



Development of halal slaughterhouse as an effort to strengthen the halal supply chain through a collaborative governance approach

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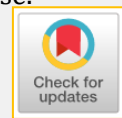
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ABSTRACT

Indonesia has significant potential in the halal meat market, yet faces major challenges in ensuring product availability and halal assurance across the supply chain. One of the key obstacles is the limited number of certified halal slaughterhouses. This study aims to develop an integrated halal slaughterhouse model through multi-stakeholder collaboration, applying a Collaborative Governance approach within the halal supply chain context in Indonesia. The involvement of key actors—government, industry, certification bodies, communities, and academics—is essential to create a more transparent, accountable, and traceable halal ecosystem. Through the implementation of collaborative governance, Indonesia can reduce the halal meat deficit, improve the competitiveness of halal products in international markets, and accelerate digital transformation in halal supply chains. Furthermore, this study addresses a critical research gap regarding traceability integration in halal slaughterhouses and provides practical policy recommendations. East Java is selected as the research location due to its strategic role as a livestock production center and its large Muslim population, making it a region with high potential for halal market development.

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Introduction

In recent decades, the halal industry has experienced significant growth, driven by the increasing awareness among Muslims of the importance of consuming products that comply with halal principles (Rejeb, 2018; Akbar et al., 2022; Azam & Abdullah, 2020). Halal is closely tied to the concept of thoyyib (good), ensuring that products are free from prohibited elements such as pork, blood, carrion, alcohol, and impurities, and are processed in accordance with Islamic law. Meanwhile, thoyyiban emphasizes hygiene, food safety, health, and environmental sustainability throughout production and distribution (Mustaffa, 2019). The concept of halalan-thoyyiban covers not only product quality and safety but also the entire supply chain—from processing and packaging to storage and delivery (Ismail et al., 2021; Susanty et al., 2024). Indonesia, with a Muslim population of 246 million (Databoks, 2024), holds the potential to become a global halal industry hub—not only as a market but also as a leading producer. The global halal market is valued at USD 1.9 trillion, with domestic opportunities reaching USD 184 million (Alamsyah et al., 2022). Meat consumption, especially of beef and poultry, plays a vital role in this ecosystem. However, based on the 2023 Outlook by the Ministry of Agriculture, Indonesia's meat demand in 2025 is projected at 739,668 tons, while local production is estimated at only 445,118 tons—resulting in a deficit of 294,550 tons. This gap is expected to

continue, leading to dependency on meat imports. Such reliance creates challenges in price stability and halal assurance, as halal standards vary across countries. Despite the mandatory halal certification campaign starting in 2023, the availability of certified halal meat in Indonesia remains limited. One major issue is the lack of certified slaughterhouses.

According to Statistics Indonesia (2022) and the Halal Journal (2024), 85% of the 1,644 slaughterhouses in the country are not yet halal certified. Many business operators lack understanding of halal standards and procedures. Certification requires not only compliance with Islamic principles but also the *thoyyib* elements—food safety, hygiene, sanitation, public health, and animal welfare, proven by owning a Veterinary Control Number (NKV). This highlights the vital role of Halalan-Thoyyiban Slaughterhouses (HTS) in strengthening the halal supply chain in Indonesia. Challenges in implementing HTS include lack of standard harmonization with other countries, limited presence of Indonesian halal products in export markets, underdeveloped traceability technology, and fragmented halal infrastructure. According to Rahman et al. (2024), ethical integrity and sustainability in halal meat production rely on traceability and transparency throughout the supply chain—from slaughtering to consumer distribution. A key barrier in improving Indonesia's halal supply chain is the lack of effective collaboration among stakeholders. Government, industry, certification bodies, academia, and civil society have yet to coordinate optimally. This fragmentation leads to inefficiencies, low transparency, and weak accountability. Strong and synergistic collaboration is essential to build an integrated and trustworthy halal supply chain. Given the complexity of halal governance, a multi-stakeholder collaborative governance approach is highly relevant. This model has been applied in areas such as climate change adaptation (Mukhlis & Perdana, 2022), food waste management (Nadeau & Koebele, 2023), and healthcare logistics systems (Tuyishime et al., 2025). Yet, it remains underutilized in the halal sector—particularly at the slaughterhouse level. As defined by Ansell and Gash (2007), collaborative governance integrates public and non-public actors in consensus-driven forums to make collective decisions.

This approach enables synergy among stakeholders in reinforcing the halal supply chain. It can reduce reliance on imports, promote local resource optimization, and increase competitiveness of halal products through transparency and traceability (Rahman et al., 2024). Finally, digitalization also plays a crucial role in enhancing halal supply chain efficiency. Technologies such as blockchain, IoT, AI, and big data can improve product traceability, optimize logistics, minimize cross-contamination, accelerate certification, and strengthen collaboration. Integrating digital technologies with collaborative governance offers a strategic pathway for Indonesia to become a global leader in halal supply chain innovation.

Method

This study employs a qualitative descriptive research design with a literature-based (desk study) approach, aiming to explore and conceptualize the development of Halalan-Thoyyiban Slaughterhouse (HTS) within the framework of strengthening Indonesia's halal supply chain. Given the normative and conceptual nature of the research, a literature review is the most appropriate method to synthesize scholarly findings, regulatory frameworks, and policy innovations relevant to halal certification, halal logistics, and governance systems in both national and global contexts. The desk study allows for the identification of theoretical gaps and best practices that can inform policy formulation, particularly in relation to HTS standardization and multi-stakeholder collaboration.

Sources of data will consist of peer-reviewed journal articles, official government regulations, reports from national halal authorities (e.g., BPJPH, MUI), and international halal standards and case studies from countries with advanced halal ecosystems such as Malaysia, Brunei, and the UAE. The study will also review documents from international organizations such as the OIC-SMIIC and FAO that are relevant to halal slaughter practices, food safety, and supply chain integrity. Literature will be selected using purposive sampling with an emphasis

on relevance, recency, and contribution to the discourse on halalan-thoyyiban, traceability, and collaborative governance. The data will be analyzed through thematic content analysis, using the conceptual lenses of the Halal Supply Chain Framework (Aziz et al., 2021; Ismail et al., 2021) and Collaborative Governance Theory (Ansell & Gash, 2008; Emerson et al., 2012). The primary outcome of this study will be a conceptual policy framework that outlines the strategic role of HTS in advancing halal assurance systems in Indonesia. The study aims to provide the government with evidence-based recommendations for designing integrated, certified slaughterhouses governed through multi-stakeholder collaboration. These findings are expected to serve as a foundation for future empirical studies or pilot interventions, particularly in regions with strong livestock industries such as East Java. Although the study does not involve fieldwork or empirical data collection, its contribution lies in offering a theoretically grounded, policy-relevant roadmap to enhance the governance and infrastructure of Indonesia's halal supply chain.

Results and Discussion

Current Status of Halal Slaughterhouse Certification

Halal slaughterhouses, or RPH (Rumah Pemotongan Hewan), serve as critical points in Indonesia's halal meat supply chain. All downstream products depend on slaughtering practices that are halal-compliant and hygienic. Yet, certification gaps persist. Only about 25% of ruminant RPHs have a Veterinary Control Number (NKV), and just 13% are dual-certified for halal and NKV. Poultry facilities show stronger performance, with 68% holding NKV and 57% meeting both standards, based on data from LPPOM MUI. Many village-based RPHs remain uncertified and fail to meet basic sanitation standards. These disparities emphasize the urgency of improving infrastructure and governance systems—particularly as Indonesia positions halal traceability systems (HTS) as part of its national halal strategy.

Improving Traceability with Digital Technology

Robust traceability ensures halal integrity throughout the supply chain. Emerging studies advocate for blockchain-based traceability systems to enhance transparency, consistency and trust (MDPI; ResearchGate). A pilot program at PT Sreeya Sewu Tbk applied blockchain to trace poultry products from farm to consumer, delivering immutable data records and raising accountability (Frontiers). Meanwhile, structural modeling of Indonesian meat firms highlights the importance of system standardization, authority support, implementation cycles and collaborative monitoring (Emerald). These models underscore the theoretical link between traceability and institutional trust—key conditions for effective collaborative governance, especially when digital tools are introduced.

Institutional Shifts and Regulatory Reform

Indonesia's halal governance underwent structural reform in late 2024, when the government established the Halal Product Assurance Organizing Agency as an independent cabinet-level body, detaching it from the Ministry of Religious Affairs (Wikipedia). This institutional evolution reflects the state's strategic shift toward positioning Indonesia as a global halal economic hub. However, successful implementation—per Noor et al. (2022)—will require active state facilitation, stakeholder coordination, and mechanisms to improve public trust and certification uptake, particularly among MSMEs and local RPH operators.

Bridging Gaps Through Collaborative Governance

The halal ecosystem is inherently multi-stakeholder—bringing together certifiers, regulators, industries, researchers and consumers. Such complexity necessitates collaborative

governance. A study in Karawaci, Tangerang, demonstrated a successful collaboration between local governments and BPJPH to streamline halal certification for MSMEs through stakeholder forums, trust-building, and shared education efforts (Bureaucracy, 2023). However, the process was constrained by infrequent dialogue, limited capacity, and uneven understanding of halal protocols. This reflects Ansell and Gash's (2007) assertion that collaborative governance requires inclusive participation, trust development, and iterative engagement—particularly in contexts with high interdependence and asymmetrical knowledge.

Policy Directions and Strategic Recommendations

Building on empirical studies and theoretical insights, several strategic policy directions are recommended to strengthen Halalan-Thoyyiban Slaughterhouse (HTS) development and halal supply chain governance. First, certification efforts should prioritize high-impact slaughterhouses (RPHs), particularly those already holding Veterinary Control Number (NKV) licenses. These RPHs should receive targeted support to upgrade infrastructure and workforce competencies in accordance with halal and thoyyib standards set by LPPOM MUI. Second, pilot initiatives should be launched to implement blockchain-enabled HTS models. These centers will serve as benchmarks for traceability and halal compliance documentation, following best practices such as those identified in *Frontiers* research.

Third, collaborative platforms must be institutionalized by forming regional or national HTS task forces that include regulators, slaughterhouses, certification bodies, academia, and community representatives. These platforms should co-design roadmaps, educational modules, and digital solutions grounded in collaborative governance principles (Emerald; *Bureaucracy*). Fourth, halal literacy and digital access need to be expanded by promoting the national halal verification platform (trace.halal.go.id), which utilizes QR-based traceability, while also raising public awareness and halal competence, as supported by IAEI recommendations.

Fifth, there is a need to strengthen institutional investment and incentives by allocating dedicated budgets and training schemes to boost RPH capacity. The transformation toward HTS can be financially supported through corporate social responsibility (CSR) initiatives and Islamic finance mechanisms.

Effective implementation requires institutional synergies and role alignment. Certifiers and regulators must actively engage RPHs and SMEs by simplifying procedures and providing outreach support. Industry actors require technical assistance and appropriate incentives to enhance their facility standards. Academia and technology providers should contribute through research, pilot programs, and the development of traceability tools. Finally, consumer and community participation in adopting traceability systems will enhance market trust and exert necessary pressure for compliance across the supply chain.

Conclusion

Indonesia has the religious foundation, institutional capacity and digital potential to lead in global halal assurance. However, the halal meat sector—and its supporting traceability systems—face critical gaps in certification, infrastructure and interagency coordination. A holistic approach grounded in collaborative governance theory is needed. This includes legal and institutional reforms, technology-driven traceability, and multi-stakeholder collaboration. By combining blockchain traceability, inclusive policy design and community engagement, Indonesia can transform its halal meat industry into a trusted, transparent and competitive

halal hub—aligned with international standards and supportive of both ethical consumption and local economic resilience.

Bibliography

- Akbar, A., Rakhmawati, N. A., & Vanany, I. (2022). *Halal Blockchain Application for a Chicken Slaughtering Factory*. *International Journal on Food System Dynamics*, 13(3), 321–334.
- Alamsyah, A., Hakim, N., & Hendayani, R. (2022). *Blockchain-based traceability system to support the Indonesian halal supply chain ecosystem*. *Economies*, 10, 134–152.
- Al-Fauziah, N., et al. (2022). *Konsep Halal dalam Perspektif Syariat Islam*.
- Ansell, C., & Gash, A. (2008). *Collaborative governance in Theory and Practice*. *Journal of Public Administration Research and Theory*, 18(4), 543–571.
- Arif, S., & Sidek, S. (2015). *Application of halalan tayyiban in the standard reference for determining Malaysian halal food*. *Asian Social Science*, 11(17), 116.
- Azam, M. S. E., & Abdullah, M. A. (2020). *Global halal industry: realities and opportunities*. *IJIBE (International Journal of Islamic Business Ethics)*, 5(1), 47–59.
- Aziz, A., et al. (2021). *Faktor Keberhasilan Halal Supply chain dalam Industri Makanan dan Minuman*.
- Ballou, R. H. (2004). *Business Logistics/ Supply chain Management: Planning, Organizing, and Controlling the Supply chain*. Pearson Education.
- bin Bustami, M. R., & Latip, A. R. A. (2021). *Social Constructs Halalan Tayyiban Food Law: A Social Scientific Study into the Insight of Muslim and Non-Muslim in Banten Indonesia*. *Intellectual Discourse*, 29(1), 53–70.
- Boadu, E. S. (2024). *Evaluating Ghana's Youth-Centered Food-Security Policies: A Collaborative Governance Approach*. *Sustainability*, 16(9), 3830.
- Bryson, J. M., Crosby, B. C., & Stone, M. M. (2015). *Designing and Implementing Cross-Sector Collaborations: Needed and Challenging*. *Public Administration Review*, 75(5), 647–663.
- Christopher, M. (2011). *Logistics and Supply chain Management*. Pearson Education.
- Chopra, S., & Meindl, P. (2016). *Supply chain Management: Strategy, Planning, and Operation*. Pearson Education.
- Emerson, K., Nabatchi, T., & Balogh, S. (2012). *An Integrative Framework for Collaborative Governance*. *Journal of Public Administration Research and Theory*, 22(1), 1–29.
- Heizer, J., & Render, B. (2014). *Operations Management: Sustainability and Supply chain Management*. Pearson Education.
- Ismail, S., Nazarudin, N., Francis, F. J., & Muhamad, M. Z. (2021). *Traceability-Technology-Training (3T) framework for halal logistics at small medium enterprises*. In 2021 7th International Conference on Research and Innovation in Information Systems (ICRIIS), 1–6.
- Isnaeni, T. (2020). *Manajemen Rantai Pasok Halal: Perspektif Industri dan Konsumen Muslim*.
- Mentzer, J. T., et al. (2001). *Defining Supply chain Management*. *Journal of Business Logistics*.
- Mustaffa, K. A. (2019). *Developing halalan tayyiban concept in Malaysia's food industry*. *Halal Journal*, 3(3), 97–108.
- Mukhlis, M., & Perdana, R. (2022). *A critical analysis of the challenges of collaborative governance in climate change adaptation policies in Bandar Lampung City, Indonesia*. *Sustainability*, 14(7), 4077.
- Nadeau, N., & Koebele, E. A. (2023). *Collaborating to reduce food waste: building collaborative advantage in local food systems*. *Renewable Agriculture and Food Systems*, 38, e32.
- Raffi, R. M., & Hasan, Q. (2019). *Food Quality and Safety in Japan: Exploring Halalan Tayyiban Aspect*. *Global Journal Al-Thaqafah*, 29–37. <https://doi.org/10.7187/GJATS112019-3>