

Effectiveness of Halal Traceability and Self-Declared Certification on Indonesian MSMEs Performance

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Abstrak.

This study aims to examine in depth the effectiveness of halal traceability in Indonesia and identify the impact of self-declared halal certification on the performance of small and medium-sized enterprises (SMEs) in the country. The research method used is qualitative, which is reinforced by statistical analysis through survey data from the Populix application as well as a comprehensive literature review. Data analysis was conducted through various techniques, including regression tests, correlation tests, chi-square tests, and content analysis. The research findings confirm that the effectiveness of the halal tracking system significantly contributes to improving the resilience and competitiveness of MSMEs. Moreover, self-declared halal certification has been proven to increase consumer confidence in halal products and their integrity. This research makes an important contribution by highlighting the urgency of integrating efficient halal supply chain management practices, including reliable tracking systems and credible certification. Furthermore, this research underscores the necessity of enhancing consumer awareness of halal products, thereby facilitating informed purchasing decisions and fostering the growth of a more resilient halal ecosystem in Indonesia.

Kata Kunci: Traceability, self-declaring, halal certification, SME performance

1 Introduction

The general issues surrounding the evaluation of halal food traceability include the challenges faced in ensuring compliance with halal standards, food safety, and environmental sustainability. In light of the growing global demand for halal products, there is a pressing need to ensure that these products meet the standards set in the production process. Nevertheless, the intricacy of the supply chain, fluctuations in regulations,

and divergent interpretations of the halal concept present significant challenges in evaluating the traceability of halal food. This necessitates the implementation of a system that can effectively trace the origin, production process, and distribution of halal products in a transparent and efficient manner.¹

Specific issues related to the evaluation of the traceability of halal food include the need for a deeper understanding of the relationships among halal supply chain management (HSCM) practices, traceability systems, knowledge management, and spiritual leadership with sustainable performance. Although previous studies have provided insights into the significance of these factors in the context of halal businesses, there is still a need for a more profound understanding of the interrelations between these factors and their influence on sustainability performance, particularly in the context of SMEs in Indonesia.²

This article makes a significant contribution to previous research by exploring the interconnections among halal supply chain management (HSCM) practices, tracking systems, knowledge management, and spiritual leadership in the context of small and medium-sized enterprises (SMEs) in Indonesia. Using a combined structural equation modelling (SEM) and fuzzy-set qualitative comparative analysis (FsQCA) approach, this article reveals a more complex and in-depth pattern of relationships between these factors in influencing sustainable performance. This approach thus represents a significant contribution to the literature, providing more detailed insight into the complex dynamics within the halal supply chain.³

¹ H. Wahyuni, I. Vanany, and U. Ciptomulyono, "Food Safety and Halal Food in the Supply Chain: Review and Bibliometric Analysis," *Journal of Industrial Engineering and Management* 12, no. 2 (2019): 373–391; S. Mujiatun et al., "The Impact of Marketing Communication and Islamic Financial Literacy on Islamic Financial Inclusion and MSMEs Performance: Evidence from Halal Tourism in Indonesia," *Sustainability (Switzerland)* 15, no. 13 (2023).

² Wahyuni, Vanany, and Ciptomulyono, "Food Safety and Halal Food in the Supply Chain: Review and Bibliometric Analysis"; Mujiatun et al., "The Impact of Marketing Communication and Islamic Financial Literacy on Islamic Financial Inclusion and MSMEs Performance: Evidence from Halal Tourism in Indonesia"; S. Abdullah and U.A. Oseni, "Towards a Shari'ah Compliant Equity-Based Crowdfunding for the Halal Industry in Malaysia," *International Journal of Business and Society* 18, no. S1 (2017): 223–240; I. Giyanti et al., "Halal Standard Implementation in Food Manufacturing SMEs: Its Drivers and Impact on Performance," *Journal of Islamic Marketing* 12, no. 8 (2021): 1577–1602.

³ Perencanaan Pembangunan Nasional Kementerian, *Laporan Perkembangan Ekonomi Indonesia Dan Dunia TW II 2023* (Jakarta, Indonesia, 2023), [https://perpustakaan.bappenas.go.id/e-library/file_upload/koleksi/migrasi-data-publikasi/file/Update_Ekonomi/Ekonomi_Makro/2023/Laporan Perkembangan Ekonomi Indonesia dan Dunia TW II 2023 - Humas-halaman-2-167.pdf](https://perpustakaan.bappenas.go.id/e-library/file_upload/koleksi/migrasi-data-publikasi/file/Update_Ekonomi/Ekonomi_Makro/2023/Laporan%20Perkembangan%20Ekonomi%20Indonesia%20dan%20Dunia%20TW%20II%202023%20-%20Humas-halaman-2-167.pdf).

The evidence provided in certain articles suggests that the concept of traceability may not be as effective in the context of halal supply chains as it is in other sectors. Although the crucial role of traceability in ensuring halal standards is upheld, the adoption of these systems remains limited. A number of factors, such as the size of the business, play an important role in the intention to adopt such systems. Furthermore, the perceived benefits of traceability systems may also be influenced by the specific business objectives of each organisation. The ineffectiveness of traceability can result in noncompliance with halal standards, a deterioration in business reputation, and an increase in the risk of food safety issues.⁴

The purpose of this article is to present a more comprehensive understanding of the factors that influence the sustainability performance of small and medium-sized enterprises (SMEs) specialising in halal products in Indonesia. By emphasising the significance of HSCM practices, traceability systems, knowledge management, and spiritual leadership, this article aims to provide practical guidance for stakeholders seeking to optimise their sustainable performance. Furthermore, this article seeks to provide insights for researchers and industry practitioners on the intricate dynamics of the halal supply chain and the significance of integrating these factors into their business strategies.⁵

2 Literature Review

Research on traceability evaluation in the halal industry highlights a number of important concepts and phenomena. First, the interconnectivity between halal supply chain management (HSCM), traceability systems, knowledge management (KM), and sustainability outcomes in small and medium enterprises (SMEs) in Indonesia specialising in halal products is examined. This article employs structural equation modelling and fuzzy-set qualitative comparative analysis (FsQCA) with 171 respondents to reveal that HSCM practices have a positive impact on sustainability performance (SP), meeting the expectations of Muslim consumers and addressing environmental and social concerns. However, this

⁴ I Isman and Ahmad Zainul Muttaqin, “Innovative Legal Modeling for Interdisciplinary Studies on Law and Economic Behavior,” *Indonesian Journal of Islamic Economic Law* 1, no. 1 (December 7, 2023): 60–71, <https://journals2.ums.ac.id/index.php/ijael/article/view/3437>.

⁵ Euis Amalia and Eltom Ishaq Osman Musa, “Economic Compatibility of Islamic Economy and Pancasila: Implications for the Postgraduate Curriculum,” *Indonesian Journal of Islamic Economic Law* 1, no. 1 (December 7, 2023): 11–22, <https://journals2.ums.ac.id/index.php/ijael/article/view/3434>.

research revealed that spiritual leadership does not moderate the relationship between HSCM practices and SP. In contrast, traceability systems play an important role in positively influencing HSCM and indirectly influencing SP through the identification and mitigation of unsafe products. Although knowledge management (KM) itself does not directly influence sustainability performance (SP), its positive influence on HSCM improves overall supply chain management. Furthermore, HSCM serves as a mediator between KM and SP. Based on these connections, fuzzy-set qualitative comparative analysis (FsQCA) identifies specific combinations of factors that consistently lead to desired outcomes, offering valuable insights into the complex dynamics among HSCM practices, traceability systems, knowledge management, and sustainability performance in small and medium-sized enterprises (SMEs).^{6 7}

Second, research on traceability in the halal industry in Pakistan provides an in-depth understanding of the factors that influence the adoption of halal food standards (HFSs) among food manufacturers in Pakistan and the role of traceability systems in compliance with halal assurance systems (HASs). The findings indicate that consumer pressure, industry competition, marketing functions, operational improvements, and organisational commitment exert considerable influence on the adoption of HFSs, whereas government regulations exert negligible influence. The results also indicate that the adoption of HFSs and the absence of traceability have a significant impact on HAS. The findings of this study provide valuable insights for policymakers and the food industry, offering guidance on how to enhance compliance with halal standards, which is a crucial requirement in the context of the growing global demand for halal products.^{8 9}

Third, the necessity of a comprehensive traceability system in the food industry to protect consumers from potential health risks was revealed in research on consumer preferences and consumers' WTP for

⁶ Theodoros Theodoridis and Juergen Kraemer, "Pola Sinergitas Dalam Mekanisme Self Declare Halal" (n.d.): 149–178; Dini Wahyuni and Nurul Arfidhila, "Traceability Pada Rantai Pasok Pangan Halal: Review Literatur," *Talenta Conference Series: Energy and Engineering (EE)* 2, no. 4 (2019); Istianah Istianah and Gemala Dewi, "Analisis Masalah Pada Konsep Halal Self-Declare Sebelum Dan Pascaenachment Undang-Undang Cipta Kerja," *Al-Adl: Jurnal Hukum* 14, no. 1 (2022): 85.

⁷ Dini Wahyuni and Nurul Arfidhila, "Traceability Pada Rantai Pasok Pangan Halal: Review Literatur."

⁸ Istianah and Dewi, "Analisis Masalah Pada Konsep Halal Self-Declare Sebelum Dan Pascaenachment Undang-Undang Cipta Kerja."

⁹ Fitri Rafianti, Robi Krisna, and Erwin Radityo, "Dinamika Pendampingan Manajemen Halal Bagi Usaha Mikro Dan Kecil Melalui Program Self Declare," *Jurnal Sains Sosio Humaniora* 6, no. 1 (2022): 636–643.

traceable meat products. The findings indicate that the majority of respondents are willing to pay a premium price for traceable food products. Furthermore, the results demonstrate that gender, income, halal certification, and transparency are significant factors influencing consumers' willingness to pay more for such products. This serves to reinforce the significance of traceability systems in meeting consumer expectations for a safe and high-quality meat supply. This study offers insights into the intention of small and medium-sized enterprises (SMEs) in the food industry to adopt a halal traceability system. The findings indicate that a number of factors influence the intention of SMEs in the food industry to adopt a halal traceability system. These include sales turnover, the perceived usefulness of the traceability system, the perceived ease of use, technological aspects, and organisational aspects. The findings provide a more comprehensive understanding of the significance of footprint systems in the halal food industry and their potential to enhance the performance of SME businesses, as well as the halal industry as a whole.^{10 11}

Fourth, a blockchain-based traceability system has been proposed to enhance transparency, traceability, and information quality in the halal supply chain in Indonesia. This research presents a blockchain-based traceability system model for halal supply chains, with a particular focus on the cosmetics industry. The findings provide insights into the necessity for a more effective trace system in the halal cosmetics industry and offer guidance for future research in this regard. It is anticipated that a blockchain-based traceability system will enhance compliance with halal standards and facilitate the advancement of the halal cosmetics industry as a whole. This study examines the willingness of halal fashion manufacturing companies to participate in a blockchain-based traceability system. The findings indicate that a halal-oriented approach exerts a significant influence on institutional pressure, which in turn affects participation intentions. The findings provide a more comprehensive understanding of the factors that influence the adoption of traceability systems in halal fashion supply chains, offering valuable empirical insights.¹²

The fifth factor identified as influencing the successful implementation of traceability is consumer satisfaction, competitive advantage, and

¹⁰ Ghadafi M. Razak, Linda C. Hendry, and Mark Stevenson, "Supply Chain Traceability: A Review of the Benefits and Its Relationship with Supply Chain Resilience," *Production Planning and Control* 34, no. 11 (2023): 1114–1134.

¹¹ I. Vanany et al., "Modelling Halal Internal Traceability in Open Source ERP System for Chicken Meat Processing Company," in *IEEE International Conference on Industrial Engineering and Engineering Management*, 2019, 1017–1021.

¹² S. Khan et al., "Implementing Traceability Systems in Specific Supply Chain Management (SCM) through Critical Success Factors (CSFs)," *Sustainability (Switzerland)* 10, no. 1 (2018).

overall halal supply chain success. To illustrate the significance of traceability in the halal food industry in Western Australia, consider the following example. This study offers insights into how individuals in facilitating organisations perceive the logic of the idea of halal and the benefits that traceability systems can provide in halal food production. This study offers a more comprehensive understanding of the significance of traceability systems in enhancing the quality and safety of halal food products while also facilitating interfirm collaboration within halal business networks.¹³

The preceding literature review indicates that traceability systems play a pivotal role in ensuring compliance with halal standards, enhancing consumer confidence, and fortifying the halal supply chain as a whole. Nevertheless, there are still research gaps that require further investigation, particularly in the context of existing regulations and industry practices in Indonesia. This implies the need for further research to elucidate the concept of traceability as defined by the Halal Assurance Law in Indonesia. Additionally, research should be conducted to identify the factors that influence the adoption of traceability systems and to explore the insights that practitioners may derive from these factors in formulating their business strategies.¹⁴

3 Method

The methodology employed in this article adheres to an evaluative research approach that integrates qualitative research methodologies with pertinent statistical analyses. The data were collected through a survey utilising the Populix app, which provides real-time access, as well as through a literature review. The statistical analyses, including regression, correlation, and chi-square tests, were performed using SPSS software. The results of the statistical tests were then deepened through content analysis of relevant halal traceability literature and theories to measure the effect of self-declare on MSME performance and to evaluate trends and factors that influence halal food consumption practices in Indonesia over a one-year period (2022-2023).¹⁵

¹³ D. Poniman, S. Purchase, and J. Sneddon, "Traceability Systems in the Western Australia Halal Food Supply Chain," *Asia Pacific Journal of Marketing and Logistics* 27, no. 2 (2015): 324–348.

¹⁴ Zainal Arifin Hossein and M Mahmudhassan, "Legal Disruption and Sharia Arbitration: Navigating Change, Measuring Impact, and Fostering Innovation," *Indonesian Journal of Islamic Economic Law* 1, no. 1 (December 7, 2023): 39–49.

¹⁵ Isman and Muttaqin, "Innovative Legal Modeling for Interdisciplinary Studies on Law and Economic Behavior"; Jaih Mubarak and Shaifurrokhman Mahfudz, "Best Practice Review:

Subsequently, the statistical test findings, presented in the form of indications and suspected correlations between research variables, are discussed in the context of the relevant literature review to gain an understanding of the theoretical context. This will permit the researcher to interpret the findings in greater depth and relate them to existing theories in a quantifiable manner. The inference technique will entail synthesising the statistical findings from the survey data analysis with the findings obtained from the literature review. The triangulation of data and analyses will ensure the validity of the data by comparing the survey results with findings from the literature, as well as the validity of the analyses by cross-referencing the statistical findings with contextual interpretations of relevant theories, thus strengthening confidence in the conclusions.¹⁶

4 Results and Discussion

This section will describe the effectiveness of the halal traceability system in Indonesia, with a focus on the implications of self-declaration of halal certification for business performance. The two main areas of interest are first, to ascertain the effectiveness of the halal traceability system in ensuring the established halal standardisation, and second, to investigate the impact of the system on business performance, with a particular focus on halal food products in Indonesia. The data presented in this discussion are analysed using relevant theories, including the theory of self-declared certification in halal assurance systems (Najmi, et al., 2023) and the theory of halal supply chain management (Khan, et al., 2018). An understanding of the efficacy of this traceability system has implications for self-declared halal certification, thereby providing comprehensive and in-depth insight into the dynamics involved in the halal supply chain in Indonesia.¹⁷

Enhancing the Quality of Shariah Economist Scholars,” *Indonesian Journal of Islamic Economic Law* 1, no. 1 (December 7, 2023): 1–10.

¹⁶ Amalia and Musa, “Economic Compatibility of Islamic Economy and Pancasila: Implications for the Postgraduate Curriculum.”

¹⁷ Ahmad Imam Hambali and Aisha Bahaaeldin Eprahim Ali, “Social Funding Programs in Non-Depository Credit Cooperatives: A Perspective on Positive Law and Sharia Principles,” *Indonesian Journal of Islamic Economic Law* 1, no. 1 (December 7, 2023): 50–59, <https://journals2.ums.ac.id/index.php/ijoe/article/view/3439>.

4.1 Efficacy of the Halal Traceability System in Indonesia

The efficacy of traceability in ensuring compliance with halal standards can be observed through statistics from a populix survey conducted in March 2023. The survey revealed that the majority of the 1,014 Muslim respondents across Indonesia indicated that recommendations from friends or family were the most influential source of information when purchasing halal food products. This indicates that consumers tend to place greater trust in information obtained from their closest social circle when choosing halal food products. Furthermore, the data indicate that advertisements on social media platforms, including Twitter, Facebook, Instagram, and TikTok, exert considerable influence, with the percentage reaching 14%. This suggests that promotion through social media is an important factor in Muslim consumers' purchasing decisions. Additionally, the survey highlighted the significance of halal logos for food products, with 93% of respondents considering it important. The survey findings demonstrate the significance of transparency in halal food product information for Muslim consumers in Indonesia.^{18 19}

To ascertain the efficacy of halal food traceability in Indonesia, it is necessary to identify the challenges that currently exist. This can be achieved by analysing the data patterns that emerge from the results of the following survey.

Table 1. The results of the Populix Institute Survey on the most influential source of information for consumers of halal food when making their purchases.

Descriptions	Values
Family recommendations	29
Social media adverts	14
In-store viewing	13
Searching for internet reviews	10
Influencer recommendations	10
Trying out products from the store	7
Online delivery available	7
Store social media accounts	4

¹⁸ Khan et al., "Implementing Traceability Systems in Specific Supply Chain Management (SCM) through Critical Success Factors (CSFs)"; N.M. Nawi et al., "Consumers' Preferences and Willingness-to-Pay for Traceability Systems in Purchasing Meat and Meat Products," *Food Research* 7, no. 1 (2023): 1–10.

¹⁹ Nawi et al., "Consumers' Preferences and Willingness-to-Pay for Traceability Systems in Purchasing Meat and Meat Products."

Internet adverts	3
Adverts in print media	1
Billboard/banner advert	1

The data presented in the table above indicate that the sources of information that most influence Muslim consumers in Indonesia before purchasing halal food can be categorised based on the Populix survey and the Insight and Customer Perspective of the Halal Industry in Indonesia report. The most common source of information for consumers is recommendations from friends or family, with 29% of respondents citing this as a key influence. This highlights the significant role of word of mouth within the immediate circle. The next most influential sources of information are social media platforms such as Twitter, Facebook, Instagram, and TikTok, with 14% of respondents citing them as a source of information. In-person stores were also a significant factor, with 13% of respondents citing them as a source of information. Searching for reviews on internet sites was also a significant factor, with 10% of respondents citing it as a source of information. Finally, influencer recommendations were also a significant factor, with 10% of respondents citing them as a source of information. Notably, social media accounts, internet advertisements, print media and billboards have only limited influence. Furthermore, the majority of respondents (93%) considered the importance of halal logo inclusion in food products to be a key consideration when shopping. This confirms that product halalness is an important factor in Muslim consumers' purchasing decisions.²⁰

The results of the Populix survey on the factors considered by Indonesian Muslim consumers when purchasing food products (March 2023) are presented in the following table:²¹

Table 2. The results of the Populix Institute Survey on the most influential source of information for Halal Food Consumers when purchasing halal food.

Data Descriptions	Values
The product displays the Halal logo.	93
The content information is clear and unambiguous.	90
The product fulfils the consumer's needs in a satisfactory manner.	85

²⁰ Theodoridis and Kraemer, "Pola Sinergitas Dalam Mekanisme Self Declare Halal."

²¹ Vanany et al., "Modelling Halal Internal Traceability in Open Source ERP System for Chicken Meat Processing Company."

The packaging is environmentally friendly.	70
The product is domestically produced.	50

The purchasing decisions of Indonesian Muslim consumers of food products in March 2023 are significantly influenced by the presence of a halal logo on the product. The Populix survey revealed that 93% of respondents considered the inclusion of the halal logo to be of significant importance, with this factor being the primary determinant in their decision to purchase a product. Furthermore, other factors that are also considered important by consumers include clear information about product content (90%), products that can fulfil needs (85%), and environmentally friendly packaging (70%). Although the halal logo provides a sense of security and quality assurance, the majority of respondents still checked the information on the raw materials used in food products, indicating a high level of caution in choosing halal products. The survey was conducted on 1,014 Muslim respondents across Indonesia through the Populix app. The majority of respondents were from the working class with middle-class economic status.²²

According to the values in Table 1 obtained via the Pearson correlation test, the correlation coefficient (r) is 0.9347. Table 1 shows the results of the Spearman Rho test.docx. This indicates a highly significant correlation between variables X (direct sources of information) and Y (indirect sources of information). This indicates a robust and positive correlation between the utilisation of direct and indirect sources of information by consumers in their selection of halal products. The greater the utilisation of a specific information source is, the more likely it is that other types of information sources will be employed. For further details on the classification of direct and indirect information sources, please refer to tabel 1.docx).²³

The results of the linear regression test permit the interpretation of the relationship between variable X (halal food consumer information sources) and variable Y (halal food consumer consideration factors). The regression equation, $\hat{y} = 2.75947X + 27.66392$, indicates a positive relationship between the sources of information used by consumers in choosing halal food products and the factors they consider when buying. This

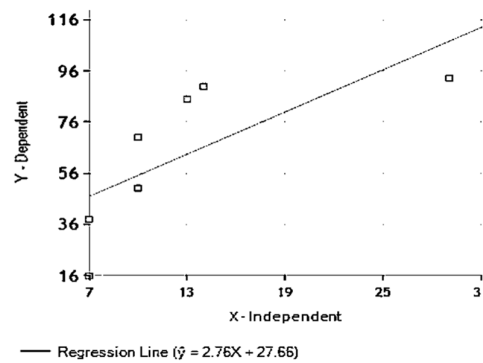
²² T. Nasyiah et al., "Explaining Sustainable Performance With SEM-FsQCA: The Role of Traceability Systems, Knowledge Management, Halal SCM Practices, and Spiritual Leadership in Small-Medium Enterprises (SMEs)," *IEEE Transactions on Engineering Management* 71 (2024): 5691–5705.

²³ A. Najmi, W. Ahmed, and S. Jahangir, "Firm's Readiness for Halal Food Standard Adoption: Assessing the Importance of Traceability System," *Journal of Islamic Accounting and Business Research* 14, no. 8 (2023): 1451–1473.

implies that for every unit increase in the source of information (X), the consumer consideration factor (Y) is anticipated to increase by 2.75947 units. The regression coefficient b (2.75947) indicates that changes in consumers' information sources have a significant effect on their consideration factors in buying halal food products.²⁴

In conclusion, the more information consumers collect about halal food products, the more likely they are to consider purchasing them. This demonstrates the importance of information sources in halal food consumer purchasing decisions.²⁵ The following linear regression graph illustrates the information in Figure 1.

Figure 1. Linear regression results test



The regression line $\hat{y} = 2.75947X + 27.66392$ can be plotted on a graph with the X-axis representing variable X (halal food consumer information sources) and the Y-axis representing variable Y (halal food consumer consideration factors). This allows the relationship between the two variables to be described. The regression line represents a positive linear relationship between variables X and Y. As the value of X (source of information) increases, the value of Y (consideration factor) is expected to increase in accordance with the regression coefficient b (2.75947). The graph above illustrates an upwards-sloping line, symbol-

²⁴ N.A. Muhamad, N.H. Kamarulzaman, and N.M. Nawi, "Agro-Food SMEs' Intention to Adopt Halal Traceability System," *Food Research* 4 (2020): 93–98.

²⁵ N.H. Kamarulzaman, N.A. Muhamad, and N. Mohd Nawi, "An Investigation of Adoption Intention of Halal Traceability System among Food SMEs," *Journal of Islamic Marketing* 13, no. 9 (2022): 1872–1900.

ising the positive relationship between consumers' sources of information and their consideration factors in purchasing halal food products.²⁶

The majority of respondents indicated that recommendations from friends or family were the most influential source of information when purchasing halal food products. This was followed by promotions through social media. These findings suggest that word of mouth and social media influence play important roles in the purchasing decisions of Muslim consumers in Indonesia regarding halal food products.

To assess the efficacy of the halal traceability system in Indonesia, survey data pertaining to the influence of the halal logo on food products can be examined as a primary consideration for Muslim consumers when shopping. The results indicate that the majority of respondents view the inclusion of halal logos as significant, underscoring the importance of literacy and awareness of product halalness as factors influencing their purchasing decisions.²⁷

The data presented above also highlight the significance of transparency in halal product information. The data indicate that consumers place considerable importance on clear product content, product availability to meet needs, and environmentally friendly packaging. However, the data also reveal challenges in the effectiveness of halal food traceability. It can be observed that the traceability of the halalness of a product is initiated by the high consumer literacy of the product. In contrast, the concept of halal traceability offers the concept of self-declaration, which means that at any time consumers search for certain products that are not in accordance with the halal standards of the product, this will spread quickly and affect the integration of the institution that issued the halal product certification. The efficacy of traceability is not solely contingent upon the incorporation of the halal logo; rather, the endorsement or promotion of such products through social media, the aggregation of reviews on the internet, and the recommendations of influencers also exert considerable influence. This illustrates the intricacy of the influence of information sources on consumer purchasing decisions.²⁸

²⁶ E. Sumarliah et al., "Blockchain-Empowered Halal Fashion Traceability System in Indonesia," *International Journal of Information Systems and Supply Chain Management* 15, no. 2 (2022).

²⁷ A.M. Saifudin, S.N. Othman, and E.M. Elias, "Critical Factors of the New Islamic Supply Chain Model through the Lens of Descriptive Data Analysis," *International Journal of Supply Chain Management* 6, no. 1 (2017): 203–208.

²⁸ I.F. Wijaya, A. Moro, and Y. Belghitar, "Does Religiosity Affect Financing Activity? Evidence from Indonesia," *Business Ethics, the Environment and Responsibility* 32, no. 2 (2023): 670–697.

The linear regression graph above is presented to effectively illustrate the relationship between consumers' information sources and their consideration factors in purchasing halal food products. While the graph indicates a positive correlation between halal food consumers' sources of information and their consideration factors in purchasing, it is important to note that there are outlier data points that challenge the linear regression test.

In other words, these values represent outliers that are significantly divergent from the general trend described by the regression line. The positioning of values above the regression line indicates that the linear regression model is unable to fully encompass the observed variation in the data. Consequently, it is possible that the model does not fully align with the data or that additional factors not considered in the model influence the observed variability.²⁹

The concept of traceability is fundamental for tracing, documenting and understanding the origins of food products. With traceability, all production stages, components and processes involved in creating a product must be monitored and traceable by consumers or other entities in the supply chain. This concept becomes especially important in the context of halal food products, where halal traceability makes it possible to trace the halal status of such products from raw materials to finished products. The relationship between the production process (X) and the halalness of the product (Y) is symmetrical. The ability to trace the production process completely and transparently directly affects consumer confidence in the halalness of the product proportionally. The application of traceability has a beneficial impact on various aspects, including crisis management, the performance of the company and the supply chain, and increased public confidence.³⁰

The data presented allow for the identification of several potential or proven aspects that make halal traceability ineffective in Indonesia. First, although the majority of respondents consider the inclusion of halal logos to be important in purchasing decisions, many still check the information on the raw materials used in food products. This indicates that although the halal logo provides a sense of security and quality assurance, there is still a lack of trust in the information presented. This may be due to a lack of transparency or irregularities in the traceability process carried out by producers or related parties.³¹

²⁹ A. Shofawati, *The Role of Islamic Fintech in Indonesia to Improve Financial Inclusion for Resolving SDGs, Artificial Intelligence, Fintech, and Financial Inclusion*, 2023.

³⁰ Razak, Hendry, and Stevenson, "Supply Chain Traceability: A Review of the Benefits and Its Relationship with Supply Chain Resilience."

³¹ Nawi et al., "Consumers' Preferences and Willingness-to-Pay for Traceability Systems in Purchasing Meat and Meat Products."

Second, the results of the linear regression analysis indicate a positive correlation between halal food consumer information sources and halal food consumer consideration factors. However, inaccurate or unreliable information can reduce the effectiveness of halal traceability. For instance, if the source of information used by consumers is found to be unreliable, such as false or inaccurate information, then halal traceability will not provide significant benefits in ensuring the halalness of food products.

Third, although there is a strong correlation between direct and indirect sources of information, there is still the potential for discrepancies between the information conveyed by both sources and the reality of halal products. This can be attributed to the lack of adequate supervision or regulation of the production and distribution process of halal products, which hinders the ability of halal traceability to provide sufficient certainty to consumers.

In conclusion, although halal traceability has the potential to enhance consumer confidence in halal food products in Indonesia, several aspects must be taken into account to optimise its efficacy. These include transparency in information, rigorous supervision of the entire supply chain, and the expansion of consumer awareness and literacy regarding product halalness.

The advantages of self-declaration in halal certification can be observed in the results of the linear regression test and correlation test, which indicate a strong relationship between the use of self-declaration and the increase in the number of halal certificates. The results of the linear regression test indicate a positive relationship between the use of self-declaration and the number of halal certificates issued. This is demonstrated by the regression equation $\hat{y} = 2.75947X + 27.66392$, which shows that the more MSEs that use self-declaration, the more halal certificates will be issued. This can increase market access for MSEs.

In addition, the results of the correlation test show that there is a very strong correlation between the use of self-declaration and the number of halal certificates issued. With a correlation coefficient (r) of 0.9347, there is an almost perfect relationship between the self-declaring variable (X) and the number of halal certificates (Y). This confirms that the use of self-declaring can contribute significantly to increasing the number of halal certificates issued, which in turn can increase consumer confidence and expand the market for MSEs.

Another advantage of self-declaration is that it accelerates the halal certification process for MSMEs, as stated in the explanation that the government prioritises the acceleration of halal certification through self-declaration. By using self-declaration, MSEs can obtain halal certifica-

tion faster and at a lower cost than can the more complicated and expensive external certification process. This can help MSEs become more competitive in the halal market and increase their overall income.

4.2 Self-Declaration of Halal Certification Systems and Performance of Small and Medium-Sized Enterprises (SMEs)

The implementation of self-declaration in halal certification has significant implications for microenterprises (MSEs). Without a valid external halal certification, MSE products may lose appeal to consumers who prioritise halalness, hinder business growth and reduce competitiveness in markets sensitive to halal status. Furthermore, products without valid halal certification may be perceived as not meeting halal standards by some consumers, potentially lowering MSE sales and reputation, especially in competitive markets.

Furthermore, the utilisation of self-declaration increases the probability of consumer complaints or litigation pertaining to the falsification of halal claims, which can result in additional costs for dispute resolution and negatively impact the overall business reputation of MSEs. Consequently, the utilisation of self-declaration in halal certification has the potential to render MSEs' income ineffective and jeopardise their financial stability in the long term. To ascertain the strength of the correlation between self-declaration and the performance of MSMEs (SMEs), the following chi-square test results are presented:

Figure 2. Halal Certification Based on a Business Scale

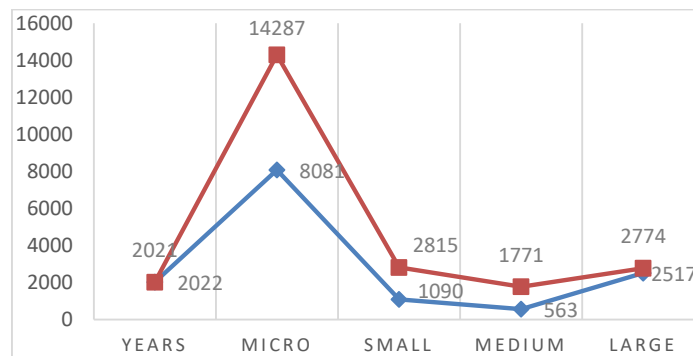


Figure 2 presents data on the number of halal certifications by business scale (micro, small, medium and large) for 2021 and 2022. In 2021, the number of halal certifications at the micro business scale was 14,287, while at the small scale, it was 2,815; at the medium scale, it was 1,771;

and at the large scale, it reached 2,774. Conversely, in 2022, there was a decline in the number of halal certifications across all business scales. The number of halal certifications at the micro business scale decreased to 8,081, at the small scale to 1,090, at the medium scale to 563, and at the large scale to 2,517.

The changes in the number of halal certifications from 2021 to 2022 can be used to illustrate the process from upstream to downstream in the halal product supply chain. At the upstream stage, there is a decrease in the number of halal certifications at micro, small- and medium-scale enterprises. This may reflect challenges or changes in halal certification requirements or processes at the production or raw material level. Conversely, the increase in the number of halal certifications at the large scale may indicate quality improvement efforts or greater interest from large companies in obtaining halal certification for their products. However, a more in-depth interpretation is necessary to understand the factors underlying these changes and their impact on the supply chain of halal products from upstream to downstream.

Table 3. Chi Square Test Halal Certification based on the Business Scale

Years	Result				Row Total
	Micro	Small	Middle	Big	
2021	14287 (1 4284.03) [0.00]	2815 (2 493.70) [41.40]	1771 (14 90.47) [5 2.80]	2774 (3 378.79) [108.26]	21647
2022	8081 (80 83.97) [0. 00]	1090 (1 411.30) [73.15]	563 (843. 53) [93.2 9]	2517 (1 912.21) [191.28]	12251
Column Totals	22368	3905	2334	5291	33898 (Grand Total)

A chi-square statistic of 560.175 and a significant p value at the $\alpha = 0.05$ level indicate a significant relationship between halal certification based on self-declaration and the scale of business (micro, small, medium and large) from 2021 to 2022. The change in the number of halal certifications at each business scale from 2021 to 2022 demonstrates the significant impact of the implementation of self-declaration certification on business performance. The decrease in the number of halal certifications

in 2022 at the micro, small and medium enterprise scale and the increase at the large enterprise scale may indicate the effect of the implementation of the self-declaration policy, which can affect business performance at various business scales.

Nevertheless, alterations in the number of halal certifications do not invariably reflect the overall performance of businesses. Despite a reduction in the number of halal certifications in 2022 for micro, small- and medium-sized enterprises, this does not necessarily indicate a significant decline in business performance at this scale. It is important to consider the possibility of other factors affecting business performance, such as changes in marketing strategies, the level of competition in the market, and overall economic conditions, when evaluating the impact of self-declared certification on business performance at various scales of business.

Furthermore, alterations in the number of halal certifications may also indicate adaptations and shifts in consumer preferences for halal products. However, to gain a more comprehensive understanding of the impact of self-declared certification on business performance at multiple scales, further analyses involving external and internal factors that affect business performance, as well as changes in management policies and practices related to halal certification, are necessary.

5 Conclusion

The findings of this research indicate two key areas for consideration: the efficacy of traceability in the halal tracking system in Indonesia and the utilisation of self-declared halal certification. The effectiveness of halal traceability is contingent upon consumer information, such as family recommendations and social media promotions. However, self-declared halal certification presents novel challenges, including the uncertainty of consumer trust in the product. The conceptual implications emphasise the necessity for increased transparency of halal product information and rigorous supply chain supervision. In practice, there is a need for greater integration between halal certification institutions and consumers, facilitated by transparent promotion. It is also important to increase consumer literacy about halal products. In the context of the halal supply chain, increasing consumer confidence through traceability and addressing self-declared challenges has an impact on the performance of MSMEs. Therefore, practical steps should be taken to improve the efficiency of halal traceability, the transparency of product information, and consumer literacy to support the growth of the halal supply chain and the performance of SMEs in Indonesia.

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