

Halal Certification Priorities for Indonesian MSEs: A Comparison Between Stakeholder Perspectives and AI-Based Insights

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Abstract

The implementation of mandatory halal certification in Indonesia poses significant challenges for Micro and Small Enterprises (MSEs), primarily due to constrained financial, technical, and human resources, as well as complex regulatory frameworks. This study investigates strategic priorities to support MSEs in navigating the halal certification process by juxtaposing qualitative perspectives from key halal ecosystem stakeholders government officials, certification bodies, MSE practitioners, and halal influencers with insights generated through artificial intelligence (AI). Employing content and thematic analysis, the study addresses the core research question: “What should be prioritized to facilitate halal certification for Indonesian MSEs?” The findings highlight both areas of convergence and divergence between human and AI-generated perspectives, particularly concerning the practicality, scalability, and sustainability of proposed interventions. While stakeholders emphasize the need for institutional support, simplified procedures, and capacity building, AI contributes innovative, data-driven strategies such as automated compliance tools and targeted digital outreach. This integrative analysis offers a novel contribution by bridging human-centric knowledge with AI-enabled foresight, thereby informing evidence-based policymaking and operational strategies. Ultimately, the study provides a multidimensional roadmap for enhancing the accessibility, efficiency, and inclusivity of halal certification in Indonesia, particularly for MSEs that constitute a vital segment of the national economy and halal value chain.

1. Introduction

The mandatory halal certification policy in Indonesia has emerged as a pivotal regulatory framework designed to ensure that food products meet the halal standards as defined by Islamic law. This policy is particularly significant in a country with the largest Muslim population in the world, where the demand for halal products is not only prevalent but also growing rapidly. The implications of this mandatory certification extend beyond consumer protection and religious compliance; they also play a crucial role in shaping the operational landscape for micro and small enterprises (MSEs) in Indonesia.

The importance of mandatory halal certification is underscored by Law Number 33 of 2014 concerning Halal Product Guarantee, which mandates that all products distributed in Indonesia must possess a halal certificate. This

law formalizes the state's commitment to protecting consumers and ensuring that food products are compliant with Islamic dietary laws (Meldona, 2023). The certification process serves as a mechanism for enhancing consumer trust, as halal certification provides assurance that the products are not only permissible under Islamic law but also safe and ethically produced (Purbasari, 2023). Furthermore, halal certification is increasingly recognized as a competitive advantage in both domestic and international markets, as consumers—Muslim and non-Muslim alike—are becoming more conscious of the ethical and health implications associated with food consumption (Amarul et al., 2019).

For MSEs, the implications of mandatory halal certification are multifaceted. Firstly, it presents an opportunity for these enterprises to differentiate themselves in a crowded marketplace. Research indicates that halal



certification can significantly enhance the marketability of products, leading to increased consumer trust and satisfaction (Purbasari, 2023). MSEs that successfully obtain halal certification can potentially expand their customer base, tapping into the lucrative halal market that extends beyond Indonesia to other Muslim-majority countries (Muin & Tahir, 2023). Moreover, the certification can improve the overall image and competitiveness of MSEs, allowing them to position themselves favorably against larger corporations that may also seek halal certification (Purbasari, 2023).

However, the transition to mandatory halal certification poses challenges for MSEs, particularly regarding the costs and complexities associated with the certification process. Many MSEs lack the necessary knowledge and resources to navigate the certification requirements effectively (Wijaya and Priantina, 2024; Oemar et al., 2022). Studies have shown that awareness and intention to register for halal certification are often low among MSE entrepreneurs, primarily due to a lack of understanding of the benefits and processes involved (Oemar et al., 2023). Therefore, initiatives aimed at increasing awareness and providing training on halal certification are essential. Government programs, such as the SEHATI initiative, which offers free halal certification through a self-declaration process, have been implemented to alleviate some of these burdens (Umami et al., 2023). Such programs not only reduce financial barriers but also enhance the capacity of MSEs to comply with halal standards.

The role of education and training in facilitating halal certification cannot be overstated. Research indicates that socialization and training initiatives significantly increase MSEs' awareness and intention to pursue halal certification (Oemar et al., 2023). By equipping entrepreneurs with the necessary knowledge about halal assurance systems and certification processes, these programs can foster a culture of compliance and quality assurance within the MSE sector. Furthermore, the involvement of universities and community organizations in providing

support and resources can enhance the effectiveness of these initiatives (Purbasari, 2023).

Another critical aspect of the mandatory halal certification policy is its potential to influence the operational performance of MSEs. Studies have shown that halal certification can lead to improved financial performance, operational efficiency, and customer loyalty (Giyanti & Indriastiningsih, 2019). MSEs that embrace halal certification often report higher profit margins and increased market share compared to their non-certified counterparts (Giyanti & Indriastiningsih, 2019). This trend highlights the economic viability of investing in halal certification, as it not only fulfills regulatory requirements but also contributes to the overall growth and sustainability of MSEs.

Moreover, the mandatory nature of halal certification aligns with broader economic goals in Indonesia, particularly in fostering the growth of the halal economy. The halal food sector is one of the fastest-growing segments of the food industry, and the government's commitment to enhancing halal certification processes is a strategic move to capitalize on this growth (Muin & Tahir, 2023). By supporting MSEs in obtaining halal certification, the government aims to create a robust halal ecosystem that benefits both producers and consumers, ultimately contributing to national economic development.

1.2 Problem Statement

The implementation of mandatory halal certification in Indonesia represents a significant policy initiative aimed at safeguarding consumer trust, ensuring product safety, and expanding economic opportunities, particularly for micro and small enterprises (MSEs) in the food and beverage sector (Wijoyo, 2023; Qadariyah, 2023). While this policy holds immense potential, its success is contingent upon addressing critical challenges and determining clear priorities for optimization. Many MSEs face significant barriers, such as a lack of awareness about the benefits of halal certification beyond religious compliance (Mardianto, 2023; Eris et al., 2023). These

businesses often fail to recognize the certification as a strategic tool for increasing consumer confidence, enhancing market competitiveness, and expanding access to broader domestic and international markets. To address this, targeted education and training programs must be implemented to equip MSE owners with practical knowledge about the certification process and its economic advantages, fostering greater participation (Mellita et al., 2020; Aprilia & Priantina, 2022).

The inefficiencies within the certification process also pose a challenge. Government agencies, particularly the BPJPH and MUI, must prioritize streamlining administrative procedures, providing financial support, and fostering coordination among stakeholders to create an accessible and efficient halal certification ecosystem (Hakim & Putri, 2022; Sani, 2023; Ibrahim, 2023). Additionally, establishing robust traceability systems is critical to maintaining the integrity of halal-certified products throughout the supply chain. By leveraging technology to ensure transparency and compliance at every stage of production, businesses can strengthen consumer confidence and enhance the reliability of certified goods (Sucipto et al., 2021; Lestari et al., 2021).

Collaboration among stakeholders, including industry players, certification bodies, educational institutions, and government agencies, is another essential element for success. Such partnerships can lead to the development of standardized resources, shared best practices, and comprehensive training programs tailored to MSE needs (Azhari, 2023). Addressing cultural and social perceptions of halal certification is equally important, as these factors influence both business practices and consumer behavior. Effective marketing and communication strategies that highlight the ethical, health, and safety benefits of halal products can motivate businesses to seek certification while encouraging consumers to prioritize certified goods in their purchases (Purbasari, 2023; Maulidia, 2022).

Furthermore, the economic implications of halal certification underscore its importance.

Certified products have a competitive edge in the market, attracting a larger customer base, particularly among Muslim consumers who value halal compliance (Qadariyah, 2023; Akmal, 2021). Optimizing the certification process will enable MSEs to harness this demand, contributing to their growth and enhancing the broader Indonesian economy. Integration of halal certification into existing quality assurance and food safety standards can further strengthen its credibility, ensuring alignment with global best practices and promoting sustainable business operations (Siska et al., 2020; Faridah, 2019).

1.3 Objectives and Scope

The objective of this study is to identify and analyze the key priorities for halal certification within Indonesia's mandatory halal policy framework, with a specific focus on micro and small food and beverage enterprises (MSEs). The research aims to uncover critical areas that require immediate attention to optimize the certification process, enhance compliance, and address challenges faced by MSEs in navigating the regulatory landscape. The scope of the study includes an examination of stakeholder perspectives, such as government bodies, certification agencies, educational institutions, and industry players, alongside insights from artificial intelligence (AI) analyses to offer a comparative framework. By integrating these perspectives, the study seeks to provide a comprehensive understanding of the priorities for halal certification, focusing on factors such as process efficiency, stakeholder collaboration, and the economic, cultural, and operational dimensions of compliance. Ultimately, the research intends to contribute actionable recommendations for improving the accessibility, effectiveness, and sustainability of halal certification for MSEs in Indonesia.

2. Literature Review

2.1 Priority on Halal Certification

The halal certification process has emerged as a critical factor influencing various sectors, particularly in the food and beverage

industry. The significance of halal certification lies not only in compliance with Islamic dietary laws but also in enhancing consumer confidence and the marketability of products. Research indicates that halal certification can positively affect consumer purchase intentions, with studies showing that halal awareness and the quality of food ingredients contribute to a substantial percentage of purchase decisions (Siska et al., 2020; Priantina et al., 2023). This underscores the necessity for businesses, especially small and medium enterprises (SMEs), to prioritize halal certification as a strategic move to cater to the growing demand for halal products.

In Malaysia, the halal certification system is well-structured, with a clear delineation of roles among various stakeholders, including halal certification bodies and auditors (Aziz, 2022). The Malaysian experience serves as a model for other countries, highlighting the importance of a skilled workforce and effective training programs in the halal industry. The dual inspection process—off-site and on-site—ensures that halal standards are rigorously maintained, thereby enhancing the integrity of the certification process (Aziz, 2022). This structured approach can serve as a benchmark for countries like Bangladesh, where the halal certification system is still developing (Aziz, 2022).

The halal meat industry in Malaysia exemplifies the challenges and practices surrounding halal certification. The Malaysian Islamic Development Department (JAKIM) plays a pivotal role in ensuring compliance with halal standards throughout the supply chain (Daud, 2023). Stakeholders in the halal food industry must collaborate to uphold halal certification practices that align with Islamic ethics and integrity (Daud, 2023). This collaborative effort is essential not only for maintaining consumer trust but also for fostering a sustainable halal economy.

The creative economy sector, particularly within the food and beverage sub-sector, has shown a keen interest in halal certification. Business actors express confidence and enthusiasm when their products bear halal

labels, as this significantly influences consumer purchasing behavior (Wijoyo, 2023). The government's role in facilitating halal certification for micro, small, and medium enterprises (MSMEs) is crucial, as many entrepreneurs lack awareness of the certification process and its benefits (Eris et al., 2023). By providing assistance and education, the government can help MSMEs navigate the complexities of halal certification, ultimately enhancing their market competitiveness. The Halal Center in Indonesia has emerged as a vital institution in promoting halal products and services, thereby contributing to the halal economy (Lubis, 2023). This center plays a crucial role in ensuring that halal standards are met, which is particularly important in a Muslim-majority society where the demand for halal products is on the rise. The establishment of such centers can significantly bolster the halal industry by providing necessary resources and support to businesses seeking certification.

Despite the evident benefits of halal certification, many entrepreneurs still exhibit reluctance or lack of understanding regarding its importance. Studies indicate that insufficient knowledge about halal certification procedures and benefits hinders MSMEs from pursuing certification (Utami et al., 2022; Oemar et al., 2022). This gap in understanding can be addressed through targeted educational initiatives that emphasize the economic advantages of halal certification, such as increased consumer trust and marketability (Utami et al., 2022). Furthermore, the integration of halal certification into business strategies can enhance the overall performance of SMEs, as evidenced by research showing a positive correlation between halal certification and financial performance (Giyanti & Indriastiningsih, 2019).

The halal certification landscape is not without its challenges. Issues such as the complexity of the certification process and varying interpretations of halal standards can create barriers for businesses (Raheema, 2018). Additionally, the halal tourism sector presents unique challenges, as the expectations of consumers regarding halal standards in



hospitality settings continue to evolve (Robbani, 2021). Addressing these challenges requires a concerted effort from all stakeholders, including government bodies, certification agencies, and industry players, to harmonize standards and streamline the certification process.

In conclusion, the halal certification process is a multifaceted issue that encompasses various sectors, particularly the food and beverage industry. The importance of halal certification cannot be overstated, as it serves as a critical factor in enhancing consumer confidence and the marketability of products. The experiences of countries like Malaysia and Indonesia provide valuable insights into the effective implementation of halal certification systems. However, addressing the challenges faced by MSMEs and ensuring that they are equipped with the necessary knowledge and resources is essential for the growth of the halal industry. As the demand for halal products continues to rise globally, prioritizing halal certification will be imperative for businesses aiming to thrive in this competitive landscape.

2.2 AI as Analysis Tool

The exploration of artificial intelligence (AI) in the context of providing opinions or explanations has garnered significant attention in recent years, particularly as AI systems become increasingly integrated into critical decision-making processes across various sectors, including healthcare, finance, and criminal justice. This integration raises essential questions about the interpretability and transparency of AI systems, which are crucial for fostering trust among users and stakeholders. The literature reveals a multifaceted landscape where the need for explainable AI (XAI) is paramount, particularly in high-stakes environments where the consequences of AI-driven decisions can be profound.

One of the foundational aspects of AI's interpretability lies in its ability to provide qualitative explanations alongside quantitative outputs. Sariyar and Holm emphasize that

healthcare providers often seek qualitative insights into AI solutions, which can enhance trust and understanding of the decision-making process (Sariyar & Holm, 2022). This sentiment is echoed by Xu et al., who highlight the necessity of explainable AI in clinical decision support systems (CDSSs), noting that while these systems can significantly improve diagnostic accuracy, their opaque nature can lead to skepticism among practitioners (Xu et al., 2023). The challenge, therefore, is to balance the technical sophistication of AI with the human need for clarity and understanding in decision-making processes.

The concept of interpretability in AI is not merely a technical requirement but a critical ethical consideration. Milossi et al. discuss the ethical implications of algorithmic determinism versus self-determination, arguing that stakeholders must have access to the underlying parameters and instructions that guide AI decision-making (Milossi et al., 2021). This transparency is essential for accountability, especially in scenarios where AI systems influence significant outcomes, such as patient diagnoses or financial assessments. The demand for interpretability is further reinforced by the findings of Antoniadi et al., who identify current challenges and future opportunities for XAI in CDSSs, emphasizing the need for systems that can articulate their reasoning in a manner comprehensible to users (Antoniadi et al., 2021).

Moreover, the literature suggests that the integration of interpretability techniques can enhance the efficacy of AI systems. For instance, feature importance techniques and surrogate models can provide insights into how AI arrives at specific conclusions, thereby improving user confidence in these technologies ("Interpretable AI Models for Transparent Decision-Making in Complex Data Science Scenarios", 2020). The systematic review conducted by Xu et al. also underscores the importance of understanding the types of explanations that resonate with users, as well as the potential benefits of employing XAI in clinical settings (Xu et al., 2023). This aligns with the broader discourse on the necessity of

transparent decision-making processes, particularly in domains where the stakes are high and the implications of errors can be severe.

In the medical field, the application of AI in interpreting complex data, such as lung ultrasound images, has demonstrated both the potential and limitations of current AI technologies. Fox et al. report on a study where an AI system was able to interpret lung ultrasound artifacts, revealing a moderate correlation with human interpretations (Fox et al., 2023). This finding illustrates the promise of AI in augmenting human capabilities, yet it also highlights the ongoing need for human oversight and the importance of understanding the AI's reasoning process. The black-box nature of many AI systems remains a significant barrier to their acceptance in clinical practice, as healthcare providers often require more than just accurate predictions; they seek to understand the rationale behind those predictions (Sariyar & Holm, 2022; Xu et al., 2023).

The discourse surrounding AI's interpretability extends beyond healthcare into other critical domains, such as finance and criminal justice, where the implications of AI-driven decisions can have far-reaching consequences. The need for transparent AI systems is echoed in the work of Yiğit et al., who address the black-box problem in AI applications, emphasizing that algorithms must not only produce results but also provide explanations for their decisions (Yiğit et al., 2022). This necessity for transparency is further supported by the findings of Korteling et al., who discuss the ethical dimensions of AI's role in decision-making, advocating for a framework that allows for accountability and understanding (Korteling et al., 2021).

As AI continues to evolve, the integration of knowledge representation and deterministic reasoning becomes increasingly critical. Yang and Peng argue that the future of AI should focus on embedding knowledge deeply within its frameworks, moving beyond mere data-driven approaches to ones that prioritize understanding and reasoning (Yang & Peng,

2020). This shift is essential for developing AI systems that can not only perform tasks but also explain their processes in a manner that is accessible and meaningful to users. In conclusion, the exploration of AI's capacity to provide opinions or explanations is a complex and evolving field that necessitates a concerted effort to enhance interpretability and transparency. The literature underscores the importance of developing AI systems that can articulate their reasoning processes, particularly in high-stakes environments where trust and accountability are paramount. As researchers and practitioners continue to navigate the challenges associated with AI interpretability, it is clear that fostering a deeper understanding of AI's decision-making processes will be crucial for its successful integration into various domains.

2.3 Research Gap

The literature on halal certification has extensively discussed its importance as a tool for enhancing consumer trust, ensuring compliance with Islamic dietary laws, and increasing marketability for businesses, particularly in the food and beverage sector. Studies highlight the need for structured certification systems, as demonstrated in Malaysia, where clear roles for certification bodies and rigorous inspection processes have set a benchmark for other countries (Aziz, 2022). In contrast, Indonesia's implementation faces challenges such as limited awareness among micro and small enterprises (MSEs) and bureaucratic complexities (Eris et al., 2023; Hakim & Putri, 2022). Existing research underscores the need for education, financial support, and improved coordination among stakeholders, including government agencies, certification bodies, and industry players, to address these issues (Lubis, 2023; Utami et al., 2022). However, these studies primarily focus on stakeholder-driven approaches and lack exploration of innovative tools or frameworks that could complement existing systems and enhance decision-making processes for prioritizing halal certification.



Simultaneously, advancements in artificial intelligence (AI) have opened new possibilities for decision-making in various domains, offering insights through qualitative and quantitative analyses. Research emphasizes the necessity of explainable AI (XAI), where systems provide transparent reasoning behind their outputs, fostering trust and interpretability (Sariyar & Holm, 2022; Xu et al., 2023). While AI applications in critical sectors such as healthcare and finance have been explored, their potential role in optimizing halal certification processes remains largely unexplored. Studies discuss AI's ability to offer structured recommendations and analyze complex data, yet the integration of AI into halal certification frameworks has not been sufficiently examined (Yiğit et al., 2022; Yang & Peng, 2020). This gap in the literature presents an opportunity to analyze how AI-generated insights can complement traditional stakeholder perspectives, offering a novel lens for determining priorities in Indonesia's mandatory halal certification for MSEs. This study seeks to address this gap by comparing the priorities identified by halal stakeholders with those suggested through AI analyses, bridging the intersection of traditional practices and emerging technologies.

3. Research Methods

3.1 Data Collection

In qualitative research, the process of data collection heavily relies on interviews, which serve as a critical method for gathering either partial or comprehensive information. Merriam and Tisdell (2016) point out that qualitative research employs a variety of techniques for data collection, including observations, surveys, and unobtrusive methods. Among these, interviews stand out as a prominent approach and can take many forms, such as individual or group sessions, with varying levels of structure—ranging from highly structured to completely open-ended formats. Sekaran and Bougie (2016) further

elaborate that interviews may be conducted through different modes, such as in-person meetings, phone calls, or virtual interactions.

To better understand interviews as a data-gathering tool, Merriam and Tisdell (2016) offer a framework that categorizes interviews by type (e.g., individual, group, expert panels) and by structure (e.g., structured, semi-structured, unstructured). This framework highlights the adaptability and breadth of interviews in qualitative studies. They can be executed through various channels, including direct face-to-face discussions, telephonic communications, or online platforms.

Semi-structured interviews, as noted by Adams (2015), play a pivotal role in social research due to their conversational nature, which often leads to the discovery of unanticipated findings. Grindsted (2005) emphasizes that this method is interactive, requiring active engagement from both the interviewer and the interviewee, creating a collaborative exchange that enhances the richness and depth of the data collected.

Interviewees

To explore the complexities of mandatory halal implementation in Indonesia, a diverse selection of interview participants was made, each contributing unique insights and perspectives. The selection process employed purposive sampling, a widely used approach in qualitative research for identifying participants with specific knowledge or experiences relevant to the research topic (Campbell et al., 2020). This technique ensures the credibility of findings by targeting individuals who can provide meaningful contributions (Bagnasco et al., 2014). Although purposive sampling involves intricate decision-making and multiple strategic options (Robinson, 2014), it remains a fundamental approach for identifying key participants with relevant expertise or experiences (Jalali, 2013).

The list of interviewees for this study is as follows:

Table 1: List of Interviewees

Code	Interviewee	Position	Year(s) of expertise/ experience
I.1	Representing Authority 1	Head of BPJPH Division of Halal Registration and Certification Center	30
I.2	Representing Authority 2	Director of Lembaga Sertifikasi Profesi Majelis Ulama Indonesia (LSP MUI: Professional Certification Institute of the Indonesian Ulema Council) Halal Product Guarantee	12
I.3	Representing Authority 3	Deputy Director of Komite Nasional Ekonomi dan Keuangan Syariah (KNEKS: National Committee for Islamic Economy and Finance) Halal Products Industry	5
I.4	Representing Halal Center 1	Former Director of BPJPH, Director of Halal Center Universitas Brawijaya	34
I.5	Representing Halal Center 2	Director of Gadjah Mada University Halal Center	24
I.6	Representing Halal Center 3	Director of Halal Center Institut Agama Islam Tazkia	9
I.7	Representing Halal Influencer 1	Business Owner, certified halal supervisor	3
I.8	Representing Halal Influencer 2	Director of Kuliner Muslim.id,	5
I.9	Representing Halal Influencer 3	Halal Influencer, official of Indonesia Halal Center Training	3
I.10	Representing Halal Business Owner 1	Halal Influencer	9

BPJPH serves as a central authority in Indonesia's halal regulatory framework, responsible for managing and enforcing halal certification standards. Its role encompasses oversight of the legal and institutional processes tied to halal implementation, offering a regulatory perspective crucial for

understanding compliance mechanisms. Meanwhile, MUI, as a prominent religious body, plays a significant role in defining the theological and spiritual dimensions of halal practices. Its historical position as the former halal certifying authority further reinforces its



influence on current halal certification systems and religious compliance.

KNEKS, on the other hand, focuses on strategic guidance for integrating halal standards into Indonesia's financial ecosystem. Its contributions are vital for understanding the broader implications of halal implementation in economic and financial policies.

Interviewees 4-6 represent academic institutions leading research and innovation in halal studies. Halal centers affiliated with universities, such as the Halal Centre at Brawijaya University in East Java, Gadjah Mada University in Central Java, and Tazkia Halal Centre in West Java, are pivotal in advancing halal education and offering consultancy services. Their academic expertise provides a forward-looking perspective on the development of halal practices and highlights the role of educational institutions in shaping public discourse on halal compliance and innovation.

Interviewees 7-9, representing social media influencers across platforms like Instagram, YouTube, and TikTok, bring insights into public perceptions and societal attitudes toward halal practices. Through their content, they engage with a wide audience, reflecting cultural trends and public sentiment. Their interactions, measured through likes, comments, and other feedback, offer valuable insight into how halal practices are received, interpreted, and critiqued by the general population.

Additionally, the perspectives of halal business owners are integral to understanding the practical challenges of compliance. Indonesia's food and beverage industry includes a diverse range of operators, from small local businesses to large franchises and imported brands, each facing unique obstacles. Their experiences provide grounded insights into navigating regulatory demands and the strategies they employ to adapt to the evolving halal certification landscape.

3.2 Analysis Techniques

This study employs content analysis as the primary method for examining documents

and textual data. Content analysis is a systematic and detailed approach to evaluating written, spoken, or visual communication to uncover patterns, themes, biases, and meanings within the material (Berg & Lune, 2012). By carefully interpreting the content, this method allows for a deeper understanding of the underlying messages and structures conveyed through communication (Cole, 1988).

3.3 Validation

The reliability and validity of qualitative research interviews are pivotal considerations, with diverse perspectives offering insights into these aspects. Appleton et al. (2006) highlights the often-overlooked importance of addressing validity and reliability within research reports. Mouter and Noordegraaf (2012) advocates for intercoder reliability checks, presenting practical recommendations derived from real-world experiences in transportation research. Zedeck et al. (1983) observe that interviewers generally exhibit similar functions but differ significantly in reliability and individual performance evaluations, where decisions lack validity in assessing training outcomes. Brink (1993) identifies major threats to validity and reliability, suggesting strategies like triangulation to mitigate these risks. Kelly et al. (1990) investigates structured interview reliability in a hospital setting, finding variability across different factors. Nasrabad (2018) underscores that validity and reliability criteria are shaped by researchers' epistemological and theoretical stances, with an emphasis on credibility and trustworthiness as central to assessing qualitative research findings.

4. Results and Discussion

4.1 Key Findings

4.1.1 Halal certification priority list: Stakeholders Opinion

Optimising the halal certification system involves several strategies to prioritise and streamline the certification process for the various actors in the halal supply chain. One important aspect is creating a prioritisation list for certification focusing on high-risk vendors,

including sellers of meat and meat-containing foods. As I.2 emphasised,

"High-risk vendors should be prioritised... This means that there are still 2900 slaughterhouses without halal certification supplying meat to markets in Indonesia. They sell meatballs, fried chicken, etc., and source their meat ingredients from these plants."

By certifying these suppliers, critical halal points in the supply chain can be addressed immediately, ensuring consumers' availability of halal-certified options.

I.6 added that it is important to increase the number of halal abattoirs so that MSEs have closer access,

"Where can I find halal-certified chicken (for example)? At Japfa (a large staple food producer) or a large RPH (slaughterhouse)? MSEs need access to raw materials that are nearby, that need to be close and cheap."

In addition to prioritising meat and meat-based foods, optimising the halal certification system also includes the certification of suppliers, slaughterhouses, slaughter units and halal slaughterhouses (*juleha*). By certifying suppliers, MSEs can access halal raw materials critical to ensuring their products' overall halal integrity. In addition, the certification of slaughterhouses and slaughter units is essential as they form a critical point in the halal supply chain. Emphasising this point, I.10 explained:

"This is why the MUI now has Juleha certification. The aim is to standardise the halal slaughtering process."

I.5 added, saying,

"For example, yesterday, there was a review of SKKNI (Standar Kompetensi Kerja Nasional Indonesia: Indonesian National Standards for Labour Competencies) for Juleha (Juru Sembelih Halal: the halal slaughterer). So, there is already an SKKNI for Juleha's competence certification."

Standardised halal slaughtering practices are crucial to ensure the halal status of meat products.

I.2 added the importance of certifying abattoirs. He explained:

"When we carry out halal certification in this industry, we must determine the critical

points. For example, we aim for all slaughterhouses to be halal within six months. 3.300 is not much. If the government is willing, certification can be obtained. Within a year, all 11,000 slaughterhouses throughout Indonesia should be halal. This is important because the high-risk points are the source of meat supply. There is no problem with imported meat because it must be halal certified as there are already halal requirements. So imported meat is not a problem and is not risky. The problem is the domestic meat. If we can solve this problem with high-risk meat, then the problem of supplying the low-income population groups will also be solved. Secondly, we need to certify the industry first, not just households. They could receive a certificate but go bankrupt three months later and stop selling. The certification would then be meaningless. Many industries, such as the food industry for souvenirs in each region, have not yet been certified."

I.10 added on the importance to prioritise slaughterhouses,

"...That's why MUI now has the Juleha (Juru Sembelih Halal: Halal Slaughter) certification. The goal is to standardize the halal slaughter process.... to increase the number of halal slaughterhouses, to increase the number of RPH slaughterhouses with halal certification....(I.10)

Other ingredients also require halal certification. In Indonesia, ingredients such as edible oils, flours and spices do not have a label or halal certification. I.9 explained that some are repackaged products from larger packaged products that are already halal certified. However, there are also regulations for repackaged products that retailers sometimes ignore to offer consumers a smaller size and a cheaper price. Therefore, I.9 said:

"We should certify the suppliers first. This way, MSEs do not have to worry about finding halal ingredients because they are supplied by suppliers already halal certified."

In addition, the certification of halal auditors is an important step towards improving the overall halal certification process. Halal auditors play a crucial role in verifying compliance with halal standards and

ensuring the integrity of the certification system. As the interviewee from I.6 said:

"In practice, they still need support... sometimes they need guidance."

Well-trained and certified halal auditors can provide the necessary guidance and support to MSEs during certification. LPH needs to provide more halal auditors. I.5 said:

"Many halal centres from universities want to become LPH but are not yet recognised. I am in a WhatsApp group with halal centres in Indonesia. There are many, but the ones that have been declared authorised to conduct audits are only a few, about twenty."

I.1 added that halal supervisor needs special attention too since it is one of the requirements to apply for halal certification,

What is important is that there is a designation as a halal supervisor, then we educate and guide them on what the tasks and functions of a halal supervisor are, what their obligations are, so that they can play a role in ensuring and being responsible for the halal status of products, and at the same time hold a commitment and consistency towards the halal product process in the future after obtaining a halal certificate. That is the job of a halal supervisor. Now, to become a halal supervisor, it is important to have proof of appointment and an appointment letter as a halal supervisor from the company's management.

Beside MSEs, micro and small industries (MSIs) play an important role in the halal supply chain. The main difference between MSIs and MSEs is that MSEs are individual enterprises, while MSIs are usually grouped and linked to the local Chamber of Commerce and Industry. FnB MSIs products are usually local traditional culinary products. As they generally have more support, it is important to prioritise halal certification for MSEs to increase the availability of halal-certified products in the market. As I.2 said:

"The 4.4 million MSIs should be prioritised... BPJPH, as the leading sector, needs to have an overview of which scale is a priority and which is the next priority for halal certification processes."

By identifying and prioritising MSIs for certification, the overall accessibility of halal products can be improved.

Overall, to educate all stakeholders is on the top priority, as I.3 highlighted,

"Socialization is also important, not just from the stakeholders, government, but from themselves, from communities, associations from fellow MSEs, this can usually be optimized because they see success stories of similar businesses that have succeeded that halal certificate is not complicated, it's possible to be done, it's not expensive, and it's even free. When they see success stories, the stories tend to spread. This is what I think could be a short-term solution. How to encourage MSEs actors to also trigger other MSEs to get halal certification."

I.7 added that educated public could somehow motivate producers to be aware of halal certification, "So, pressure from society is important. And that also became a trigger for the business owner."

When every producers are aware of the halal assurance urgency, sellers like street vendors which may be close to public daily transactions, will also be educated, I.8 stated,

"We can also make massive online education. But don't forget also that we need offline education. Maybe by organizing a halal seminar throughout Indonesia, we gather SMEs in one city for example, invite them to come for free, and educate big and small merchants there. The most important thing is to include street vendors, we include them, invite them, make a special forum, make a seminar, and at the closing statement, invite them to join a special Muslim entrepreneur group, then we give them a booklet and some information, something like that. There, we can also hold halal training for them."

The successful socialization should be led by the government, as I.4 mentioned from Malaysia case,

"Malaysia often announces its incredible progress. I see the positive side of it. Maybe their society is already very aware. Second, perhaps their government is also very attentive. These two things are important, because in Malaysia there is no law that guarantees halal products, it is voluntary."

4.1.2 Halal certification priority list: AI Answers

Selected AIs were given this question, “Given the halal mandatory status in Indonesia, including for micro and small food and beverages, in your opinion what should be prioritized to be halal certified? Explain”, and the answers are as follow:

Chat GPT

1. High-Consumption Staple Foods

Staple foods such as rice-based snacks, noodles, bread, and beverages are fundamental to the daily diets of the Indonesian population. These items are often produced or sold by micro and small enterprises (MSEs), making their halal certification a critical priority. Ensuring these commonly consumed products meet halal standards fosters public trust and supports adherence to religious dietary laws. Certification efforts should focus on high-demand staples that are widely distributed and consumed, especially those at risk of containing haram additives, such as flavorings or emulsifiers.

2. Meat and Meat-Based Products

Meat and its derivative products hold significant religious importance, especially for street food vendors offering dishes like *pecel lele* or *satay*. These businesses often operate on a small scale but serve a substantial portion of the population. The halal status of these products is directly linked to proper slaughtering and handling processes. Prioritizing certification of meat suppliers and vendors ensures traceability and allows MSEs to source verified halal ingredients with ease, thus safeguarding the integrity of halal practices across the supply chain.

3. Food Ingredients with High Risk of Haram Contamination

Certain food ingredients, such as gelatin, enzymes, shortening, and seasonings, pose a higher risk of haram contamination due to their complex production processes. These inputs are frequently utilized by MSEs, which may lack the resources to verify their halal status independently. Certifying suppliers of these high-risk ingredients not only mitigates risks

for small businesses but also ensures the integrity of the final products sold to consumers. Emphasis should be placed on creating awareness among MSEs about selecting halal-certified ingredients.

4. Packaged Snacks and Drinks Produced by MSEs

Packaged snacks and drinks, such as chips, cakes, or bottled beverages, are a significant part of the informal economy and are especially popular among children and general consumers. These products often dominate school canteens and small retail markets, making their halal compliance a visible and impactful priority. Certification efforts should target these widely available items to ensure that even informal and small-scale markets meet the mandatory halal requirements, thereby fostering trust and compliance at the grassroots level.

5. School Canteens and Street Vendors

Food provided by school canteens and street vendors forms a critical part of the diet for children and the general public. These food sources often rely on cost-effective production methods and local suppliers, raising concerns about the reliability of halal standards. Certifying these businesses ensures that the most accessible food sources comply with Islamic dietary requirements while setting a precedent for the future. Simplifying and subsidizing halal certification processes for small-scale vendors is essential to encourage compliance without imposing financial burdens.

6. Affordable Halal Certification for MSEs

MSEs are vital contributors to the Indonesian economy but often face significant challenges in navigating complex and costly certification processes. Ensuring that halal certification is affordable and accessible for these enterprises allows them to meet regulatory requirements while maintaining competitiveness. Efforts should focus on streamlining the certification process, providing government subsidies, and offering tailored solutions for MSEs to promote widespread adoption of halal practices.

7. Imported Raw Materials Used by MSEs

Many MSEs rely on imported raw materials, such as seasoning powders, processed sauces, or flavor enhancers, which may not always be halal certified. As these inputs are essential for food production, their halal compliance is crucial for protecting both businesses and consumers. Certification should prioritize the verification of these imported materials, ensuring that MSEs have access to halal-certified inputs and that the integrity of the supply chain is maintained.

Gemini

Given Indonesia's mandatory halal certification, even for micro and small food and beverage businesses, prioritizing halal certification for products directly consumed or coming into contact with food is crucial. This includes:

- Food and beverages: Prioritizing these ensures product safety and aligns with Islamic dietary guidelines, building consumer trust.
- Food packaging materials: This is essential to prevent cross-contamination and maintain product integrity.

While other product categories like cosmetics and pharmaceuticals are important, focusing on food and beverages initially can establish a strong foundation for halal branding and quality assurance.)

Scite

In Indonesia, the mandatory status of halal certification for food and beverage products, particularly for micro and small enterprises (MSEs), necessitates a strategic approach to prioritize which products should be certified. Given the significant Muslim population and the increasing consumer awareness regarding halal products, it is essential to focus on specific categories of food and beverages that not only meet the halal standards but also cater to market demand and contribute to the economic viability of these enterprises.

First and foremost, it is crucial to prioritize staple food items and beverages that are commonly consumed by the majority of the population. This includes products such as rice, meat, poultry, and dairy, which are integral to

the daily diet of Indonesian consumers. The high demand for these products among Muslim consumers underscores the need for their halal certification, as it ensures that these essential items are compliant with Islamic dietary laws. Research indicates that halal certification significantly influences consumer purchasing decisions, particularly for staple foods, as it provides assurance of the product's compliance with halal standards (Utami et al., 2022; , Mohammad, 2021; , Oemar et al., 2023). Furthermore, the halal certification of staple foods can enhance the marketability of these products, thereby improving the economic prospects of MSEs involved in their production (Muin & Tahir, 2023; Santosa et al., 2022).

In addition to staple foods, it is also important to prioritize the certification of processed food products, including snacks and ready-to-eat meals. The growing trend of convenience foods among consumers, especially in urban areas, presents a substantial market opportunity for MSEs. The halal certification of these products not only meets the dietary requirements of Muslim consumers but also positions these enterprises competitively in the food market (Mellita et al., 2020; Priantina, 2023). The implementation of halal certification in processed foods can also help mitigate the risks associated with non-compliance, as consumers increasingly seek products that align with their halal lifestyle (Talib et al., 2017; Sujibto & Fakhruddin, 2023).

Moreover, beverages, particularly those that are popular among the youth and health-conscious consumers, should be prioritized for halal certification. This includes soft drinks, juices, and functional beverages that are often marketed as healthy alternatives. The halal certification of these products can significantly enhance consumer trust and loyalty, as many consumers are now more aware of the importance of halal compliance in their beverage choices (Meldona, 2023; Purbasari, 2023). The halal certification process can also serve as a marketing tool, allowing MSEs to differentiate their products in a competitive market (Amarul et al., 2019; , Pradana et al., 2021).

Another critical area for prioritization is the certification of food products that are traditionally significant within Indonesian culture, such as local snacks and traditional dishes. These products often hold cultural and social importance and are widely consumed during festivals and family gatherings. By certifying these traditional foods, MSEs can not only preserve cultural heritage but also tap into the growing market for authentic and culturally relevant halal products (Akbarizan et al., 2023; , Susanti, 2021). The halal certification of traditional foods can also attract both local and international tourists, who are increasingly seeking authentic culinary experiences that comply with halal standards (Sucipto et al., 2021; Santoso et al., 2021).

Furthermore, it is essential to consider the role of innovation in the halal certification process. MSEs that are engaged in developing new halal products or improving existing ones should be prioritized for certification. This includes businesses that are exploring plant-based alternatives or innovative food processing techniques that align with halal principles. The halal certification of innovative products can help MSEs capture emerging market trends and consumer preferences, thereby enhancing their competitiveness and sustainability in the long run (Sucipto et al., 2022; Meldona, 2023; Tania et al., 2022).

To facilitate the halal certification process for MSEs, it is vital to provide adequate support and resources. This includes training programs that educate business owners about halal standards, certification procedures, and the importance of compliance. Research indicates that a lack of knowledge and resources is a significant barrier to halal certification among MSEs (Priantina, 2023, Oemar et al., 2023). By empowering these businesses with the necessary knowledge and tools, the government and relevant agencies can foster a more robust halal ecosystem that benefits both producers and consumers (Oemar, 2023; Soetjipto et al., 2023; Purbasari, 2023).

In conclusion, the prioritization of halal certification for specific food and beverage categories in Indonesia should focus on staple

foods, processed products, beverages, traditional foods, and innovative offerings. This strategic approach not only aligns with consumer demand but also enhances the economic viability of MSEs. Furthermore, providing support and resources for halal certification will empower these enterprises to navigate the certification process effectively, ultimately contributing to the growth of the halal market in Indonesia.

Perplexity

With the impending implementation of mandatory halal certification in Indonesia, particularly for food and beverage products, several priorities should be established to ensure compliance and facilitate the transition for businesses, especially micro and small enterprises (MSEs). Here are the key areas that should be prioritized:

1. Food and Beverage Products

The foremost priority must be the food and beverage sector, as it is directly impacted by the regulations. All F&B products, including:

- Processed foods: Snacks, canned goods, and ready-to-eat meals.
- Beverages: Soft drinks, juices, and other liquid consumables.
- Raw ingredients: All raw materials used in food production must also be halal-certified.

Ensuring these products are certified is crucial because they directly affect consumer health and trust in halal standards.

2. Ingredients and Additives

Another critical area is the certification of ingredients and food additives. Businesses should prioritize:

- Sourcing raw materials from halal-certified suppliers.
- Ensuring all additives comply with halal standards.

This focus is essential to maintain the integrity of the final product and avoid non-compliance due to overlooked ingredients.

3. Slaughtering Practices

For businesses involved in meat production, ensuring compliance with halal slaughtering practices is vital. This includes:

- Certification of slaughterhouses to ensure they meet halal standards.

- Training personnel involved in slaughtering to adhere to Islamic laws.

This area is particularly important for maintaining ethical practices in food production and meeting consumer expectations regarding animal welfare.

4. Compliance for Imported Products

As the regulations also apply to imported goods, businesses must ensure that:

- Products manufactured abroad are halal-certified before entering Indonesia.
- Foreign halal certifications are recognized only if they come from agencies that have mutual recognition agreements with Indonesia's Halal Product Assurance Agency (BPJPH).

This aspect is increasingly important as global trade expands; products must meet local standards to avoid market entry barriers.

5. Education and Support for MSEs

Given the challenges faced by micro and small enterprises in obtaining halal certification, prioritizing education and support is essential. This includes:

- Providing workshops on halal compliance.
- Offering resources to help businesses navigate the certification process.

By enhancing knowledge about halal requirements, MSEs can better prepare for certification and reduce the risk of non-compliance.

The Good AI

The implementation of mandatory halal certification in Indonesia, particularly for micro and small enterprises (MSEs), necessitates a strategic prioritization to ensure compliance and market viability. Given the fast-approaching deadline of October 17, 2024, businesses producing low-risk food and beverages should be prioritized for halal certification (Shrivastava, 2024). These products typically have simpler production processes and utilize natural ingredients, making them easier to certify under the existing frameworks. Aligning this approach with the government's "Sertifikasi Halal Gratis" (SEHATI) program can facilitate accessibility for smaller businesses while ensuring adherence to halal standards.

Moreover, addressing the complexities associated with the certification process is essential. Research indicates that many MSEs perceive halal certification as complicated and costly (Oemar, 2023). Simplifying procedures and reducing associated costs will encourage more businesses to pursue certification actively. Additionally, strengthening supervision mechanisms within self-declaration processes is crucial to maintain genuine compliance with halal requirements (Suriyani, 2024). Thus, a comprehensive strategy that combines product prioritization with procedural simplification will enhance overall compliance among Indonesian MSEs.

4.1.3 Discussion

The comparison and contrast of Halal Stakeholders' Opinions versus AI-Generated Answers on prioritizing halal certification for Indonesian MSEs highlight both convergence and divergence in focus and methodology.

Convergence

1. **Emphasis on High-Risk Areas:** Both stakeholders and AI emphasize the need to prioritize high-risk products, particularly meat and meat-based products. Stakeholders stress the importance of certifying slaughterhouses, suppliers, and halal slaughterers (Juleha) to address critical points in the supply chain, which AI aligns with by identifying meat products and proper handling as crucial for halal integrity.
2. **Support for MSEs:** Stakeholders and AI agree on the necessity of supporting MSEs through affordable and accessible certification processes. Stakeholders advocate for government-led initiatives to streamline bureaucracy and provide financial assistance, while AI suggests simplifying processes and subsidizing certification to encourage MSE compliance.
3. **Certification of Ingredients:** Both perspectives recognize the importance of certifying ingredients with a high risk of contamination, such as oils, spices, and additives. Stakeholders highlight suppliers' certification to ease MSE access to halal inputs, while AI underscores the need to

verify the halal status of such ingredients to maintain product integrity.

Comparison of Halal Certification Priorities: Stakeholders vs AI

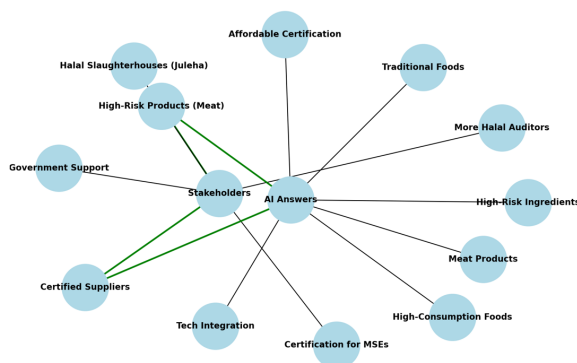


Figure 1. Comparison of Halal Certification Priorities: Stakeholders vs AI

Divergence

1. **Broader Scope by AI:** AI-generated answers include additional categories, such as high-consumption staple foods (e.g., rice-based snacks and beverages), packaged snacks, and products for school canteens, focusing on widespread consumer impact. Stakeholders, however, are more concentrated on meat and ingredient supply chains, reflecting a narrower and immediate scope based on on-ground realities.
2. **Operational Priorities:** Stakeholders highlight the importance of standardizing halal practices through initiatives like Juleha certification and revising Indonesian labor competency standards (SKKNI). In contrast, AI emphasizes education and awareness campaigns to help MSEs understand the economic and religious value of halal certification.
3. **Technology Integration:** AI suggests using technology to facilitate traceability and improve process efficiency. Stakeholders, while discussing the need for more auditors and certifications, do not explicitly advocate for technological solutions, focusing instead on regulatory and structural enhancements.

Cultural and Market Trends: AI mentions prioritizing certification for products like traditional foods and beverages popular among younger consumers and tourists. This reflects an attempt to align with evolving market demands. Stakeholders focus less on market

trends and more on ensuring compliance at critical supply chain points.

5. Closing

5.1 Conclusion

While stakeholders provide detailed and grounded insights into the immediate needs and challenges of halal certification, particularly for high-risk areas like meat supply chains, AI offers a broader, systematic approach that incorporates technological advancements and market dynamics. Combining the depth of stakeholder knowledge with AI's comprehensive analysis could create a robust strategy to optimize halal certification for Indonesian MSEs.

5.2 Suggestion

Policy Recommendation

To enhance the effectiveness of Indonesia's mandatory halal certification for micro and small enterprises (MSEs), policymakers should prioritize streamlining the certification process by reducing bureaucratic hurdles and providing financial incentives. Efforts should focus on certifying high-risk supply chain points, such as slaughterhouses and suppliers of meat and key ingredients, to ensure the integrity of halal products. Additionally, targeted training programs and public awareness campaigns should be implemented to educate MSEs on the economic and religious benefits of halal certification, fostering broader compliance. Collaborative efforts between government bodies, certification agencies, and academic institutions are essential to expand the pool of halal auditors and ensure accessible certification processes. Finally, leveraging technology for traceability and monitoring can further strengthen consumer trust and ensure adherence to halal standards.

Recommendation for Future Studies

Future research should explore the integration of advanced technologies, such as artificial intelligence (AI) and blockchain, into halal certification processes to improve efficiency and traceability. Studies should also investigate the socio-cultural factors influencing MSEs'

adoption of halal certification, providing deeper insights into regional variations and consumer perceptions. Furthermore, comparative analyses between Indonesia and other countries with established halal certification frameworks, such as Malaysia, could offer valuable lessons for refining Indonesia's system. Finally, evaluating the long-term economic impacts of halal certification on MSEs, particularly in rural and underserved regions, would provide policymakers with evidence-based insights to inform more inclusive strategies.

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