



Assessing Scientific Output and Collaborative Networks in Halal Supply Chain Management Research: An R-Biblioshiny Analysis

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Abstract

Today, the demand for halal products from the Muslim population, which is approaching 2 billion, underscores the critical importance of halal supply chain management in the global business environment. Identifying the requirements, principles, and gaps in the implementation of halal supply chain management—and examining not only the active participants in the chain but also the theoretical foundations from an academic perspective—is essential for enhancing process efficiency. This study aims to conduct a bibliometric analysis of research published in internationally indexed journals on halal supply chain management. The analysis covers 630 publications retrieved from the Web of Science database between 1997 and 2025 and includes various indicators such as the distribution of papers by year, keyword analysis, author profiles, co-authorship collaborations, citation analysis, thematic mapping, publication counts by country, and country-based clustering analysis. The findings reveal that the *Journal of Islamic Marketing* has the highest number of publications in this field. Additionally, the most cited researcher is *Marco Tieman*. The top three researchers with the most publications are, in order, *Mohamed Syazman Ab Talib*, *Abid Haleem*, and *Mohd Imran Khan*. Furthermore, *Malaysia*—the first country to implement halal logos and certification practices—has been identified as the most productive country in this field. *The research identifies Malaysia and Indonesia as the countries with the highest levels of international collaboration*. However, the analysis of scientific productivity distribution shows that the literature in this field is still not mature enough, underscoring the need for further research.

Keywords: *Halal, Supply Chain, Logistics, Bibliometric, Biblioshiny.*

JEL Codes: *L97, L99.*

INTRODUCTION

In today's environment of increasing global competition, all companies share common, enduring objectives, including producing goods or services and generating profit from these activities. Within this context, the integration of innovative products and production variables into daily life and nearly all economic activities—driven by the demands of the digital age—requires attention not only to the development of new products but also to the growing diversity of consumer demands. Furthermore, considering the influence of cultural, social, economic, demographic, situational, and psychological factors on consumers, it is clear that consumer expectations regarding the acquisition of goods and services have become increasingly varied. Among these

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distinctions, the concepts of the halal supply chain and halal logistics have become increasingly prominent, driven largely by the growing global demand for halal products among Muslim consumers. These concepts consider halal sensitivity within the value chain approach, encompassing the flow of goods, services, and information from raw material procurement to the delivery of the final product to the end customer.

The concept of halal refers to conformity with the doctrinal standards established by religion (TDK, 2025) and Islamic principles. According to Tieman and Ghazali (2013), halal is a dietary obligation for Muslims. Halal products are those that fully comply with Islamic religious laws and are considered lawful and permissible (Kurtoğlu & Çiçek, 2013, p.181). Sharia law considers all materials to be halal unless they are explicitly restricted or prohibited.

The concept of halal products encompasses not only food products, but also numerous products across various sectors, including cleaning products, cosmetics, medicines, and clothing (Ngah et al., 2014). Moreover, a halal product requires not only that the raw materials used are halal but also that the production process complies with halal principles. A halal product must be made in accordance with these standards, with no haram ingredients or contact during production. In other words, the product's halal integrity must be maintained throughout the entire process. This requirement has led to the introduction of the concept of "halal production" in the literature. For meat, poultry, and related products, experts emphasize the need to establish a comprehensive framework to supervise halal production (Chaudry et al., 2000, p.3).

In all halal production processes, consumers are expected to have confidence that every stage—from production and processing to distribution—complies with Shariah law. Moreover, the producers' ability to monitor and track each stage of the production process is essential for maintaining consumer trust (Shafii & Khadijah, 2012, p.1). In this context, halal supply chain management becomes a critical process, overseeing and coordinating every stage of a product's journey from raw materials to final consumption in accordance with Islamic principles.

When considered as a whole, producing a final halal product requires managing halal sensitivities, such as attitudes and behaviours, and minimizing contamination and contact risks throughout the production process. Additionally, it involves the proper management of halal storage and distribution processes, commonly referred to as halal logistics. Together, these processes form the fundamental elements of halal supply chain management.

On the other hand, as of 2025, Muslims constitute approximately 24.1% of the global population (Islamicity 2025), making them the second-largest demographic group after Christians, with a population of 2 billion (Wasserman, 2024). This situation highlights the significant demand for halal products and underscores the need for authorities to raise awareness about halal supply chain management. Ensuring compliance and efficiency in halal supply chain management, while addressing existing shortcomings, requires not only the involvement of institutional authorities but also comprehensive academic research. Research of this kind will contribute to

improving halal supply chain processes at both theoretical and practical levels, enhancing industry efficiency and facilitating the safer and more effective global supply of halal products.

In this context, the study comprehensively examines trends identified in relevant research within the Web of Science (WoS) database by conducting searches using key terms such as “halal industry”, “halal logistics”, “halal certification” and “halal supply chain management”. This review aims to examine academic studies in the sub-discipline of halal supply chain management, highlighting the development of scientific literature in the field and identifying existing research gap. The primary objective is to assess scientific productivity in halal supply chain management and highlight the main trends. Additionally, this study aims to serve as a resource for researchers in halal supply chain management and related fields, helping them stay informed about the latest innovations and developments in the industry. In doing so, it provides an opportunity to gain insights into emerging trends, practical innovations, and theoretical advancements in the field. Moreover, this study aims to contribute to achieving more accurate and objective results in future research by minimising potential biases. To achieve this goal, bibliometric analysis examines the information density of scientific publications from a holistic perspective and systematically summarises this information using quantitative methods. Consequently, this bibliometric review will serve as a vital resource for developing strategies to enhance the management of halal supply chains at both academic and industrial levels.

HALAL SUPPLY CHAIN MANAGEMENT

The global Muslim market, valued at 2 trillion USD in 2021, is expected to grow by 40% to reach 2.8 trillion USD by 2025 (Davies, 2025). This situation demonstrates that the halal industry is a sector that has experienced significant global growth, as emphasised by Mahalle et al. (2020, p.67). Halal supply chain management underpins the central concept, integrating the halal industry including sourcing and production with halal logistics, such as distribution, storage, packaging, and inventory management. In addition, halal certification plays a central role in the value chain, assuring Muslim countries that products meet Shariah standards in international trade (Sapa & Muthiadin, 2024, p.25). The Halal certification, first introduced by Malaysia in the 1980s, is now issued by more than 400 organisations (Khan & Haleem, 2014, p.36). Although different Halal standards are applied by certification bodies, the packaging of products manufactured by a producer with a Halal certificate bears the HCO (Halal Certification Organization) logo.

When examining the literature on Halal supply chain management, it becomes evident that there is no single, universally accepted definition of the concept:

Halal supply chain management aims to prevent direct contact with haram substances, mitigate contamination risks, and ensure alignment with the expectations and perceptions of Muslim consumers (Tieman, 2011, p.186).

Tieman et al. (2012, p.218) define halal supply chain management as the management of a halal network that

preserves halal integrity from the source to the point of consumer purchase.

According to Zulfakar et al. (2014, p.59), all components of the halal supply chain must assume both individual and collective responsibilities to prevent intentional or unintentional cross-contamination of halal products throughout the entire process, from start to finish.

Khan et al. (2022, p.2794) emphasize that halal supply chain management prioritizes maintaining halal integrity.

Tieman (2020, p.9) addresses the dynamic transformation of Halal, illustrating how it begins with Muslim companies and evolves into a Halal value chain, as shown in Figure 1.

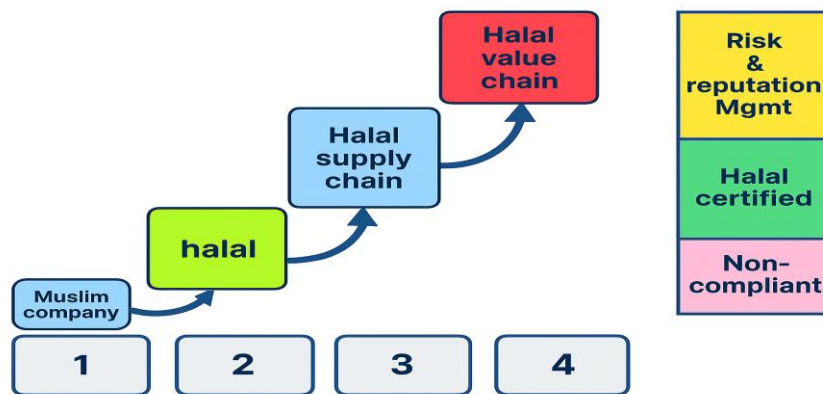


Figure 1: Transformation from Halal-to-Halal Supply Chain

Source: “Evolution of Halal” (Tieman, 2020, p.9). Adapted from “The Halal Industry: Processes, Products, and Perspectives” by M. Tieman, 2020, Routledge. © 2020 by Routledge.

According to Figure 1, initially, trade relies solely on mutual trust among Muslim companies, representing the most primitive phase of the process. The halal certification process begins at Level 2, known as the halal product stage. With the introduction of certification procedures in the third stage, the concept of halal extends beyond the product itself to encompass halal supply chain management, ensuring halal integrity throughout all processes. The final stage, the halal value chain, emphasizes maintaining complete halal integrity and ensuring full compliance across all systems, including supply, production, distribution, marketing, and finance (Tieman, 2020, pp.9-10).

Today, Muslims do not live exclusively in Muslim-majority countries; therefore, in trade between Muslim and non-Muslim countries, as well as in businesses from non-Muslim countries that provide services to Muslims, the importance of a halal supply chain that ensures full compliance with halal integrity is growing. This process continues to evolve through its own dynamics.

METHODOLOGY: BIBLIOMETRIC ANALYSIS

The term “bibliometric”, first introduced by Pritchard in 1969, refers to the application of mathematical and statistical methods to books and other communication media (Pritchard, 1969, p.348). Bibliometric analyses

examine the characteristics and trends of recorded knowledge, analyse the structures of scientific and research fields, evaluate research activities, and manage scientific information (Patra et al., 2006, pp.27–28).

Bibliometric studies, amid the overwhelming volume of new knowledge, conceptual developments, and data, serve to identify researchers' trends over time, explore themes, and shifts in disciplinary boundaries. They also reveal the most productive scholars and institutions within a given field, thereby presenting a comprehensive overview of ongoing research (as cited in Aria & Cuccurullo, 2017, p.959).

Such bibliometric studies or analyses reveal specific characteristics of documents or publications, enabling the quantification of relevant literature, the evaluation of emerging concepts, and the identification of current trends in the field (Kasemodel et al., 2016, p.82; Guzeller & Celiker, 2017, p.89).

Bibliometric studies pinpoint the most influential research on a given topic and map the collaborations among researchers (Subramanyam, 1983, p.33). Bibliometric analyses examine information using various indicators, such as publications, cited references, keywords, phrases, quotations, familiar citations, authorship, and other relevant features, to uncover hidden patterns in structured data (Daim et al., 2005, p.112). Bibliometric analyses, which extract patterns from vast databases and provide insights into past research, are quantitative methods that generate science maps based on the relationships among relevant scientific publications within a field, discipline, or area of expertise (Zupic & Čater, 2014, p.429). Researchers create science maps by analysing citations at the journal or country level, or by examining article and author co-citations (Osareh, 1996, p.149).

While bibliometric analyses based on extensive databases are increasingly encompassing nearly all disciplines today, various commercially licensed analysis and mapping software are employed to manage the complexity of the analytical process (Guler et al., 2016, p.385).

In the international literature, bibliometric studies have addressed topics such as halal (Haleem et al., 2020), halal production (Masudin et al., 2022), halal suppliers (Handayani et al., 2021), halal products (Wahyuni et al., 2019; Agrawal et al., 2021; Priantina & Sapian, 2021; Rejeb et al., 2021; Anam, 2022), halal cosmetics (Azmi et al., 2021; Zakaria et al., 2022), halal logistics (Rusydia et al., 2021), halal certification (Agrawal et al., 2021; Yanti et al., 2022), halal blockchain (Yanti et al., 2022), and halal supply chains encompassing all these processes (Antonio et al., 2020; Omar et al., 2020; Rusydia et al., 2023; Hanoum et al., 2023; Hasnan et al., 2024).

Antonio et al. (2020) examined the role of Islamic economics and finance in the halal value chain from a bibliometric perspective, analysing more than 163 publications. Omar (2020) examined the halal supply chain by conducting a bibliometric analysis of 104 publications indexed in the Scopus database from 2008 to 2018. Rusydia et al. (2023) analysed 228 publications on halal supply chain management in the Scopus database using R-Biblioshiny software as of 2021. Hanoum et al. (2023) conducted a bibliometric analysis of 149 publications on halal supply chain management using both the Scopus and Web of Science (WoS) databases.

Finally, Hasnan et al. (2024) presented bibliometric findings on halal supply chain management based on 290 publications from the Scopus database covering the years 2009–2022.

In general, the relatively small number of publications included in these studies is noteworthy. Additionally, Antonio et al. (2020) limited their focus by analysing publications confined to a specific area or perspective.

ANALYSIS AND RESULTS

Data Set

In this study, searches were conducted using the keywords “halal logistics”, “halal certification”, “halal industry”, “halal supply chain”, and “halal supply chain management”. Terms such as “halal food”, which do not directly pertain to supply chain management, were intentionally excluded to maintain the study’s focus on the supply chain perspective. A total of 630 academic studies published in the Web of Science (WoS) database between 1997 and 2025 were examined. The R-Studio Biblioshiny program was used for the analysis. The study included various document types from the WoS database, namely: articles (402), book chapters (31), early access articles (30), proceedings papers (102), books (2), book reviews (3), editorial materials (7), letters (1), news items (1), and reviews (51). Table 1 presents the types and numbers of documents in detail.

Table 1: Main Information about the Documents

Category	Metric	Value
General Information	Timespan	1997–2025
	Sources (Journals, Books, etc.)	282
	Total Documents	630
	Annual Growth Rate (%)	16.98
	Average Document Age	4.75
	Average Citations per Document	12.88
	Total References	22,296
Document Contents	Keywords Plus (ID)	742
	Author’s Keywords (DE)	1,655
Authors	Total Authors	1,593
	Authors of Single-Authored Docs	65
Document Types	Article	402
	Article; Book Chapter	31
	Article; Early Access	30
	Article; Proceedings Paper	3
	Book	2
	Book Review	2
	Book Review: Early Access	1
	Editorial Material	4
	Editorial Material; Book Chapter	3
	Letter	1
	News Item	1
	Proceedings Paper	99
	Review	44
	Review: Book Chapter	2
	Review: Early Access	5

Source: Created by author.

The analysis of the parameters related to the scientific publications listed in Table 1 shows that the annual average growth rate of publications is 16.98%, and the average number of citations per publication is 12.88. Additionally, a total of 1,593 researchers authored these scientific publications. While 65 of these authors published their work as sole authors, the majority representing 95.9% published collaboratively. Examination of the types of studies shows that most publications are articles. Figure 2 illustrates the annual development in the number of publications.

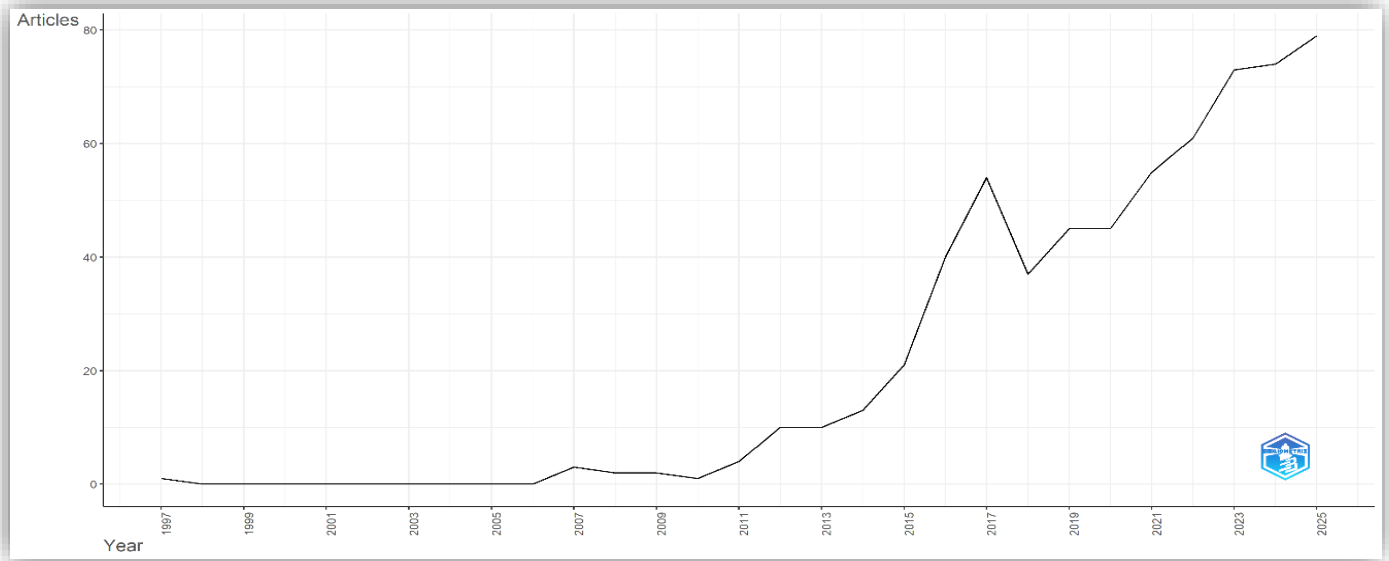


Figure 2: Annual Growth Rate

Source: Created by author.

Examination of the graph in Figure 2, which depicts the number of articles published each year, shows that the first publication occurred in 1997, followed by a gap with no publications until 2006. Publications resumed in 2007, and the number of publications exhibits a noticeable upward trend after 2011.

Figure 3 presents a three-field plot depicting the relationships among keywords (KW-Merged), authors (AU), and the journals (SO) in which the studies were published. This figure highlights the journals with the highest number of publications on halal supply chain management and its related sub-keywords, the authors who have contributed most to these journals, and the keywords or themes most frequently used by these authors. The relationships among these variables are illustrated by a gray connecting line. The size of the rectangles in the graph reflects the volume of publications associated with each element.

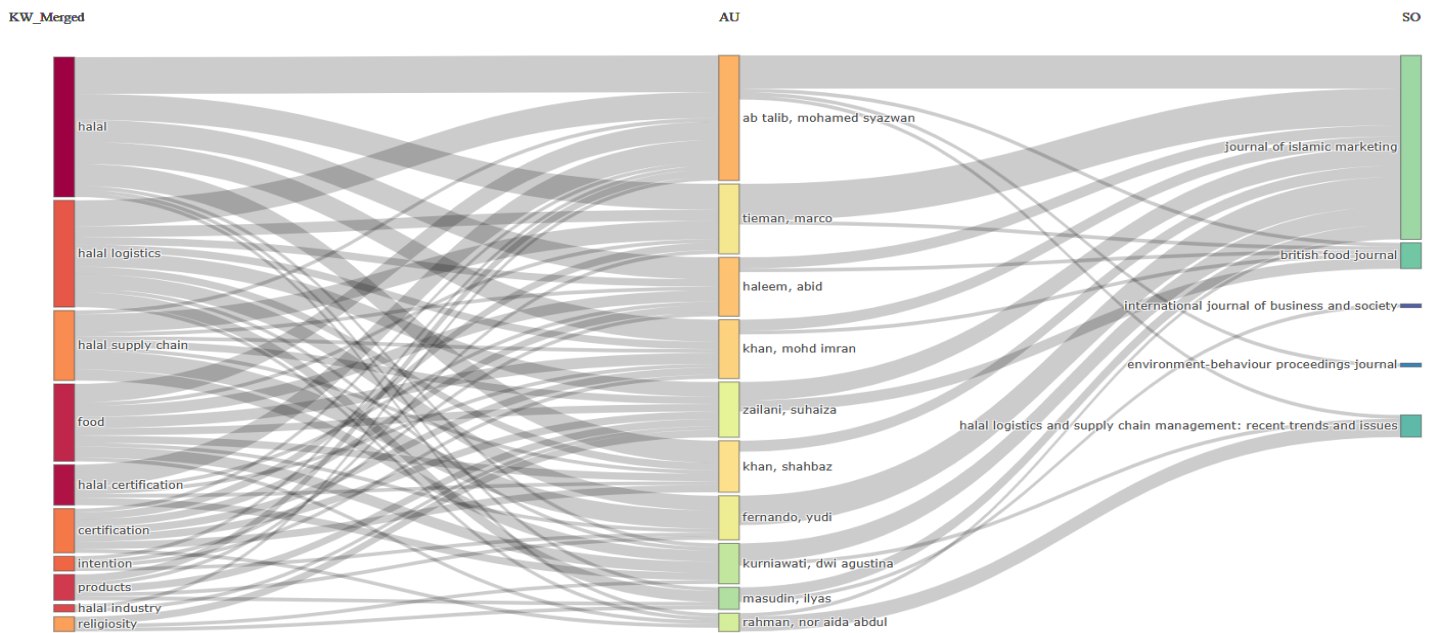


Figure 3: Three Field Plot

Source: Created by author.

According to Figure 3, the keywords “halal,” “halal logistics” and “halal supply chain” stand out prominently. These terms reflect the primary research focus areas within the field of halal logistics. In addition, terms like ‘halal certification’ and ‘halal industry’ are among the most prevalent in the field. At the centre of the graph, the authors with the highest number of publications are, in descending order, Mohamed Syazwan Ab Talib, Marco Tieman, Abid Halem, and Mohd Imran Khan. These authors have made significant contributions to the fields of halal logistics and supply chain management. Finally, according to the journal rankings displayed on the left side of the graph, the journal with the most publications on halal logistics is, by far, the “*Journal of Islamic Marketing*”. Researchers regard this journal as one of the most significant for publications on this topic.

Table 2 lists the most relevant sources and the number of studies they published during the research period.

Table 2: Most Relevant Sources

Sources	Articles
Journal of Islamic Marketing	168
Global Journal Al-Thaqafah	15
British Food Journal	14
Halal Logistics and Supply Chain Management: Recent Trends and Issues	14
Pertamina Journal of Social Science and Humanities	12
Advanced Science Letters	11
Environment Behavior Proceedings Journal	7
International Food Research Journal	7
International Journal of Business and Society	7
Handbook of Halal Food Production	6

Source: Created by author.

This trend is also evident in the most frequently cited sources presented in Table 3. The Journal of Islamic Research ranks first with 3,623 citations. The British Food Journal is the second cited source, with 801 citations, followed by Meat Science in third place, with 311 citations.

Table 3: Most Cited Sources

Sources	Articles
Journal Of Islamic Marketing	3623
British Food Journal	801
Meat Science	311
Food Control	285
Sustainability-Basel	249
J Bus Res	208
Trends In Food Science Technology	199
Journal Of Agribusiness in Developing and Emerging Economies	198
Procedia Social and Behavioural Sciences	194
International Journal of Islamic and Middle Eastern Finance and Management	179

Source: Created by author.

Another bibliometric output related to the sources in the field is Bradford's Law. Figure 4 illustrates the application of this law in identifying the core sources related to halal supply chain management.



Figure 4: Bradford's Law

Source: Created by author.

Bradford's Law highlights the concentration of core articles within a subject area: approximately one-third of the articles are published by a specific group of journals, another third by a different group, and the remaining articles are distributed across a broader range of journals (Garfield, 1980, p.477). On the other hand, this law defines the core sources of the most relevant journals in a particular field (Venable, et al. 2016, p.56). In light of this information, an examination of Figure 4 reveals that the core sources for publications related to halal supply chain management and its sub-keywords are the *Journal of Islamic Research*, *Global Journal Al-Thaqafa*, and *Halal*

The Three-Field Plot in figure 3 highlights parallel findings for the most relevant authors in the field. Table 4 lists the top 10 most relevant authors.

Table 4: Most Relevant Authors

Authors	Articles	Articles Fractionalized	Total Citation	h-index	Citation/Publication
Ab Talib, Mohamed Syazwan	15	6.50	232	10	15.46
Haleem, Abid	13	4.12	185	10	14.23
Khan, Mohd Imran	13	4.12	185	10	14.23
Khan, Shahbaz	12	3.62	148	9	12.33
Tieman, Marco	12	6.25	377	9	31.42
Fernando, Yudi	10	3.39	51	4	5.1
Zailani, Suhaiza	10	2.60	161	9	16.1
Rahman, Nor Aida Abdul	9	2.83	<20	1	<2.22
Kurniawati, Dwi Agustina	8	3.17	34	4	4.25
Masudin, Ilyas	8	1.90	50	7	6.25

Source: Created by author.

Table 4 shows that Ab Talib is the most relevant author in the field with 15 publications, followed by Halem and Khan, who tie for second place with 13 publications each. However, in the Three-Field Plot (Figure 3), although *Tieman* appears more relevant based on the relationship between keywords and sources shown in the graph, he ranks behind Halem and Khan with 12 publications. On the other hand, *Tieman*, with 12 publications in the field, is the most cited author. *Tieman* has 377 citations across 12 publications. Despite the relatively limited number of publications, *Tieman*'s research has had a significant impact and can be considered the most influential in the field. The high citation count of his work indicates widespread recognition by the scientific community and underscores his important contributions. Therefore, *Tieman*'s influence is measured not only by the quantity of his publications but also by their acceptance and impact within the academic community. Table 5 presents the most-cited publications in the field. Notably, *Tieman* authored both the first and second most-cited publications. The top-cited publication, with 171 citations, is *Tieman*'s inaugural paper “*The application of Halal in supply chain management: in-depth interviews*” in this area, published in 2011. This research focuses on the halal food supply chain, aiming to clarify the guidelines and principles that govern it and to identify its specific requirements. The research explores the concept of halal and discusses the proper implementation of halal supply chains. *Tieman et al.* (2012), in their study “Principles in Halal Supply Chain Management”, present the “Halal Supply Chain Model” to optimise the design of halal food supply chains; this publication is the second most-cited in the field. The study, based on focus group discussions in Malaysia, the Netherlands, and China, aims to identify halal control and assurance activities in logistics business processes. The findings indicate that this model can serve as a valuable tool for effective supply chain management. Both studies can thus be considered foundational works in the field. The first emphasises the importance of understanding specific requirements and guidelines. In

contrast, the second fills an important gap in halal logistics and supply chain management, making valuable contributions to academic literature in this field.

The third most-cited study is by Awan et al. (2015), titled *'Factors affecting Halal purchase intention—evidence from Pakistan’s Halal food sector'*. This study focuses on the Pakistani market and provides explanations for strategies based on Islamic Marketing philosophy, followed by Halal food producers and marketers. Additionally, it provides a comprehensive understanding of the behavioural, social, and marketing factors that influence customers’ purchase intentions.

Ab Talib et al.'s most-cited work is the 2015 publication titled *“Halal Supply Chain Critical Success Factors: A Literature Review”*. In this study, Ab Talib et al. (2015) aimed to identify the critical success factors for stakeholders in halal supply chain management. In this context, the study highlights factors such as government support, transportation planning, information technology, human resource management, collaborative relationships, halal certification, and halal traceability. This study addresses a more specific area in comparison than Tieman’s works.

The most frequently cited studies primarily focus on the fundamentals, principles, requirements, and growing market dynamics of halal supply chain management. However, halal certification (Rajagopal et al., 2011; Marzuki et al., 2012), halal verification (Man et al., 2007), and the integration of digital technologies into the halal supply chain (Hew et al., 2020) have also received significant attention and have been the subject of numerous studies.

Table 5: Most Global Cited Documents

Paper	DOI	Total Citations	TC per Year
Tieman, M. (2011). The application of Halal in supply chain management: in-depth interviews. <i>Journal of Islamic Marketing</i> , 2(2), 186-195.	10.1108/17590831111139893	171	11.40
Tieman, M., Van der Vorst, J. G., & Che Ghazali, M. (2012). Principles in halal supply chain management. <i>Journal of Islamic Marketing</i> , 3(3), 217-243.	10.1108/17590831211259727	146	10.43
Awan, H. M., Siddiquei, A. N., & Haider, Z. (2015). Factors affecting Halal purchase intention—evidence from Pakistan’s Halal food sector. <i>Management Source: Created by author.</i>			
<i>Research Review</i> , 38(6), 640-660.	10.1108/MRR-01-2014-0022	139	12.64
Lever, J., & Miele, M. (2012). The growth of halal meat markets in Europe: An exploration of the supply side theory of religion. <i>Journal of Rural Studies</i> , 28(4), 528-537.	10.1016/j.jrurstud.2012.06.004	119	8.50
Soon, J. M., Chandia, M., & Regenstein, J. M. (2017). Halal integrity in the food supply chain. <i>British Food Journal</i> , 119(1), 39-51.	10.1108/BFJ-04-2016-0150	100	11.11
Hew, J. J., Wong, L. W., Tan, G. W. H., Ooi, K. B., & Lin, B. (2020). The blockchain-based Halal traceability systems: a hype or reality? <i>Supply Chain Management: An International Journal</i> , 25(6), 863-879.	10.1108/SCM-01-2020-0044	96	16.00
Ab Talib, M. S., Abdul Hamid, A. B., & Zulfakar, M. H. (2015). Halal supply chain critical success factors: a literature review. <i>Journal of Islamic Marketing</i> , 6(1), 44-71.	10.1108/JIMA-07-2013-0049	92	8.36
Marzuki, S. Z. S., Hall, C. M., & Ballantine, P. W. (2012). Restaurant managers’ perspectives on halal certification. <i>Journal of Islamic Marketing</i> , 3(1), 47-58.	10.1108/17590831211206581	91	6.50

Man, Y. C., Aida, A. A., Raha, A. R., & Son, R. (2007). Identification of pork derivatives in food products by species-specific polymerase chain reaction (PCR) for halal verification. <i>Food control</i> , 18(7), 885-889.	10.1016/j.foodcont.2006.05.004	88	4.63
Rajagopal, S., Ramanan, S., Visvanathan, R., & Satapathy, S. (2011). Halal certification: implication for marketers in UAE. <i>Journal of Islamic Marketing</i> , 2(2), 138-153.	10.1108/17590831111139857	85	5.67

Source: Created by author.

Figure 5 illustrates the authors' productivity over time. The size and colour intensity of the circles in Figure 5 correlate with the number of studies in the field. In other words, as the number of studies increases, the circles grow larger, and their colour intensity becomes stronger. Accordingly, it can be observed that Tieman has continued to publish from 2011 to 2025, though not regularly every year, with a maximum of 3 publications in a year (in 2019). M. Khan, Halem, and S. Khan each contributed four publications to the field in 2020, and these researchers have consistently published every year from 2017 to 2025. This situation supports the assertion that these researchers are among the most influential and active scholars in the field (See Table 4).

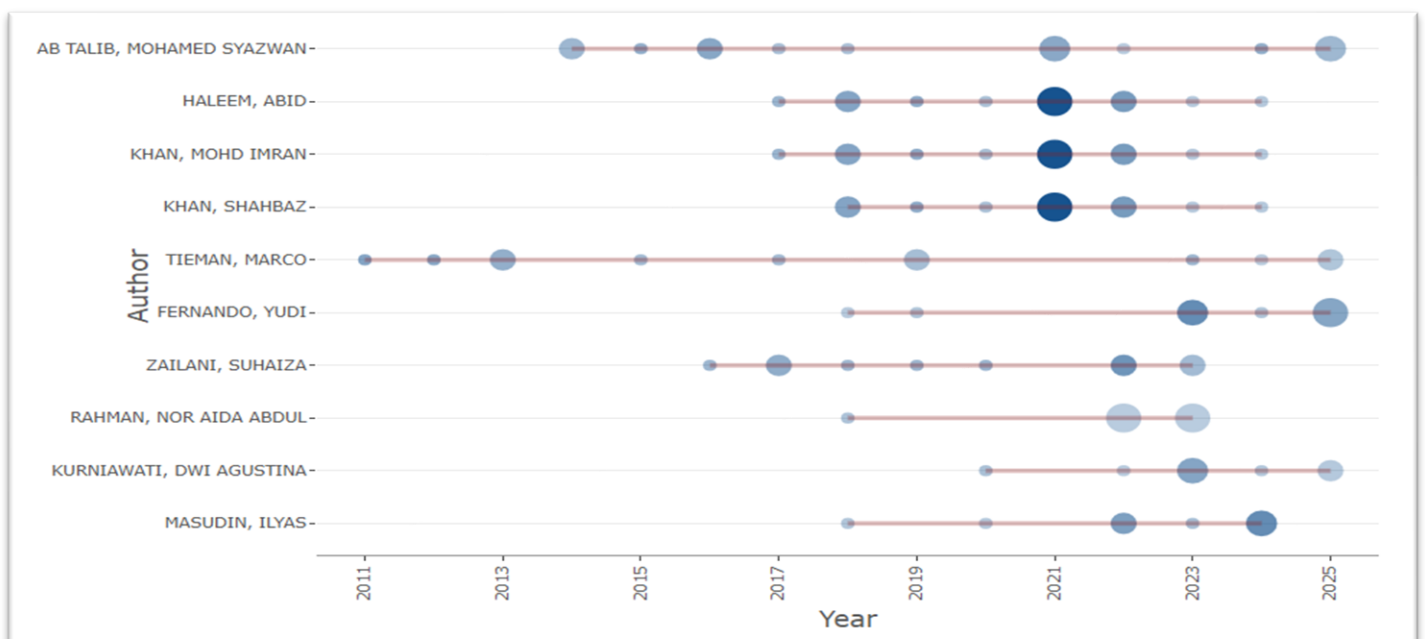


Figure 5: Authors' Production over Time

Source: Created by author.

The countries of the authors in the field and international collaborations between countries also constitute another important output of bibliometric analysis. Such an analysis reveals global collaborations and interactions within the research field. Collaborations between countries demonstrate international research networks and specialisation on a specific topic. Figure 6 presents the graph illustrating collaborations between the countries of the corresponding authors.

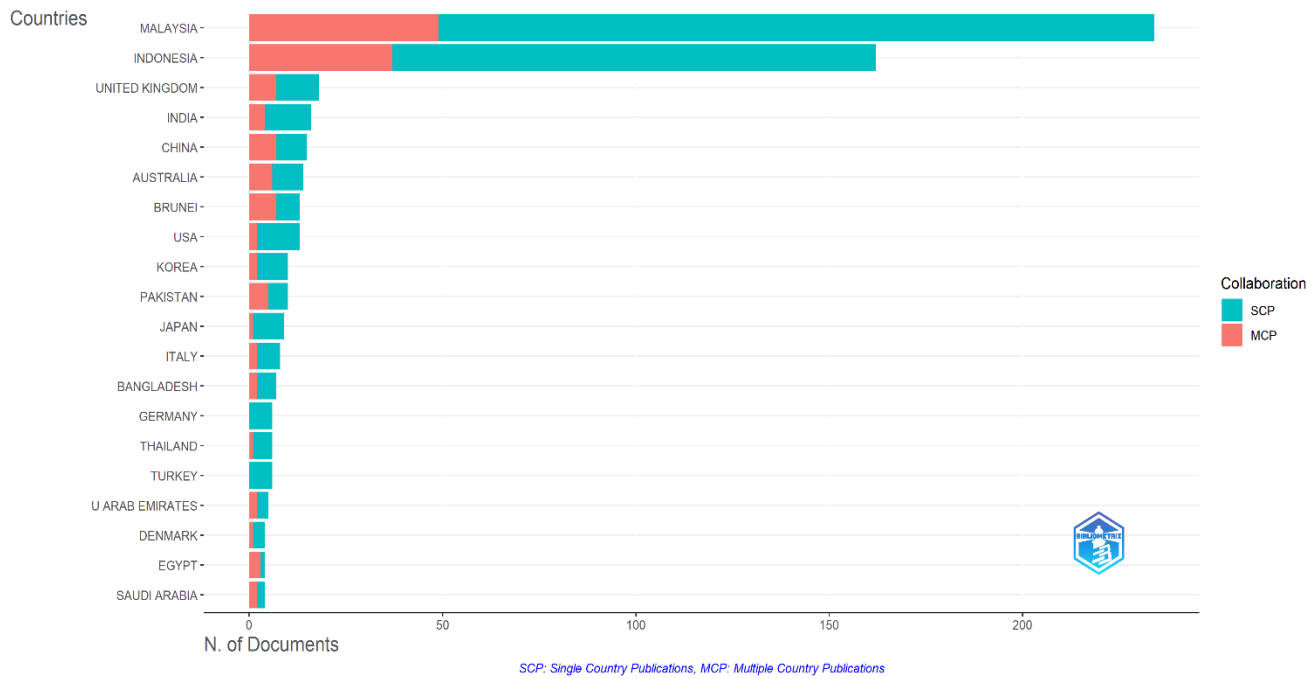


Figure 6: Corresponding Author's Countries

Source: Created by author.

According to Figure 6, Malaysia has produced the highest number of publications. It not only leads in total research output but also demonstrates the highest level of multiple-country collaboration (MCP). This suggests that Malaysian researchers are well-integrated into global research networks and are active to participate in multinational projects. Indonesia ranks second in publication volume and also demonstrates a relatively strong level of international collaboration. In contrast, countries such as the United Kingdom, India, China, and Australia show lower levels of both total publications and international collaboration. Overall, these findings highlight Malaysia's dominant position in research productivity and international engagement within the region. A noteworthy observation concerns Turkey. The graph shows that Turkey's publications are produced exclusively through single-country authorship (SCP), indicating limited international collaboration and suggesting that most research is conducted at the national level. This lack of multinational co-authorship may restrict Turkey's scientific visibility and representation within global research networks.

Figure 7 presents a world map illustrating cooperation among countries in this field. Collaborative activity is concentrated primarily in Malaysia and Indonesia.

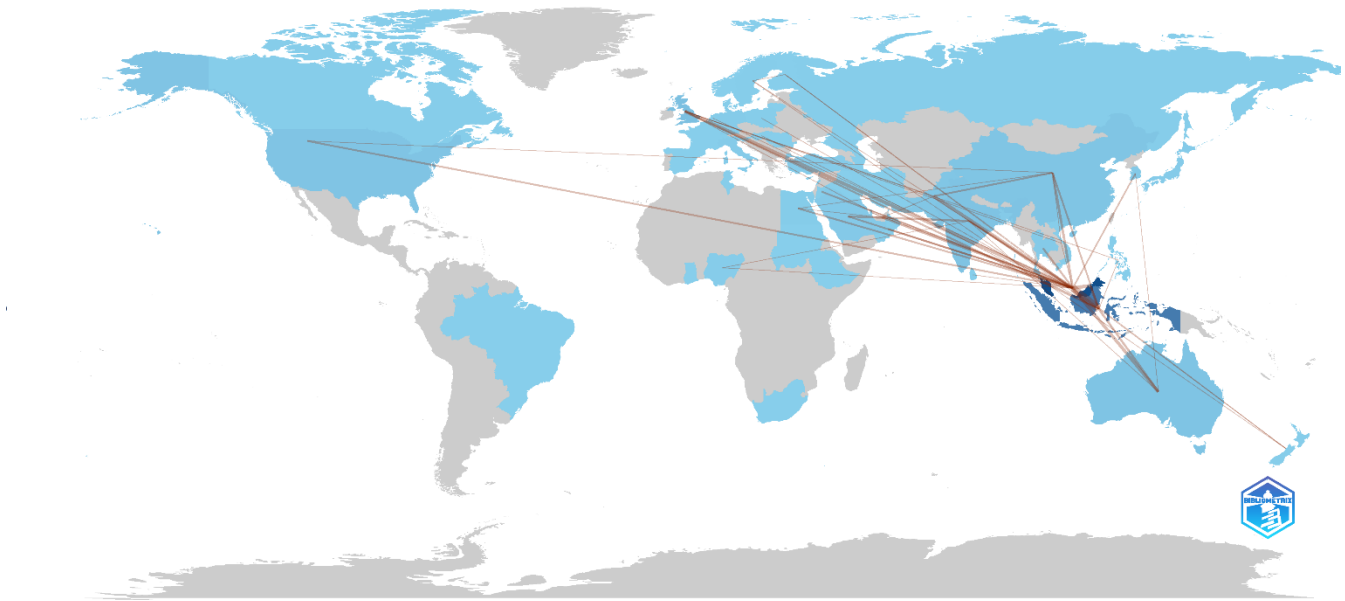


Figure 7: Countries' Collaboration World Map

Source: Created by author.

The citation counts for the countries further support these findings. Malaysia has the highest number of citations, with a total of 3,272, followed by Indonesia with 1,258 citations. Table 6 presents information on the top 10 most cited countries.

Table 6: Most Cited Countries

Country	Total Citations	Average Article Citations
Malaysia	3273	14.00
Indonesia	1258	7.80
India	563	35.20
United Kingdom	492	27.30
U Arab Emirates	261	52.20
Pakistan	197	19.70
China	196	13.10
USA	185	14.20
Brunei	181	13.90
Australia	156	11.10

Source: Created by author.

According to this, Asian countries such as Malaysia, Indonesia, Pakistan, and Saudi Arabia stand out as the leading contributors to research in the field of halal logistics. Additionally, the United Kingdom, the United States, and Australia are also among the countries hosting significant scientific studies with highly cited publications in this area.

When examining the most relevant keywords in the field, as shown in Table 7, the most frequently used word is “halal” (133 occurrences), followed by “halal certification” (90), “food” (86), and “product” (58). This suggests that the primary focus is on understanding and standardizing the concept of “halal”, with studies mainly

concentrating on the food sector, followed by other product categories.

Table 7: Most Frequent Words

Words	Occurrences
halal	133
halal certification	90
food	86
products	58
halal industry	54
halal logistics	51
intention	50
certification	49
halal supply chain	49
religiosity	48

Source: Created by author.

However, trending keywords differ slightly from the most frequently used keywords. Figure 8 presents the trending topics for all keywords in the field. The figure visualises the keywords that have trended over the years, with the size of each circle indicating the frequency of its use in a given year.

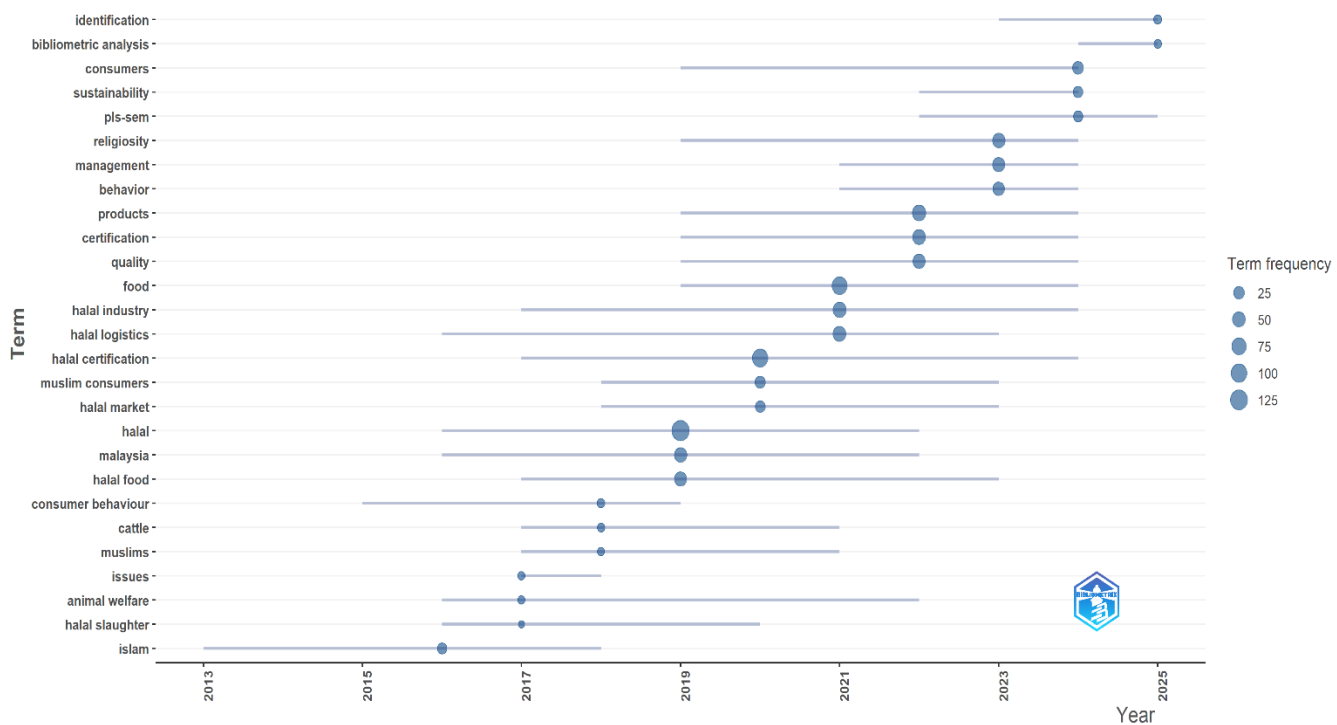


Figure 8. Trend Topics about Halal Supply Chain Management Literature in WoS

Source: Created by author.

Accordingly, the analysis identifies halal, Malaysia, halal certification, halal logistics, and halal industry as the most frequently used keywords over the years. In recent periods, *sustainability* has also emerged as one of the commonly used keywords.

Biblioshiny offers a unique feature for creating thematic maps, which is typically not available in other bibliometric software (Oztemiz & Vatansever, 2025, p.36). Figure 9 presents the thematic map for halal supply chain management

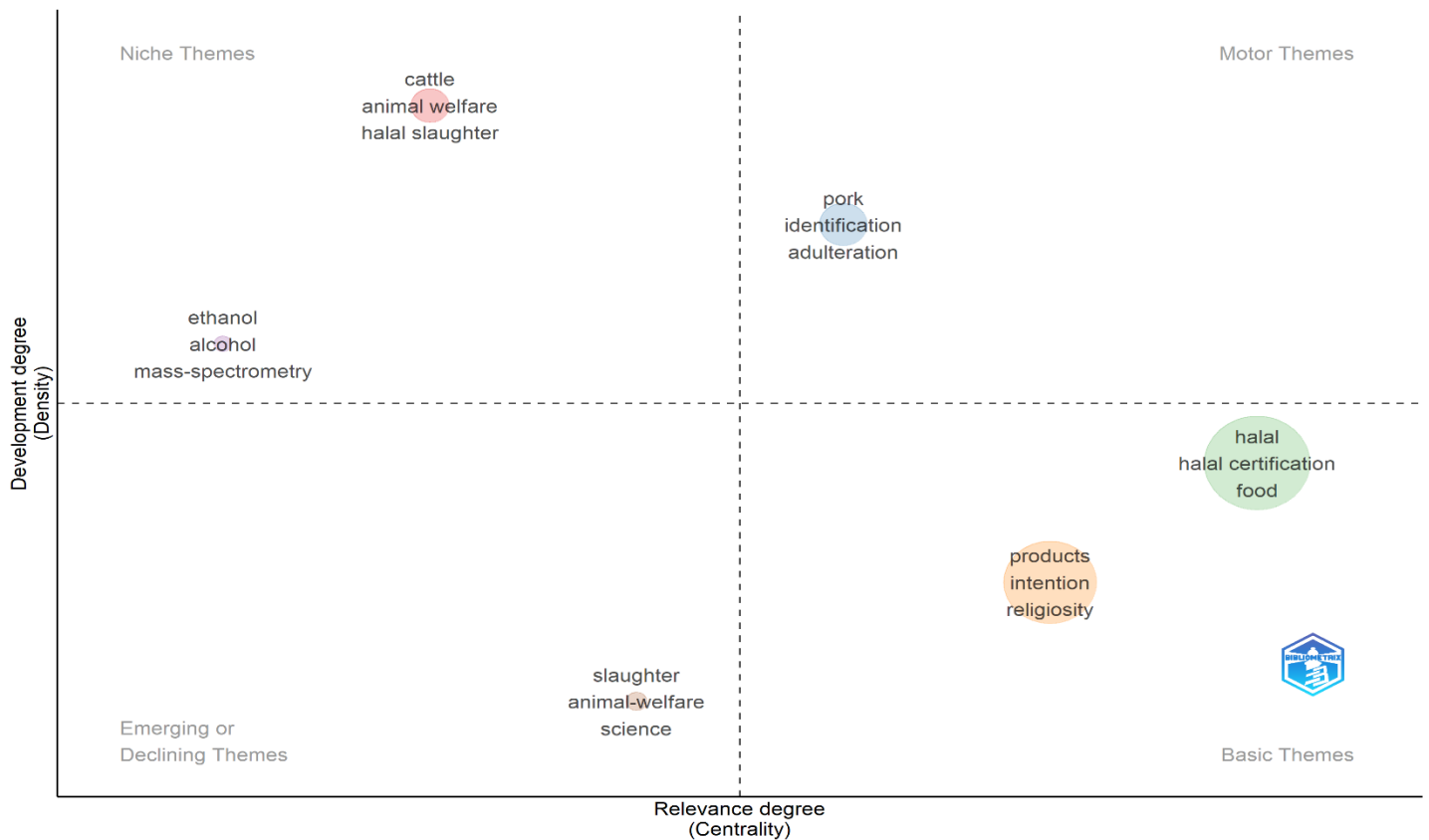


Figure 9. Thematic Map

Source: Created by author.

The horizontal axis of the thematic map represents the centrality of clusters formed by keywords, while the vertical axis indicates their density. According to Callon et al. (1991, pp.164–165):

- Centrality degree refers to the strength of connections between a particular cluster and other clusters. Stronger connections increase a cluster’s centrality, indicating that it plays a significant role in highlighting research problems considered highly important by the scientific or technological community
- Density degree reflects the strength of the connections between keywords within a cluster. A higher density indicates that the research problems within the cluster are more cohesive and integrated. The thematic map, which illustrates clusters of keywords based on their centrality and density, is divided into four main categories: Basic themes, Motor themes, Emerging/Declining themes, and Niche themes.

Accordingly, the analysis identifies “halal”, “halal certification”, “food”, “product”, “intention”, and “religiosity” as the basic themes in the field. These themes constitute the foundation of the field, with the first three concepts

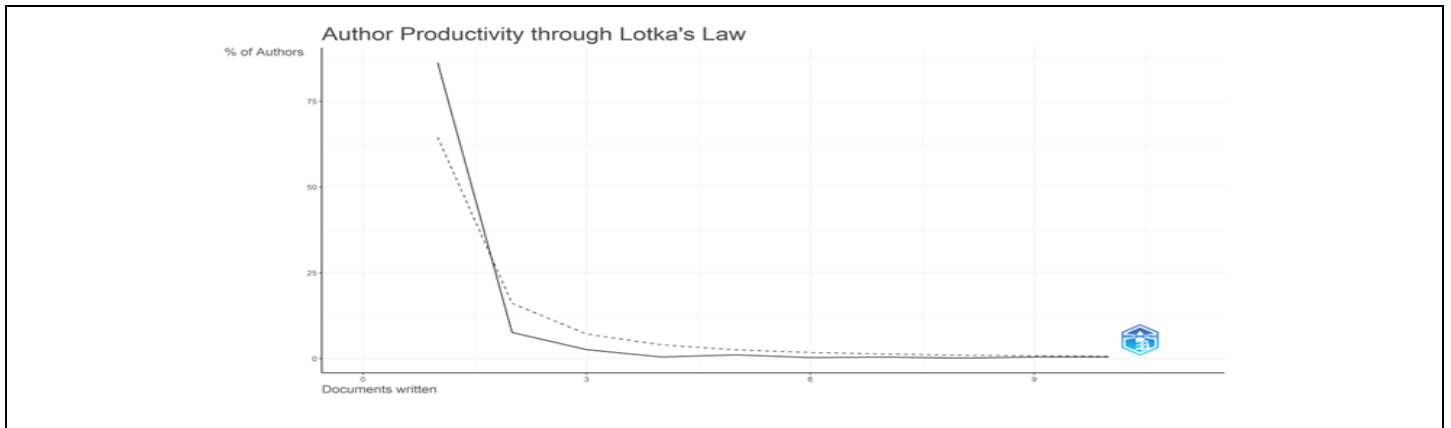
also falling within the boundary of motor themes. In this context, “halal”, “halal certification”, and “food” are expected to continue being developed and emphasized in the halal supply chain domain.

When examining the motor themes, it is evident that the themes of "pork", which is not acceptable from an Islamic perspective, “identification”, and “adulteration”. The theme of “pork” is significant because Islam forbids it, prompting strict controls and regulations within halal supply chains. The theme of “identification” pertains to the accurately labelling of products and ensuring they comply with halal standards. The theme of 'adulteration' is crucial because it ensures the purity of halal products by preventing the introduction of additives or prohibited substances. These findings suggest that researchers will place greater emphasis on these themes, continuing to prioritise them in the development of more precise solutions within the halal supply chain.

The emergence of the themes “slaughter”, “animal welfare”, and “science” in the Emerging/Declining Themes area indicates that the ethical and scientific aspects of the halal supply chain are still evolving. These themes, particularly those concerning slaughtering processes and ethical considerations for animal welfare, highlight the sensitivities related to animal rights and well-being. Additionally, the “science” theme emphasises the need to ground these issues in scientific principles and suggests that research should be more methodical and structured.

The niche themes “cattle”, “animal welfare”, “halal slaughter”, “ethanol”, “alcohol”, and “mass spectrometry” highlight specialized and specific topics within the halal supply chain. These themes correspond to well-developed research problems and, although they were central themes in earlier stages, they have gradually become less prominent and are now considered marginalized clusters. They also represent expertise that is isolated from other sub-networks.

Finally, the analysis indicates that author productivity plays a significant role in the scientific output on halal supply chain management. As shown in Table 1, there are 1,593 authors in the field, contributing to 630 publications. These publications have appeared in 282 different journals and sources. This indicates a substantial number of researchers interested in the topic and a considerable diversity of journals contributing to the published works. However, it also suggests a particular concentration of scientific productivity. This concentration should be analysed in terms of scientific activity within the field using Lotka's Law. Lotka's Law, proposed to describe the distribution of scientific productivity among researchers in any field, states that the proportion of researchers who contribute a single publication should be approximately 60% of the total number of researchers; the proportion of researchers who contribute two publications should be 25% of those who contribute a single publication; and the proportion of researchers who contribute three publications should be 11.1% (Lotka, 1926, p.323).



<i>Documents written</i>	<i>Number of Authors</i>	<i>Proportion of Authors</i>	<i>Theoretical</i>
1	1430	0.859	0.638
2	149	0.09	0.16
3	45	0.027	0.071
4	13	0.008	0.04

Figure 10: Distribution of Scientific Productivity According to Lotka's Law

Source: Created by author.

Figure 10 shows that 85.9% of researchers in the field have published only one paper, and researchers with two publications account for just 9% of those with a single publication. The remaining approximately 5.1% consists of researchers who have published three or more single-author papers on the subject. These findings indicate that the scientific productivity in the field deviates from Lotka's Law. This deviation, rather than representing a deficiency, suggests that the field is in its initial or developmental stage and has not yet formed a broad core of productive authors.

CONCLUSION AND DISCUSSION

This study analyses publications in the field of halal supply chain management using bibliometric methods, focusing on documents, sources, authors, universities, and countries. This comprehensive compilation aims to provide readers and researchers with a foundational literature review. As part of the study, the concepts of "halal supply chain management" and its sub-concepts – "halal supply chain", "halal logistics", "halal certification", and "halal industry" were searched in the Web of Science (WoS) database, which includes the most prestigious internationally indexed resources. The study examined a total of 630 sources published between 1997 and 2025.

The study finds that the first publication in the field appeared in 1997, but researchers did not conduct further studies until 2006. Academic interest in the topic began to increase from 2011 onwards. In this context, 630 works from 282 sources were authored by 1,593 researchers, with an average annual publication growth rate of 17%. Most works were published as journal articles, although a considerable number also appeared as conference proceedings. It has been observed that only two documents have been published as books in this field. Additionally, a few studies have been published as book reviews. The high volume of article-format publications indicates that research in the field predominantly focuses on addressing practical, short-term problems. This

indicates that the research community tends to prioritise quick results and application-oriented studies. The researchers who stood out in the study, ranked by publication count, were *Ab Talip*, *Halem*, *M. Khan*, and *Tieman*. However, in terms of citations, *Tieman* was identified as the most influential scientist in the field, significantly surpassing the other authors. Another notable finding in the study is that the primary source for publishing documents in the field is the *Journal of Islamic Research*. In addition, the *Global Journal Al-Thagafah*, *British Food Journal*, and *Halal Logistics and Supply Chain Management: Recent Trends and Issues* also serve as core sources in the field. These journals have become key reference points in the literature by publishing significant research on halal supply chain management and related topics. In this context, it would be a highly strategic and appropriate step for researchers interested in the field to first consult the authors in question and these fundamental sources.

On the other hand, researchers in Malaysia produce the highest number of publications, followed by those in Indonesia. In areas such as halal, halal logistics, halal certification, and the value chain, Malaysia leads the research in this field. In addition, *Malaysia* and *Indonesia* stand out in terms of citation count, and these two countries play a significant role in international collaboration.

Bibliometric analysis of the halal supply chain field reveals that research has predominantly focused on concepts such as “halal”, “halal certification”, “food”, “product”, “intention”, and “religiosity”. This suggests that the field is still in the process of solidifying its conceptual foundations and remains more centred on theoretical definitions than on practical applications. Notably, the increasing use of the term “sustainability” in recent years reflects a growing intersection between the halal supply chain and global ethical and environmental concerns. However, the prominence of themes such as “pork”, “identification” and “adulteration” among the motor themes indicates that research continues to emphasise maintaining the fundamental religious boundaries of the halal concept. In contrast, researchers have yet to sufficiently integrate innovative and digital transformation themes. Themes like “slaughter”, “animal welfare” and “science” are identified as emerging but immature areas, suggesting that the ethical and scientific dimensions of the halal supply chain are still undergoing institutionalisation. Conversely, research on topics like “cattle”, “ethanol”, and “mass spectrometry” was once prominent but has gradually declined in scholarly attention, becoming increasingly marginal and seldom explored. In this context, scholars have largely shaped the existing literature to preserve religious conformity, highlighting the need for more comprehensive studies that integrate sustainability, ethics, technology, and global trade dimensions. The rise of the sustainability theme presents significant opportunities for halal supply chain managers to develop strategies that reduce environmental impacts, optimize energy and raw material use, improve waste management, and strengthen ethical standards. Furthermore, this trend encourages policymakers to integrate sustainability criteria into halal certification processes by establishing regulations and guidelines. In doing so, both environmental and ethical responsibility in production processes can be enhanced, while companies’ competitive advantage is

strengthened in line with consumers' conscious preferences. Therefore, for researchers and practitioners in the field, developing integrated approaches that incorporate sustainability emerges as a critical strategic step to make the halal value chain more economically and socially efficient, as well as more competitive at the international level. From a technological perspective, innovations such as digital traceability systems, blockchain applications, automation, and data analytics enhance the transparency of the halal supply chain, supporting compliance with religious and ethical standards throughout the entire process from production to consumption, thereby providing a more reliable value chain. From a global trade perspective, integrating sustainability and digitalization themes into the halal supply chain provides businesses with significant strategic advantages. The integration of sustainability and digitalization can play a pivotal role in reinforcing halal certification processes by employing environmentally and technologically advanced methods, thereby enhancing access to new international markets, expanding export capacity, facilitating adherence to global standards, and strengthening the overall competitiveness of enterprises.

Finally, when examining the scientific productivity of authors, it was found that 86% of them published only a single article in the field and did not continue publishing. This suggests that researchers need to further develop the field and enhance specialisation in scientific productivity. To enhance the effectiveness of the halal value chain, addressing this issue requires continuous and in-depth research. It is important for the authors to further develop their expertise in the field. Such studies will strengthen the knowledge base and play a crucial role in transforming the initial halal process into an efficient and effective halal value chain. This will also help make the field more competitive and effective at the international level.

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