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BIBLIOMETRIC MAPPING OF HALAL CERTIFICATION AND COMPLIANCE STANDARDS

Sharifah Azwani Syed Hamzah¹, Shazali Johari^{1*}, Yus Aniza Yusof^{2,3}, Mohd Aswad Ramlan¹, Putri Umairah Batrisyia Mohd Azmi⁴

¹ Department of Recreation and Ecotourism, Faculty of Forestry and Environment, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

Email: gs65239@student.upm.edu.my ; zali_johari@upm.edu.my ; m.aswad@upm.edu.my

² Laboratory of Halal Science Research, Halal Product Research Institute, Universiti Putra Malaysia, 43000 UPM Serdang, Selangor, Malaysia

Email: yus.aniza@upm.edu.my

³ Department of Process and Food Engineering, Faculty of Engineering, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

Email: yus.aniza@upm.edu.my

⁴ Faculty of Accountancy, Universiti Teknologi MARA, Kampus Segamat, 85000 Segamat, Johor

Email: 2023872556@student.uitm.edu.my

* Corresponding Author

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Abstract:

This study presents a comprehensive bibliometric analysis titled “Bibliometric Mapping of Halal Certification and Compliance Standards,” aiming to explore the intellectual landscape and thematic evolution of research in this rapidly growing field. Despite the increasing global demand for Halal-certified products, scholarly understanding of publication trends, dominant themes, and research gaps remains fragmented. To address this issue, the study systematically investigates the literature using the keywords Halal, Halal certification, Halal compliance, and Halal standards through the Scopus database. The dataset was refined using OpenRefine to ensure accuracy and consistency, and then further analyzed using VOSviewer to generate keyword co-occurrence maps and visualize research trends. A total of 1,224 relevant publications from 2000 to 2025 were retrieved and analyzed. The findings reveal a significant surge in publications from 2015 onwards, with Malaysia and Indonesia emerging as leading contributors, reflecting their strong institutional roles in Halal governance. Highly cited works emphasize consumer behavior, supply chain integrity, and the application of behavioral theories, such as the Theory of Planned Behavior (TPB). Key themes identified include Halal tourism, certification logistics, religiosity, purchase intention, and technological innovations such as blockchain and traceability systems. The analysis also highlights persistent challenges, including the lack of unified global standards, complex certification processes, and the need for stronger

stakeholder collaboration and education. This study provides a valuable reference for academics, policymakers, and industry stakeholders, providing a clearer understanding of the current research structure and future directions in Halal certification and compliance.

Keywords:

Halal, Halal Certification, Halal Compliance, Halal Standards

Introduction

Halal certification and compliance standards are critical in ensuring that products adhere to Islamic dietary laws and are permissible for Muslim consumption. The certification process involves various aspects, including the slaughter methods, ingredients, processing, contamination control, and traceability (Osman, 2023a). Halal Certification Bodies (HCBs) play a significant role in monitoring and enforcing these standards, ensuring that products maintain their halal status throughout the supply chain (Osman, 2023a). The certification process is stringent, involving detailed checklists, rigorous documentation, and regular training sessions for staff to maintain ongoing compliance (Chavez & Vicente, 2025). This systematic approach helps businesses uphold halal certification, ensuring product safety, quality, and consumer trust (Chavez & Vicente, 2025).

The implementation of halal certification faces several challenges, particularly for Micro, Small, and Medium Enterprises (MSMEs). These businesses often struggle with understanding the importance of halal certification and the steps required to obtain it (Al-Mahmood, Fraser, Osman, et al., 2023). In Indonesia, for example, halal certification has become mandatory, with a strict deadline for compliance, highlighting the urgency for businesses to prioritize obtaining certification (Al-Mahmood, Fraser, Osman, et al., 2023). The certification process is seen as essential for maintaining high standards of safety and quality, appealing to both Muslim and non-Muslim consumers (Chavez & Vicente, 2025). Additionally, integrating Halal Assurance System (HAS) with food safety standards can help reduce financial barriers and certification burdens, making it easier for businesses to establish quality halal food supply chains (Al-Mahmood, Fraser, Osman, et al., 2023).

Technological advancements, such as the use of virtual technologies in halal audits, are being explored to improve the efficiency and effectiveness of the certification process. The halal blockchain, for instance, can help manage halal issues related to contamination, non-compliance, and perception by ensuring effective segregation and communication within the supply chain (Tieman et al., 2019). Despite these advancements, the lack of unified national or global halal standards remains a significant challenge, leading to confusion about what constitutes authentic halal (Al-Mahmood & Fraser, 2023; Fuseini et al., 2020). Efforts to harmonize halal standards globally are ongoing, intending to provide a clear and consistent framework for halal certification (Al-Mahmood & Fraser, 2023; Osman, 2023b).

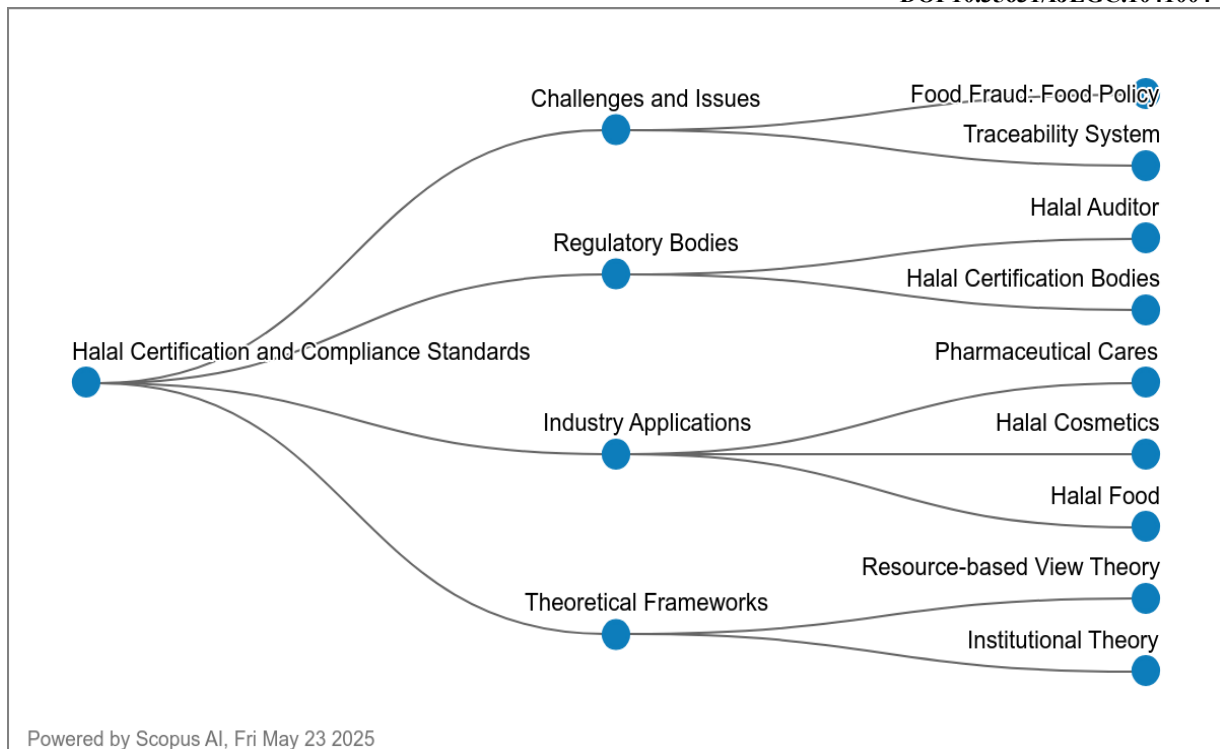
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Figure 1: Conceptual Mapping of Key Research Themes in Halal Certification and Compliance Standards

Key Components of Halal Certification Standards

To understand the key components of Halal certification standards, it is essential to recognize the various aspects and requirements that ensure compliance with Islamic dietary laws and regulations. Based on the provided abstracts, the following components are identified:

Table 1: Key Components of Halal Certification Standards

	Key Component
Slaughter Method	The method of slaughter is a critical component, ensuring that the animal is slaughtered in accordance with Islamic principles (Osman, 2023b).
Ingredients and Processing	All ingredients used in the product must be Halal, and the processing methods must prevent contamination with non-Halal substances (Osman, 2023b; Rejaii & Arianfar, 2016).
Contamination Control	Measures must be in place to prevent contamination with non-Halal substances during production, transportation, and storage (Osman, 2023b; Tieman et al., 2019).
Traceability and Recall Systems	Effective traceability and recall systems are necessary to ensure that any non-compliance can be quickly identified and addressed (Osman, 2023a; Tieman et al., 2019).
Halal Assurance System (HAS)	The HAS integrates food safety and Halal standards, ensuring that products meet both safety and religious requirements (Kohilavani et al., 2015; Wahyuni et al., 2024).
Halal Critical Control Points (HICCP)	Similar to HACCP, HICCP identifies critical points in the production process where Halal compliance must be ensured (Kohilavani et al., 2015).

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Certification Bodies and Accreditation	HCBs and accreditation organizations play a crucial role in monitoring and enforcing compliance with Halal standards (Latif, 2020; Osman, 2023b; Rahman & Al Balushi, 2022).
Regulatory Compliance	Compliance with local and international Halal regulations is mandatory, and businesses must adhere to the specific requirements of the regions in which they operate (Martiningsih et al., 2024; Rahayu et al., 2023).
Transparency and Consumer Trust	Transparency in the certification process and clear communication about Halal status are essential for maintaining consumer trust (Osman, 2023c; Tieman et al., 2019).
Ethical and Religious Considerations	Halal certification also encompasses ethical and religious considerations, ensuring that products align with Islamic values (Osman, 2023c).

Challenges and Variability

Differences in Standards

There are significant differences in Halal standards between countries, particularly regarding the permissible content of ethanol in food products (Pauzi et al., 2019). The concept of Istihalah, which involves transforming non-Halal substances into Halal, is another area of inconsistency among different Islamic schools of thought (Randeree, 2019).

Implementation and Compliance

Businesses, especially MSMEs, face challenges in understanding and implementing Halal certification requirements, which are crucial for legal compliance and maintaining consumer trust (Martiningsih et al., 2024; Rahayu et al., 2023). Halal certification standards are comprehensive and multifaceted, covering everything from the slaughter method and ingredient sourcing to contamination control and regulatory compliance. The integration of food safety with Halal standards, effective traceability systems, and the role of certification bodies are all crucial in maintaining the integrity of Halal products. Despite the challenges and variability in standards across different regions, the core components remain focused on ensuring that products are permissible for Muslim consumers and align with Islamic dietary laws. Implementing and maintaining Halal certification and compliance standards in the food industry involves several significant challenges. These challenges can be broadly categorized into issues related to standardization, traceability, ingredient verification, cross-contamination, and stakeholder collaboration.

Standardization and Certification

The lack of Unified Standards is one of the primary challenges, being the absence of a universal Halal standard. Different regions and certifying bodies may have varying criteria, leading to inconsistencies and confusion among producers and consumers (Al-Mahmood, Fraser, Rahayu, et al., 2023; Randeree, 2019). This fragmentation can undermine consumer confidence and complicate the certification process.

Forged Certificates and Expired Logos

In the United States (US), issues such as forged Halal certificates and expired Halal logos have been reported, which further complicates the reliability of Halal certification (Al-

Mahmood & Fraser, 2023).

Traceability and Transparency

In Complex Supply Chains, ensuring traceability throughout the supply chain is crucial for maintaining Halal integrity. However, complex supply chains can make it difficult to track the provenance of ingredients and verify compliance at every stage (Prathama et al., 2024; Raimi & Animashaun, 2025; Sunmola et al., 2025). Blockchain technology has been proposed as a solution to enhance transparency and traceability (Raimi & Animashaun, 2025; Sunmola et al., 2025).

Documentation and Verification

Accurate documentation and verification of ingredients are essential to prevent contamination and ensure that products are genuinely Halal. This requires robust systems and continuous monitoring (Eldaw & Osman, 2023; Harun et al., 2023).

Ingredient Verification and Cross-Contamination

Verification of Ingredients, where ensuring that all ingredients meet Halal standards is a significant challenge, especially with modern food production involving novel foods, and reliable labeling practices (Eldaw & Osman, 2023).

Cross-Contamination

Preventing cross-contamination with non-Halal substances is critical. This necessitates stringent hygiene and sanitation practices throughout the supply chain (Eldaw & Osman, 2023; Saeed, 2023).

Stakeholder Collaboration and Education

Effective implementation of Halal standards requires collaboration among various stakeholders, including producers, certifying bodies, and regulatory authorities. This collaboration facilitates the sharing of knowledge, addressing challenges, and ensuring compliance (Eldaw & Osman, 2023; Rahayu et al., 2023; Saeed, 2023).

Training and Education

Continuous education and training for all stakeholders involved in the Halal food supply chain are essential to maintaining high standards and adapting to evolving requirements (Rahayu et al., 2023; Saeed, 2023).

Economic and Operational Challenges

Financial and Infrastructure Constraints, where small and micro businesses often face financial and infrastructure challenges in implementing Halal certification. These barriers can be mitigated through effective cost management, supplier management, and external support (Marsusvita et al., 2021).

Operational Integration

Integrating HAS with other management systems can improve overall business performance, but it requires overcoming internal and external constraints (Puspaningtyas & Sucipto, 2021). Addressing these challenges requires a multifaceted approach involving technological solutions, stakeholder collaboration, and continuous improvement in practices and processes.

Table 2: Summary of Key Challenges in Halal Certification and Their Sources

Challenge	Description	Sources
Lack of Unified Standards	Different criteria across regions and certifying bodies	(Al-Mahmood & Fraser, 2023; Randeree, 2019)
Forged Certificates and Expired Logos	Issues with the reliability of certification	(Al-Mahmood & Fraser, 2023)
Complex Supply Chains	Difficulty in tracking ingredient provenance	(Prathama et al., 2024; Raimi & Animashaun, 2025; Sunmola et al., 2025)
Documentation and Verification	Need for accurate documentation and verification processes	(Eldaw & Osman, 2023; Harun et al., 2023)
Ingredient Verification	Ensuring all ingredients meet Halal standards	(Harun et al., 2023)
Cross-Contamination	Preventing contamination with non-Halal substances	(Eldaw & Osman, 2023; Saeed, 2023)
Stakeholder Collaboration	Collaboration among producers, certifying bodies, and regulatory authorities	(Eldaw & Osman, 2023; Rahayu et al., 2023; Saeed, 2023)
Training and Education	Continuous education and training for stakeholders	(Rahayu et al., 2023; Saeed, 2023)
Financial and Infrastructure Constraints	Challenges faced by small and micro businesses	(Marsusvita et al., 2021)
Operational Integration	Integrating HAS with other management systems	(Puspaningtyas & Sucipto, 2021)

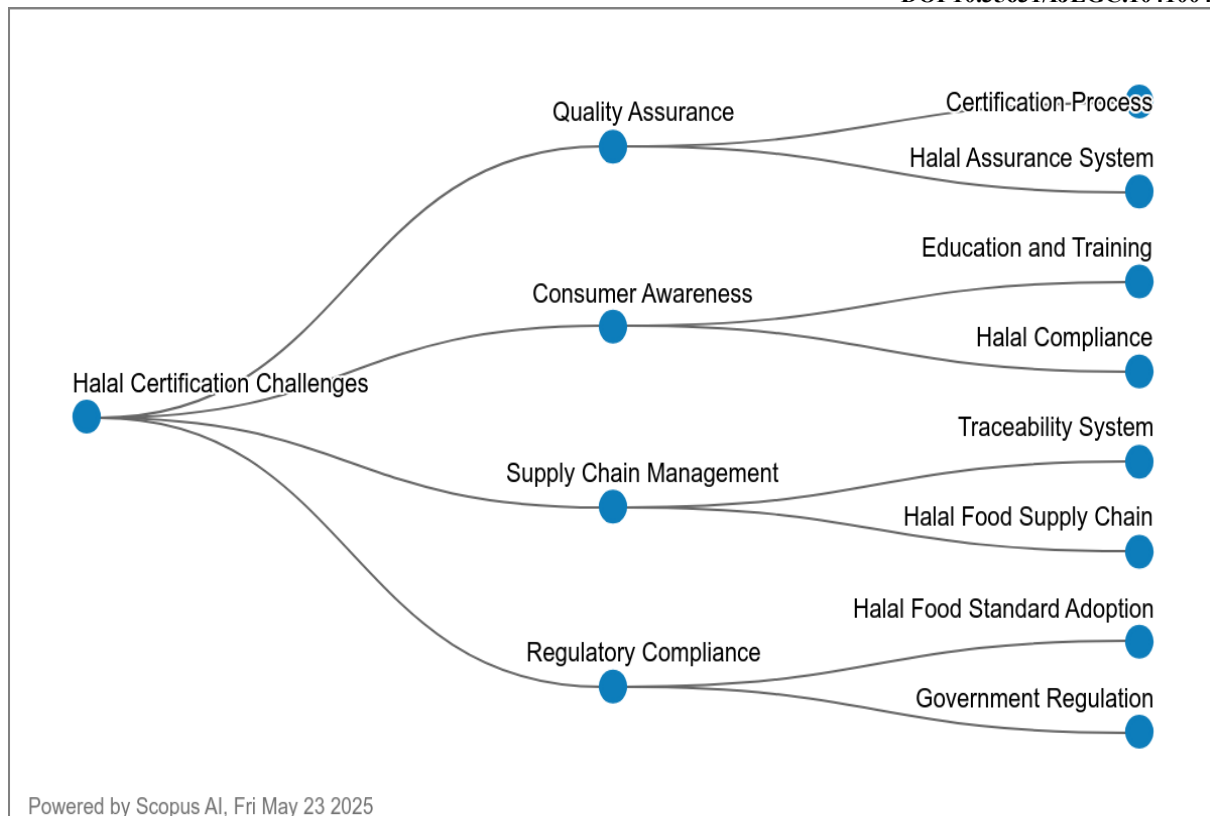


Figure 2: Illustrates The Main Challenges in Halal Certification, Grouped into Four Thematic Areas: Quality Assurance, Consumer Awareness, Supply Chain Management, And Regulatory Compliance. Each Theme is Connected to Specific Issues Such as the Certification Process, HAS, Traceability, And Government Regulation, Highlighting the Complexity and Multi-Dimensional Nature of Ensuring Halal Compliance Across Industries

Research Question

RQ 1. What are the research trends in Halal Certification and Compliance Standards according to the year of publication?

RQ 2. What are the most to 10 cited articles?

RQ 3. What are the top 10 countries based on the number of publications?

RQ 4. What are the popular keywords related to the study?

RQ 5. What is co-authorship by countries' collaboration?

Methodology

Bibliometrics refers to the process of collecting, structuring, and examining bibliographic information from scholarly publications (Alves et al., 2021; Assyakur & Rosa, 2022; Verbeek et al., 2002). Beyond basic statistics, such as identifying publishing journals, publication years, and leading authors (Wu & Wu, 2017), bibliometrics includes more sophisticated techniques, including document co-citation analysis. A thorough literature review involves a deliberate and systematic process of identifying relevant keywords, systematically searching for sources, and conducting a comprehensive analysis of the gathered literature. This approach facilitates the compilation of a comprehensive bibliography and yields reliable results (Fahimnia et al., 2015). Given this context, the study prioritized high-impact publications, as they offer valuable perspectives on the theoretical foundations that influence the development of the research field.

To ensure data accuracy, Scopus served as the primary source for data collection (Al-Khoury et al., 2022; di Stefano et al., 2010; Khiste & Paithankar, 2017). To ensure the quality of the analysis, the study included only articles from peer-reviewed academic journals, intentionally omitting books and lecture notes (Gu et al., 2019). Publications were retrieved from Elsevier's Scopus database, recognized for its extensive coverage, spanning the period from 2020 to December 2023, for detailed analysis

Data Search Strategy

A comprehensive data search was conducted using the Scopus database to identify scholarly literature related to the governance, regulation, and assurance of Halal certification systems. The search aimed to capture publications that discussed key themes such as Halal compliance, standards, monitoring, and the role of Islamic authorities in certification processes. To ensure thorough coverage, the following search string was used: ("Halal certification" OR "Halal compliance" OR "Halal standards" OR "Halal regulation" OR "Halal assurance" OR "Halal governance" OR "Halal integrity" OR "Halal monitoring") AND TITLE-ABS-KEY ("JAKIM" OR "Islamic authority" OR "regulatory system" OR "compliance protocol" OR "audit" OR "Halal certification body" OR "international Halal standards" OR "Halal enforcement") AND PUBYEAR > 1999 AND PUBYEAR < 2026 AND (LIMIT-TO(DOCTYPE, "ar") OR LIMIT-TO(DOCTYPE, "re") OR LIMIT-TO(DOCTYPE, "cp")) AND (LIMIT-TO(LANGUAGE, "English")). This search targeted articles, reviews, and conference papers published in English between 2000 and 2025. The search terms were applied to titles, abstracts, and keywords to ensure relevance. As a result of this search strategy, a total of 1,224 documents were identified and selected for bibliometric analysis, providing a robust dataset for examining trends, influential authors and institutions, and thematic developments within the field of Halal certification governance.

Table 3: The Search String

Scopus	TITLE (halal OR "halal certification" OR halal OR "halal compliance" OR "Halal standards") AND (LIMIT-TO (AFFILCOUNTRY, "Malaysia") OR LIMIT-TO (AFFILCOUNTRY, "Indonesia")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English")).
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Table 4: The Selection Criterion Is Searching.

Criterion	Inclusion	Exclusion
Country	Malaysia, Indonesia	Non-Malaysia and Non-Indonesia
Language	English	Non-English
Timeline	2005 – 2025	< 2005
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press

Data Analysis

VOSviewer is a user-friendly bibliometric software developed by Nees Jan van Eck and Ludo Waltman at Leiden University, Netherlands (van Eck & Waltman, 2010, 2017). Widely utilized for visualizing and analyzing scientific literature, the tool specializes in creating intuitive network visualizations, clustering related items, and generating density maps. Its versatility allows for the examination of co-authorship, co-citation, and keyword co-occurrence networks, providing researchers with a comprehensive understanding of research landscapes. The

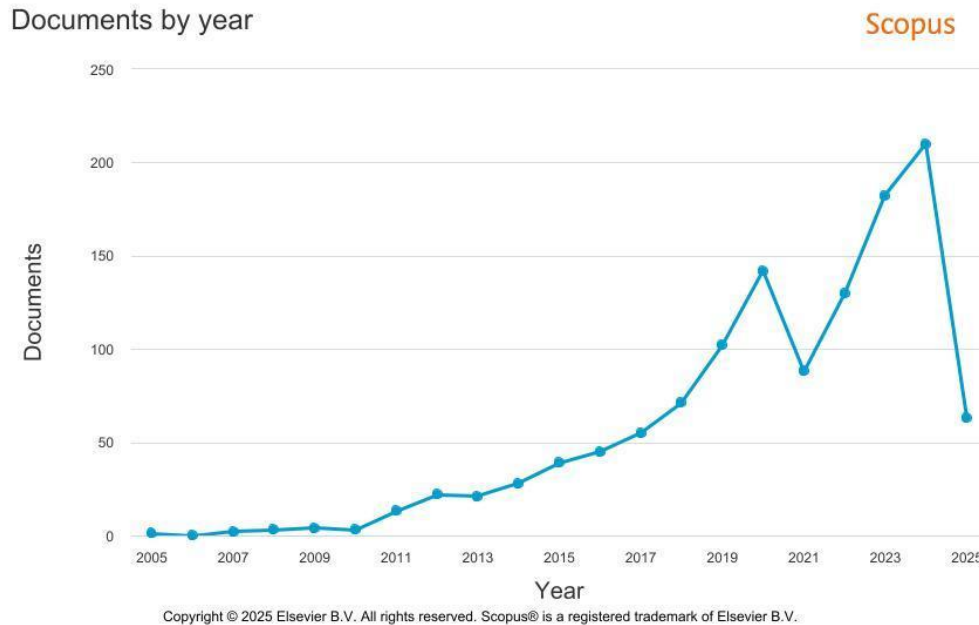
interactive interface, coupled with continuous updates, ensures efficient and dynamic exploration of large datasets. VOSviewer's ability to compute metrics, customize visualizations, and its compatibility with various bibliometric data sources make it a valuable resource for scholars seeking insights into complex research domains.

One of the standout features of VOSviewer is its capacity to transform intricate bibliometric datasets into visually interpretable maps and charts. With a focus on network visualization, the software excels in clustering related items, analyzing keyword co-occurrence patterns, and generating density maps. Researchers benefit from its user-friendly interface, enabling both novice and experienced users to explore research landscapes efficiently. VOSviewer's continuous development ensures it remains at the forefront of bibliometric analysis, offering valuable insights through metrics computation and customizable visualizations. Its adaptability to different types of bibliometric data, such as co-authorship and citation networks, positions VOSviewer as a versatile and indispensable tool for scholars seeking deeper understanding and meaningful insights within their research domains.

Datasets comprising information on the publication year, title, author name, journal, citation, and keywords in PlainText format were procured from the Scopus database, spanning the period from 2004 to December 2024. These datasets were then analyzed using VOSviewer software version 1.6.19. Through the application of VOS clustering and mapping techniques, this software facilitated the examination and generation of maps. Offering an alternative to the Multidimensional Scaling (MDS) approach, VOSViewer focuses on situating items within low-dimensional spaces, ensuring that the proximity between any two items accurately reflects their relatedness and similarity (van Eck & Waltman, 2010). In this respect, VOSViewer shares a similarity with the MDS approach (Appio et al., 2014). Diverging from MDS, which primarily engages in the computation of similarity metrics like cosine and Jaccard indices, VOS utilizes a more fitting method for normalizing co-occurrence frequencies, such as the Association Strength (AS_{ij}), and it is calculated as (van Eck & Waltman, 2007):

$$AS_{ij} = \frac{C_{ij}}{w_i w_j},$$

which is “proportional to the ratio between, on the one hand, the observed number of cooccurrences of i and j and, on the other hand, the expected number of co-occurrences of i and j under the assumption that co-occurrences of i and j are statistically independent” (Van Eck & Waltman, 2007).

Findings***RQ1. What Are the Research Trends in Halal Certification and Compliance Standards According to The Year of Publication?*****Figure 3: Annual Publication Trend on Halal Certification and Compliance Research (2005–2025)****Table 5: Annual Distribution and Percentage of Publications on Halal Certification and Compliance (2005–2025)**

Year	Total publication	Percentage
2025	63	5%
2024	210	17%
2023	182	15%
2022	130	11%
2021	88	7%
2020	142	12%
2019	102	8%
2018	71	6%
2017	55	4%
2016	45	4%
2015	39	3%
2014	28	2%
2013	21	2%
2012	22	2%
2011	13	1%
2010	3	0%
2009	4	0%
2008	3	0%
2007	2	0%
2005	1	0%

The trend in publications on Halal certification and compliance standards has shown a significant growth trajectory, particularly in the past five years. Between 2020 and 2024, there is a marked surge in research activity, accounting for nearly two-thirds of the total output during the analyzed period. The peak occurred in 2024, with 210 publications (17%), followed closely by 2023 (15%) and 2020 (12%). This sharp increase suggests a heightened global interest in the governance, assurance, and standardization of Halal certification systems, likely driven by the expansion of the Halal industry, the growth of Muslim consumer markets, and the increasing need for international trade to comply with cross-border protocols.

The data also reflects a relatively steady growth in publications from 2015 to 2019, with annual outputs rising from 39 in 2015 to 102 in 2019. This phase represents the developmental stage of the field, where foundational discussions and institutional frameworks around Halal compliance were becoming more established. The rise during this period indicates a gradual buildup of academic attention, potentially spurred by the formalization of global Halal standards and the increased involvement of national Halal authorities, such as Department of Islamic Development Malaysia (JAKIM), in regulatory and export certification roles.

Before 2015, research output was minimal, with fewer than 30 publications per year and several years recording single-digit figures. This limited activity may reflect a nascent research landscape, where Halal certification had not yet emerged as a prominent topic within academic or policy discourse. The early 2000s publications likely served as exploratory studies or case-specific analyses, setting the stage for the more structured and high-volume research seen in the subsequent decade. Overall, the temporal distribution of publications demonstrates an evolving field, maturing in relevance and complexity in response to the growing global significance of Halal certification systems.

RQ2. What Are the Most To 10 Cited Articles?

The top-cited authors in Halal research, based on Scopus analysis, predominantly focus on consumer behavior, certification awareness, and supply chain management. The most cited paper, by Shah Alam and Mohamed Sayuti (2011), applies the Theory of Planned Behavior (TPB) to Halal food purchasing, highlighting the psychological and behavioral factors that influence consumer choices, with an impressive 503 citations. This is closely followed by Lada et al. (2009), who used the Theory of Reasoned Action to predict intentions to choose Halal products, which has been cited 395 times. These studies demonstrate the centrality of consumer decision-making theories in understanding the dynamics of Halal product adoption, particularly in diverse and emerging markets.

In addition to consumer behavior, the roles of Halal awareness and non-Muslim consumer interest are also prominent. Aziz and Chok (2013) explored factors influencing Halal purchase intention among non-Muslims using structural equation modeling, garnering 296 citations. Tieman's (2011) qualitative work on Halal supply chain management, as well as his 2012 co-authored paper on Halal supply chain principles, emphasize the operational and logistical aspects of certification, jointly contributing to over 450 citations. These works reflect the growing recognition of Halal as not only a religious requirement but also a system of quality assurance, traceability, and ethical production, especially within supply chains.

Recent contributions have started to shift toward technological and interdisciplinary approaches. Notably, Ali et al. (2021) introduced a sustainable blockchain framework for the

Halal food supply chain, which has already been cited 201 times, indicating rapid academic uptake and interest. Research on Halal cosmetics (Abd Rahman et al., 2015) and labeling perception (Jamal and Sharifuddin, 2015) further broadens the field's scope into lifestyle and branding. Scientific validation and authenticity testing are also represented by Nurjuliana et al. (2011), who used electronic nose and gas chromatography methods for pork detection. Meanwhile, Farouk et al. (2014) in their review of Halal and Kosher slaughter methods. These top-cited works demonstrate that Halal research spans behavioral, operational, technological, and scientific domains, reflecting its multidisciplinary evolution.

Table 6: Most Cited Author

Authors	Title	Cited by	Year	Source Title
Shah Alam S.; Mohamed Sayuti N. (Shah Alam & Mohamed Sayuti, 2011)	Applying the Theory of Planned Behavior (TPB) in halal food purchasing	503	2011	International Journal of Commerce and Management
Lada S.; Harvey Tanakinjal G.; Amin H. (Lada et al., 2009)	Predicting intention to choose halal products using the theory of reasoned action	395	2009	International Journal of Islamic and Middle Eastern Finance and Management
Aziz Y.A.; Chok N.V. (Aziz & Chok, 2013)	The Role of Halal Awareness, Halal Certification, and Marketing Components in Determining Halal Purchase Intention Among Non-Muslims in Malaysia: A Structural Equation Modeling Approach	296	2013	Journal of International Food and Agribusiness Marketing
Tieman M. (Tieman, 2011)	The application of Halal in supply chain management: In- depth interviews	249	2011	Journal of Islamic Marketing
Abd Rahman A.; Asrarhaghighi E.; Ab Rahman S. (Abd Rahman et al., 2015)	Consumers and halal cosmetic products: Knowledge, religiosity, attitude and intention	222	2015	Journal of Islamic Marketing
Tieman M.; van der Vorst J.G.A.J.; Ghazali M.C. (Tieman et al., 2012)	Principles in halal supply chain management	213	2012	Journal of Islamic Marketing
Ali M.H.; Chung L.; Kumar A.; Zailani S.; Tan K.H. (Ali et al., 2021)	A sustainable Blockchain framework for the halal food supply chain: Lessons from Malaysia	201	2021	Technological Forecasting and Social Change

Jamal A.; Sharifuddin J. (Jamal & Sharifuddin, 2015)	Perceived value and perceived usefulness of halal labeling: The role of religion and culture	188	2015	Journal of Business Research
Nurjuliana M.; Che Man Y.B.; Mat Hashim D.; Mohamed A.K.S. (Nurjuliana et al., 2011)	Rapid identification of pork for halal authentication using the electronic nose and gas chromatography-mass spectrometer with headspace analyzer	167	2011	Meat Science
Farouk M.M.; Al- Mazeedi H.M.; Sabow A.B.; Bekhit A.E.D.; Adeyemi K.D.; Sazili A.Q.; Ghani A. (Farouk et al., 2014)	Halal and kosher slaughter methods and meat quality: A review	166	2014	Meat Science

The publication landscape for Halal certification and compliance research is dominated by Malaysia and Indonesia, which together account for the vast majority of scholarly output in this field. Malaysia leads with 714 publications, followed closely by Indonesia with 625. This reflects the central role both countries play in the global Halal ecosystem. Malaysia, with its well-established Halal infrastructure and the influential role of the JAKIM, has positioned itself as a global reference for Halal standards. Similarly, Indonesia, home to the world's largest Muslim population, has increasingly developed its own certification systems and regulatory frameworks, making it a natural hub for related academic inquiry.

Beyond Southeast Asia, the representation of other countries is relatively limited, indicating that Halal research is still largely concentrated in Muslim-majority nations where the topic is highly relevant both culturally and economically. The United Kingdom (UK) and Pakistan are the next most productive, with 25 and 23 publications, respectively. The UK's presence suggests growing academic and market interest in Halal standards in non-Muslim-majority contexts, likely driven by its sizable Muslim minority population and the need for regulatory clarity in food labeling and supply chains. Pakistan's contributions reflect its internal efforts to formalize Halal certification practices and engage in international Halal trade.

The remaining countries—Australia, UAE, Oman, Saudi Arabia, Thailand, and Bangladesh—show modest but notable engagement, with publication counts ranging from 12 to 20. These countries either have significant Muslim populations or are active participants in the global Halal trade. For example, Gulf countries such as the UAE and Saudi Arabia are key consumers and certifiers of Halal goods. At the same time, Australia plays a role as a major exporter of Halal-certified meat. Thailand's participation is likely linked to its ambitions to become a regional hub for Halal products. Collectively, these publication trends underline a globalizing interest in Halal certification, although scholarly contributions remain highly concentrated in a few leading nations.



Figure 4: Global Distribution of Publications on Halal Certification and Compliance

This map visualizes the number of academic publications by country related to Halal certification and compliance standards. Malaysia and Indonesia lead with the highest number of publications, followed by countries like the UK, Pakistan, Australia, and several others in the Middle East and South Asia. The data highlights the regional concentration of Halal research in Southeast Asia, with emerging contributions from Western and Middle Eastern nations (Map created with mapchart.net).

Table 7: Top 10 Countries by Number of Publications on Halal Certification and Compliance

Country	Total
Malaysia	714
Indonesia	625
United Kingdom	25
Pakistan	23
Australia	20
United Arab Emirates	16
Oman	14
Saudi Arabia	14
Thailand	13
Bangladesh	12

The VOSviewer keyword analysis shows that the core themes in Halal research are strongly centered around general concepts of “**halal**” (233 occurrences, 227 total link strength), “**halal food**” (95, 115), and “**halal certification**” (91, 97). These terms dominate the research landscape and represent foundational concepts in the field of study. Supporting them are high-frequency country-specific keywords such as “**Malaysia**” (81, 140) and “**Indonesia**” (51, 76), which indicates these nations’ significant contributions to and leadership in Halal research. Other high-impact themes, such as “**halal tourism**” (113, 78), suggest that the industry has

expanded beyond food into lifestyle and services, reflecting the evolving and globalized nature of Halal markets.

The analysis also emphasizes consumer-oriented research. Keywords such as **“purchase intention”** (45, 75), **“attitude”** (35, 63), **“halal awareness”** (35, 53), and **“religiosity”** (48, 81) highlight a strong focus on understanding behavioral drivers of Halal consumption. These are often linked to theoretical models, such as the **Theory of Planned Behavior**, evidenced by keywords including **“intention”** (15, 28), **“subjective norm”** (10, 22), and **“tpb”** (10, 19). Additionally, **“trust,” “perception,”** and **“knowledge”** further underscore the importance of consumer psychology and decision-making in the literature.

Emerging and interdisciplinary research trends are also visible. Technological and operational themes such as **“blockchain”** (21, 21), **“traceability”** (12, 14), and **“halal logistics”** (42, 63) show growing interest in digital tools and supply chain integrity. Meanwhile, terms like **“sustainability,” “SMEs,”** and **“innovation”** suggest a developing interest in how Halal systems interact with broader economic and environmental issues. The appearance of scientific terms like **“chemometrics,” “ftir spectroscopy,”** and **“gelatin”** points to a parallel research stream focused on Halal authentication and food safety. Collectively, the keyword data reflects a diverse, interdisciplinary, and rapidly evolving research field that integrates cultural, technological, economic, and scientific dimensions.

Table 8: Top 10 Most Frequent and Strongly Linked Keywords in Halal Certification and Compliance Research

Id	Keyword	Occurrences	Total Link Strength
1	Halal	233	227
2	Malaysia	81	140
3	Halal Food	95	115
4	Halal Certification	91	97
5	Religiosity	48	81
6	Halal Tourism	113	78
7	Indonesia	51	76
8	Purchase Intention	45	75
9	Attitude	35	63
10	Halal Logistics	42	63

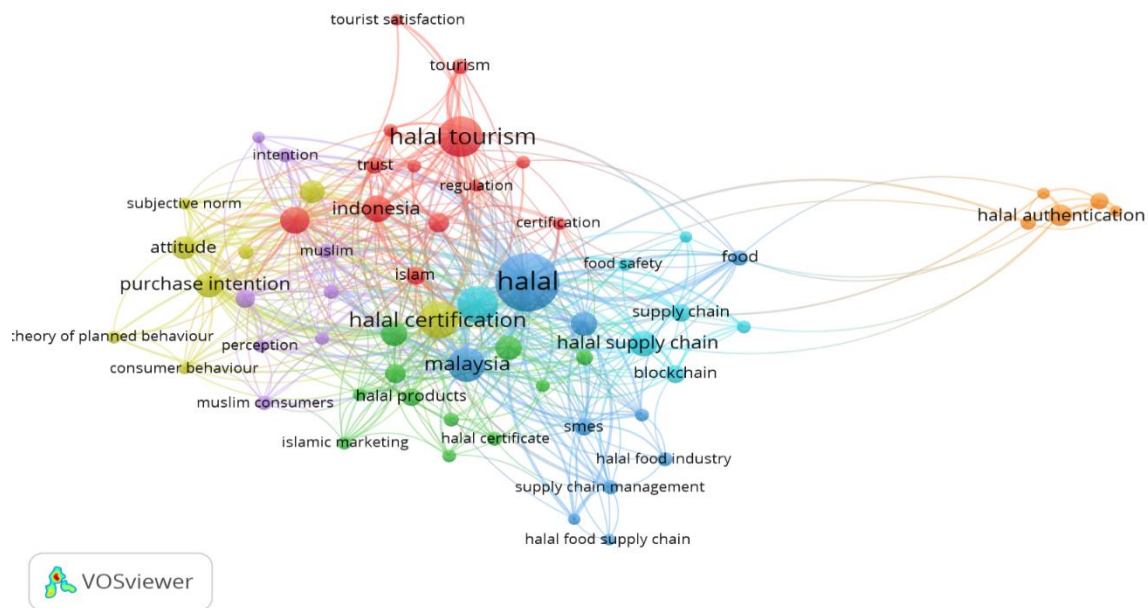


Figure 5: Network Visualization Map of Keywords' Co-Occurrence

RQ 5: What Is Co-Authorship by Countries' Collaboration?

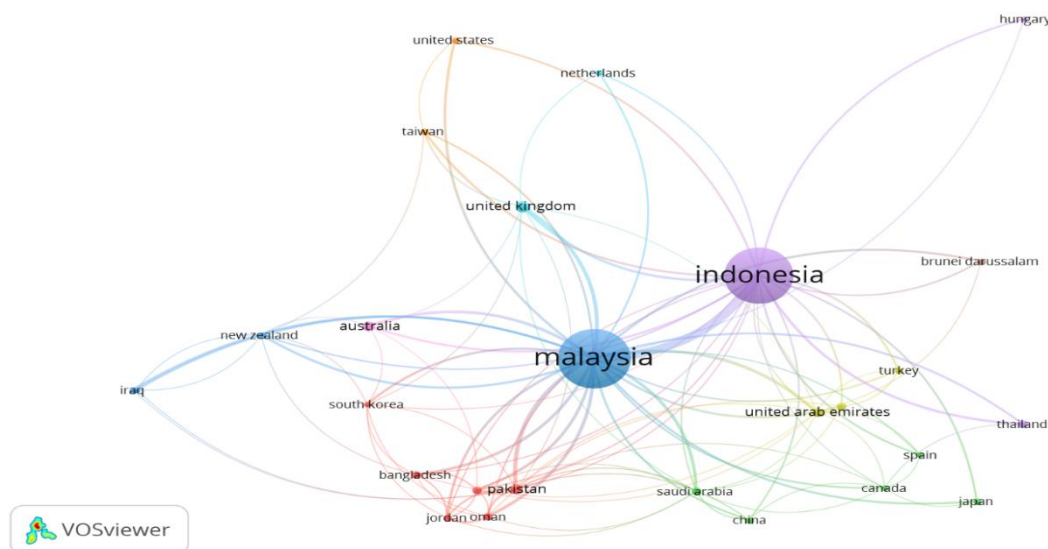
The country-level bibliometric analysis highlights **Malaysia** and **Indonesia** as the dominant contributors to Halal research. Malaysia leads with 714 documents and 15,454 citations, reflecting prolific output and substantial academic impact, reinforced by its top total link strength of 334. Indonesia follows with 625 documents and 6,136 citations, showing strong scholarly engagement and growing influence (link strength of 212). These figures align with their leadership in Halal policy, certification systems, and institutional infrastructure, making them central hubs in both academic and regulatory discussions of Halal.

A second tier of contributing countries includes **Pakistan, the UK, and Oman**, each producing 14 to 25 documents with notable citation counts (e.g., the UK with 1,037 citations and Oman with 380). These countries, although publishing less than the leaders, show relatively high citation-to-document ratios, suggesting their research carries significant weight. Countries such as **Jordan, UAE, Australia, India, and Saudi Arabia** also show moderate but impactful involvement with consistent citation and link strength levels (ranging from 25 to 29), indicating a balanced contribution to both content and scholarly connectivity.

Beyond the top 10, a diverse mix of countries, including **Egypt**, **New Zealand**, **Thailand**, **Taiwan**, and the **US**, demonstrate growing academic engagement with Halal research. While their publication numbers remain modest (mostly around 10–13 documents), many still attract strong citation counts, such as New Zealand (548) and the U.S. (432). This suggests that even lower-output countries can play important roles in the intellectual network through quality publications. The presence of countries like **China**, **Nigeria**, **Canada**, and **Japan** further reflects the globalization of Halal scholarship, signaling increasing cross-cultural and interdisciplinary research interest.

Table 9: Top 10 Contributing Countries in Halal Certification Research by Documents, Citations, and Link Strength

Id	Country	Documents	Citations	Total Link Strength
1	Malaysia	714	15454	334
2	Indonesia	625	6136	212
3	Pakistan	23	586	44
4	United Kingdom	25	1037	34
5	Oman	14	380	33
6	Jordan	10	211	29
7	United Arab Emirates	16	301	29
8	Australia	20	614	25
9	India	12	222	25
10	Saudi Arabia	14	269	25

**Figure 6: Density Map of Top Contributing Countries**

This study aimed to map and analyze the academic landscape surrounding Halal certification and compliance standards through a bibliometric approach. The analysis sought to identify prevailing trends, influential contributors, and dominant research themes in this field. Using a dataset of 1,224 Scopus-indexed publications between 2000 and 2025, processed with OpenRefine and analyzed through VOSviewer, several meaningful patterns emerged. Key findings revealed a significant rise in research output beginning in 2015, peaking in 2024, indicating an intensified scholarly and industry attention to Halal governance. Malaysia and Indonesia emerged as the most prolific countries, highlighting their institutional leadership in Halal regulation. Frequently cited topics included consumer behavior, religious influence, and supply chain logistics. Keywords like "Halal tourism," "Halal awareness," and "blockchain" demonstrate a diversification of research focus into both traditional and emerging themes. Author and country-level collaborations emphasized Southeast Asia as a central node in the global Halal research network.

This study contributes to the academic field by organizing fragmented knowledge into a structured overview of thematic clusters, intellectual contributions, and evolving research directions. By highlighting underexplored areas such as certification harmonization, stakeholder integration, and digital authentication technologies, the findings inform future scholarly inquiry and policy discussions. From a practical perspective, insights gained can support certification bodies, businesses, and regulators in addressing operational challenges, improving transparency, and enhancing consumer trust in Halal systems. Limitations of this study include its reliance on a single database and the exclusion of non-English publications, which may omit relevant regional perspectives. Future research could expand to include diverse databases and qualitative insights to enrich the analysis. Overall, this bibliometric mapping underscores the value of data-driven approaches in identifying knowledge gaps, guiding policy, and fostering innovation in the evolving domain of Halal certification and compliance.

AI Disclosure Statement

In the course of preparing this work, the principal author (Sharifah Azwani) utilized ChatGPT to enhance the writing style and to check for grammar and spelling errors using Napki.AI to create diagrams. After using this tool, the author(s) carefully reviewed as well as revised the content as necessary and assumed full responsibility for the final publication.

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