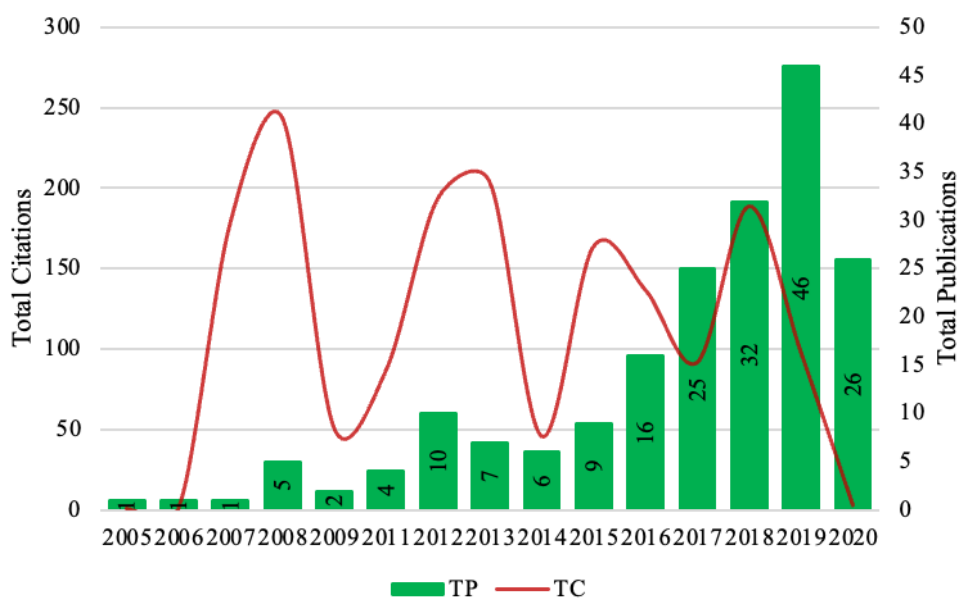


Figure 2. Publication by year (2005 – 2020)

Based on Table 3, although halal consumer publication reached its peak in 2019, the highest average citations per cited publication were found in the publication year of 2007, followed by 2008. The statistic means that halal consumer research gained attention after two years after its first

publication in 2005. Meanwhile, the average citations per publication show that 2019 received the lowest value after 2005 and 2006. The average citations per publication started to decrease since in 2015.

Table 3. Year of publications

Year	TP	%	Cumm. %	NCP	TC	C/P	C/CP	h	g
2005	1	0.52	0.52	1	1	1.00	1.00	1	1
2006	1	0.52	1.05	1	1	1.00	1.00	1	1
2007	1	0.52	1.57	1	179	179.00	179.00	1	1
2008	5	2.62	4.19	5	244	48.80	48.80	4	5
2009	2	1.05	5.24	2	51	25.50	25.50	2	2
2011	4	2.09	7.33	3	87	21.75	29.00	3	4
2012	10	5.24	12.57	7	194	19.40	27.71	5	10
2013	7	3.66	16.23	7	204	29.14	29.14	5	7
2014	6	3.14	19.37	5	46	7.67	9.20	3	6
2015	9	4.71	24.08	6	164	18.22	27.33	4	9
2016	16	8.38	32.46	12	137	8.56	11.42	6	11
2017	25	13.09	45.55	17	92	3.68	5.41	6	8
2018	32	16.75	62.30	23	189	5.91	8.22	8	13
2019	46	24.08	86.39	23	98	2.13	4.26	6	8
2020	26	13.61	100.00	3	3	0.12	1.00	1	1
Total	191	100.00		116	1690	8.85	14.57	22	37

Notes: TP = total number of publications; NCP = number of cited publications; TC = total citations; C/P = average citations per publication; C/CP = average citations per cited publication; h = h-index; and g = g-index.

Table 4 shows 25 subject areas of the halal consumer. The most popular areas are business, management, and accounting, followed by agricultural and biological sciences. Biochemistry, mathematics, physics, pharmaceuticals, and chemistry are the least subject areas. The most active source titles (journal) for the subject areas are Journal of Islamic Marketing with 38 publications, followed by British Food Journal (9 publications), International Journal of Supply Chain Management (7 publications), Journal of Food Products Marketing (7 publications), Advanced Science Letters (6 publications), and Journal of International Food and Agribusiness Marketing (5 publications).

Table 4. Subject areas of halal consumer

Subject Areas	Total Publications (TP)	Percentage (%)
Business, Management, and Accounting	102	53.40
Agricultural and Biological Sciences	48	25.13
Social Sciences	32	16.75
Computer Science	28	14.66
Engineering	25	13.09

Table 4. Continued

Subject Areas	Total Publications (TP)	Percentage (%)
Economics, Econometrics, and Finance	23	12.04
Arts and Humanities	18	9.42
Decision Sciences	12	6.28
Environmental Science	11	5.76
Biochemistry, Genetics, and Molecular Biology	9	4.71
Energy	8	4.19
Mathematics	8	4.19
Medicine	8	4.19
Nursing	6	3.14
Physics and Astronomy	4	2.09
Psychology	4	2.09
Materials Science	3	1.57
Veterinary	3	1.57
Chemical Engineering	2	1.05
Multidisciplinary	2	1.05
Pharmacology, Toxicology, and Pharmaceutics	2	1.05
Chemistry	1	0.52
Earth and Planetary Sciences	1	0.52

An analysis of the authors' keywords found that 'halal', 'Malaysia', 'halal food', 'Muslim consumers', 'religiosity', 'consumer', 'attitude', 'halal certification', 'Islam', and 'food quality' were the most frequently used keywords. These keywords are visualized in Figure 3.

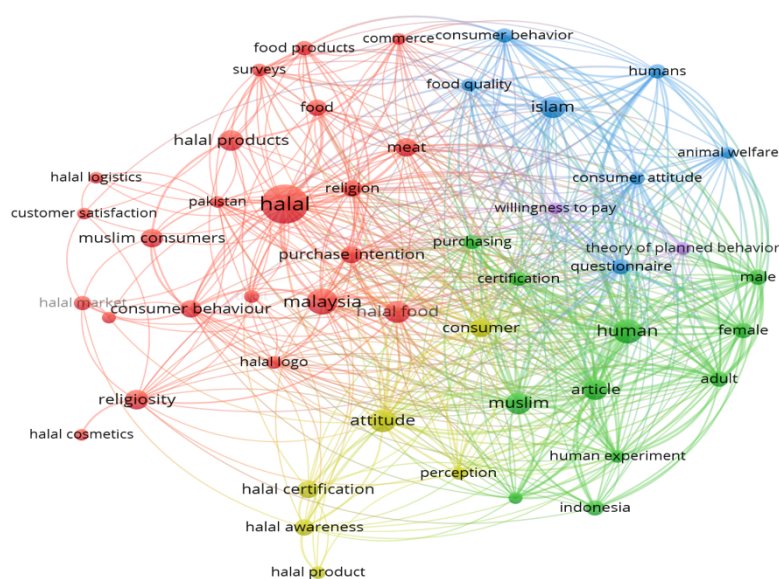


Figure 3. Network visualisation map of the authors' keywords

Table 5 shows the 231 keywords listed by the author. After ‘halal’, ‘Malaysia’ was the second most popular keyword. It obtained almost 10% within the two decades of halal consumer research. Keywords such as ‘consumer’, ‘Muslim consumers’, ‘consumer behaviour’ and ‘halal certification’ were the least searched keywords.

Table 5. Top keywords

Authors' Keywords	Total Publications (TP)	Percentage (%)
Halal	37	19.37
Malaysia	19	9.95
Human	17	8.90
Attitude	15	7.85
Halal Food	14	7.33
Islam	14	7.33
Muslim	14	7.33
Article	13	6.81
Halal Products	13	6.81
Religiosity	12	6.28
Consumer	11	5.76
Meat	11	5.76
Muslim Consumers	11	5.76
Consumer Behaviour	10	5.24
Halal Certification	10	5.24
Purchase Intention	10	5.24

As shown in Figure 4, after Malaysia, the top Asian countries that contributed to most publications are Indonesia and Pakistan. Then, it is followed by non-Muslim countries, such as the United Kingdom, China, and South Korea. However, the United Arab Emirates, which is a Muslim country that uses Arabic as their official speaking language, ranked seventh in the list.

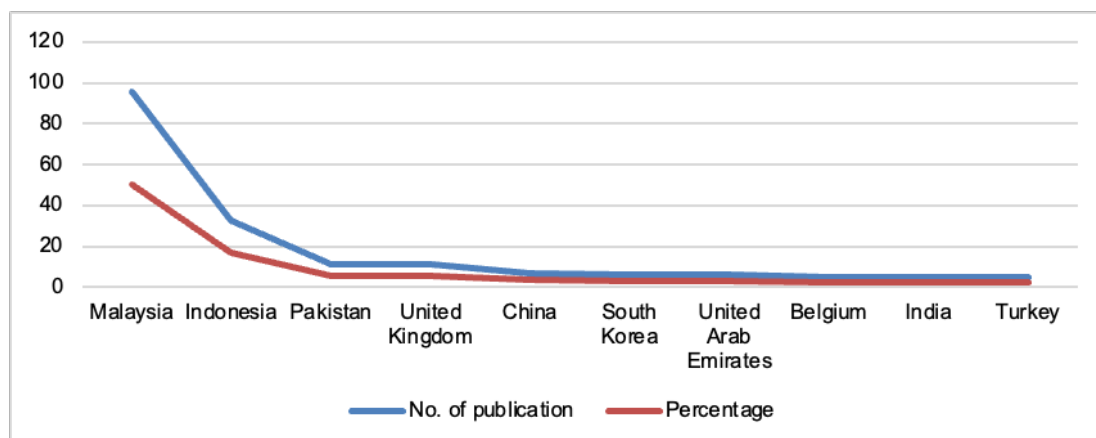


Figure 4. Top countries with five and more publications

Table 6 shows that Universiti Teknologi MARA, Universiti Putra Malaysia, Universiti Utara Malaysia, Universiti Kebangsaan Malaysia, University Malaya, Universiti Sains Malaysia, Universiti Teknologi Malaysia, International Islamic University Malaysia, and Universiti Malaysia Sabah were among the most influential institutions with a minimum of five publications from 2005 to 2020. On the other hand, Hogeschool Gent and Universiteit Gent, both from Belgium, were the only non-Malaysian institutions.

Table 6. Most influential institutions with a minimum of five publications

Institution	Country	TP	%
Universiti Teknologi MARA	Malaysia	21	10.99
Universiti Putra Malaysia	Malaysia	15	7.85
Universiti Utara Malaysia	Malaysia	12	6.28
Universiti Kebangsaan Malaysia	Malaysia	11	5.76
University Malaya	Malaysia	11	5.76
Universiti Sains Malaysia	Malaysia	8	4.19
Universiti Teknologi Malaysia	Malaysia	7	3.66
International Islamic University	Malaysia	6	3.14
Hogeschool Gent	Belgium	5	2.62
Universiti Malaysia Sabah	Malaysia	5	2.62
Universiteit Gent	Belgium	5	2.62

Notes: TP = total number of publications; % = percentage

Discussion

This article provides several insights into the questions posed in the earlier section: (1) what are the characteristics of the literature produced in halal consumer since the early 2000s in terms of type, influence, and impact? (2) what are the influence and productivity levels of researchers within the halal consumer research community and institutions? and (3) how would the halal consumer research shape the aquaculture field?

First, the years 2007 and 2015 witnessed different patterns of average citations per publication. The latter, unlike the former, was found to act as a starting year for low average citations per publication. Since its first publication in 2005, halal consumer research has shown a decrease in citations after ten years. In our opinion, this is a good sign for researchers to start studying other fields of studies such as aquaculture to work with halal consumers. The year 2020 onwards should be characterized by other fields that are positively correlated with the human population's size and growth rate. Food and Agricultural Organisation (FAO) of the United Nations (2018) stated: "aquaculture contributes over 15% of animal proteins in human consumption and thus plays an essential role in eradicating poverty and achieving sustainable development worldwide by 2030."

Second, the bibliometric analysis reveals that business, management, and accounting were the most influential subject areas, with more than 50% contributions to the halal consumer field. However, we doubted that this could be a good sign for halal consumer research, especially in the long run. We have a different understanding of what the figures imply. We see that 50% means that business, management, and accounting are the most 'matured' fields in halal consumer research nowadays. Agricultural and biological sciences were the second most influential subject area in halal consumer research. According to Chengwei Liu from the Warwick Business School, "finishing in second place could make you the real winner in the long run" (Hosie, 2017).

Third, the bibliometric analysis exposes the three most active source titles (journals) with the word 'food': British Food Journal, Journal of Food Products Marketing, and Journal of International Food and Agribusiness Marketing. The literature shows that agriculture and food are interrelated with each other. Both fields share the same issues as follows: climate change (Kogo et al., 2021), innovation for life (Gremmen et al., 2019), and improved nutrition (Saravanakumar et al., 2020). According to Little et al. (2016), aquaculture is a rapidly growing sector of food in agriculture. This is because aquaculture, specifically the farming of aquatic animals, has expanded faster in recent decades than other livestock sectors.

Finally, the bibliometric analysis shows that 9 of the 11 most influential institutions in halal consumer research are from Malaysia. The second top keyword is also 'Malaysia'. It is quoted that the agricultural sector has played an important role in the economic growth of Malaysia. The sector is expected to contribute 3.5% of Gross Domestic Product (GDP) in the Eleventh Malaysia Plan (2016–2020). For the financial year 2016, the Federal Government has approved an allocation grant of RM169.77 million. The government's concern in helping to reduce the cost of living of fishermen was continued through the Fisheries Development Authority of Malaysia (FDAM) through the Fishermen Living Allowance Program (ESHN) and the Program of Incentives for Fishing Products (IHTN). It is clear from all these facts and figures that halal consumer researchers have a great opportunity to venture into the aquaculture discipline

Conclusion

This article has established a new area of halal consumer-aquaculture research from the bibliometric analysis. It is hoped that this study can be used to reflect the direction of future halal consumer research. We believe that business, management, and accounting scholars focus on aquaculture disciplines and realize that the key to defining aquaculture in halal consumers is promising.

Researchers over the world share the responsibility to ensure the conduct of high-quality, scientifically rigorous, and ethically sound research of halal consumers. This study found that halal consumer research has steadily created its field as promising for about two decades; hence, researchers should take the opportunity to benefit from multi-discipline research participation.

Freshwater aquaculture such as catfish, carp, red tilapia, black tilapia, snakehead, and prawn can be the main sources of protein supply in Malaysia because they have the potential to grow further. However, there are very limited empirical studies on halal and fisheries in Malaysia. This study sees as a big opportunity for halal researchers especially when the study of health supplements in Malaysia (Zakuan & Ismail, 2019) and organic food consumption in response to the COVID-19 pandemic is also increasing and predicted to grow enormously (Latip et al., 2020).

Halal consumer research is designed mostly according to business, management, and accounting disciplines. The word 'halal consumer' is the sign of 'product', 'purchase', and 'certification', which were depicted as the top authors' keywords. However, there is significant evidence from the findings, especially from the year 2019 onwards, that the utilized channel of deployed business, management, and accounting is approaching its maximum limit.

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