



# Integrating Halal Management Systems and Control Points in Poultry Processing: A Transnational Compliance Case from Thailand to Malaysia

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## ABSTRACT

Halal poultry production in Thailand is vital for strengthening its position in the global halal poultry market. The present study aimed to explore the strategic significance of halal management systems (HMS) and halal control points (HCPs) for the global halal poultry industry by investigating their application in Thailand and assessing compliance with Malaysian standards. The present study focused on certified Thai poultry slaughter and processing facilities located in Thailand and approved for export to Malaysia. Additionally, the present study explored the religious, technical, and institutional requirements compatible with poultry processing to fulfill the requirements of the Department of Veterinary Services and the Department of Islamic Development Malaysia. Employing a qualitative case study methodology that encompassed document analysis, in-depth interviews, and field observations, the present study identified eight critical HCPs immersed within a large 59-step operational process, focusing on key issues concerning animal welfare, ritual slaughter, hygiene, and prevention measures contamination. The integration of HMS and HCPs into the operational flow of poultry processing facilities required a structured approach, incorporating halal food-general requirements, the Malaysian protocol for halal meat and poultry production, and the Malaysian halal management. The present findings provided significant contributions to cross-border halal governance, supporting the development of a framework that enhances halal assurance in the international poultry processing industry and comprehensively addresses the halal poultry standards market.

**Keywords:** Halal control point, Halal management system, Poultry processing, Slaughterhouse

## INTRODUCTION

The global halal food industry that adheres to Islamic dietary laws has experienced substantial growth, driven by increasing Muslim populations and heightened demand for halal products. It was estimated that the global halal food market would exceed 2 trillion USD by the year 2024, with meat and poultry products constituting a significant segment (DinarStandard, 2023). Therefore, ensuring religious compliance and hygienic integrity in poultry production has become essential for both Muslim-majority and non-Muslim countries involved in halal certification and production trade.

Thailand is one of the world's leading halal poultry exporters, which is widely accepted in the global markets such as the Middle East, the European Union, and Southeast Asia (Wongtangintharn et al., 2025). Among

these countries, Malaysia stands out as both a significant trading partner and a pioneer in halal certification and enforcement. The Department of Islamic Development Malaysia (JAKIM), in collaboration with the Department of Veterinary Services (DVS), has developed stringent guidelines for halal food imports, such as the MS 1500:2019 and the Malaysian protocol for halal meat and poultry production. These guidelines encompass animal welfare, slaughter procedures, hygiene, traceability, and halal governance systems (Department of Standards Malaysia, 2019).

For Thai poultry processors aiming to access the Malaysian market, adherence to these regulations is obligatory. Facilities should be certified by an authorized halal certification body (HCB), such as the Central Islamic Council of Thailand (CICOT), and should undergo on-site

audits conducted by Malaysian authorities. Additionally, poultry processing facilities should implement internal halal assurance systems that include trained Muslim slaughtermen, halal executives, and documentation of halal control points (HCPs) throughout the production process (JAKIM, 2020).

Halal poultry production involves applying Islamic legal principles (Shariah) to the breeding and feeding of chickens until slaughter and beyond distribution. According to Rahman *et al.* (2024), halal meat is authorized exclusively when it adheres to a specific procedure involving an animal deemed permissible for consumption, slaughtered by a mentally competent adult Muslim, utilizing a sharp instrument, and invoking the name of Allah. The slaughtering process should include cutting the trachea, esophagus, and carotid arteries to ensure it does not suffer before it dies, and allow complete blood drainage. The blood removal from the edible muscle is essential for religious adherence and hygienic considerations. Furthermore, halal assurance schemes have integrated operational methods, including good manufacturing practices (GMP), hazard analysis and critical control point (HACCP), and HCP within the halal poultry production process (Rahman *et al.*, 2021). These operational methods are crucial to ensure religious compliance, addressing not only the welfare of the slaughtered animal but also the implications for food safety in industrial processes (Bonne and Verbeke, 2008; Alqudsi, 2014).

The HCPs are critical operational stages, such as lairage, stunning, slaughtering, and carcass inspection, where risks of religious or procedural non-compliance should be mitigated. These control points require trained oversight, preventive measures, and detailed documentation in accordance with MHMS 2020 (JAKIM, 2020). The HCPs strategically serve as religious risk mitigation tools within a broader enterprise risk management framework, emphasizing continuous monitoring, control, and validation (Tieman, 2011). Failures in HCP governance can result in certification invalidation and loss of consumer trust (Tieman *et al.*, 2012).

Malaysia is recognized worldwide for its comprehensive and institutionalized halal management system (HMS). The JAKIM established several national halal standards, including MS 1500:2019, which includes general requirements on cleanliness, traceability, handling, and storage for halal food production (JAKIM, 2019). To address the technical and organizational aspects of halal regulation, including stunning techniques, personnel

certification, and internal auditing, the Malaysian protocol for halal meat and poultry production and the Malaysian halal management system are implemented (Department of Standards Malaysia, 2019; MHMS, 2020). The use of HMS by DVS and other authorities ensured that the religious and safety standards were firmly applied (Hashim *et al.*, 2019).

Thailand has emerged as a significant supplier of halal poultry, particularly to Muslim-majority countries such as Malaysia (Paramayudha and Budhisatrio, 2024). The CICOT is the only recognized halal certifying body by JAKIM. Thai exporters are obligated to adhere to the HMS established by the exporting country. Consequently, Thai poultry exporters willing to export to Malaysia should obtain halal certification from the appropriate Malaysian authorities and establish their operational and quality control systems in accordance with the certification requirements (Wongtangintharn *et al.*, 2025).

There is a limited understanding of how HCPs are employed and their compliance with regulatory standards such as MS 1500:2019 (MHMS, 2020). Furthermore, the HMS in Malaysia plays a crucial role in guiding halal certification processes; however, there is a limited number of empirical studies examining how poultry processing facilities in Thailand align their practices to facilitate export. The present study aimed to assess the implementation of Malaysia-aligned HMS in a Thai poultry processing facility, exploring halal compliance and the application of HCPs in the slaughtering and processing stages according to the MS 1500:2019, the Malaysian protocol for halal meat and poultry production.

## MATERIALS AND METHODS

### Ethical approval

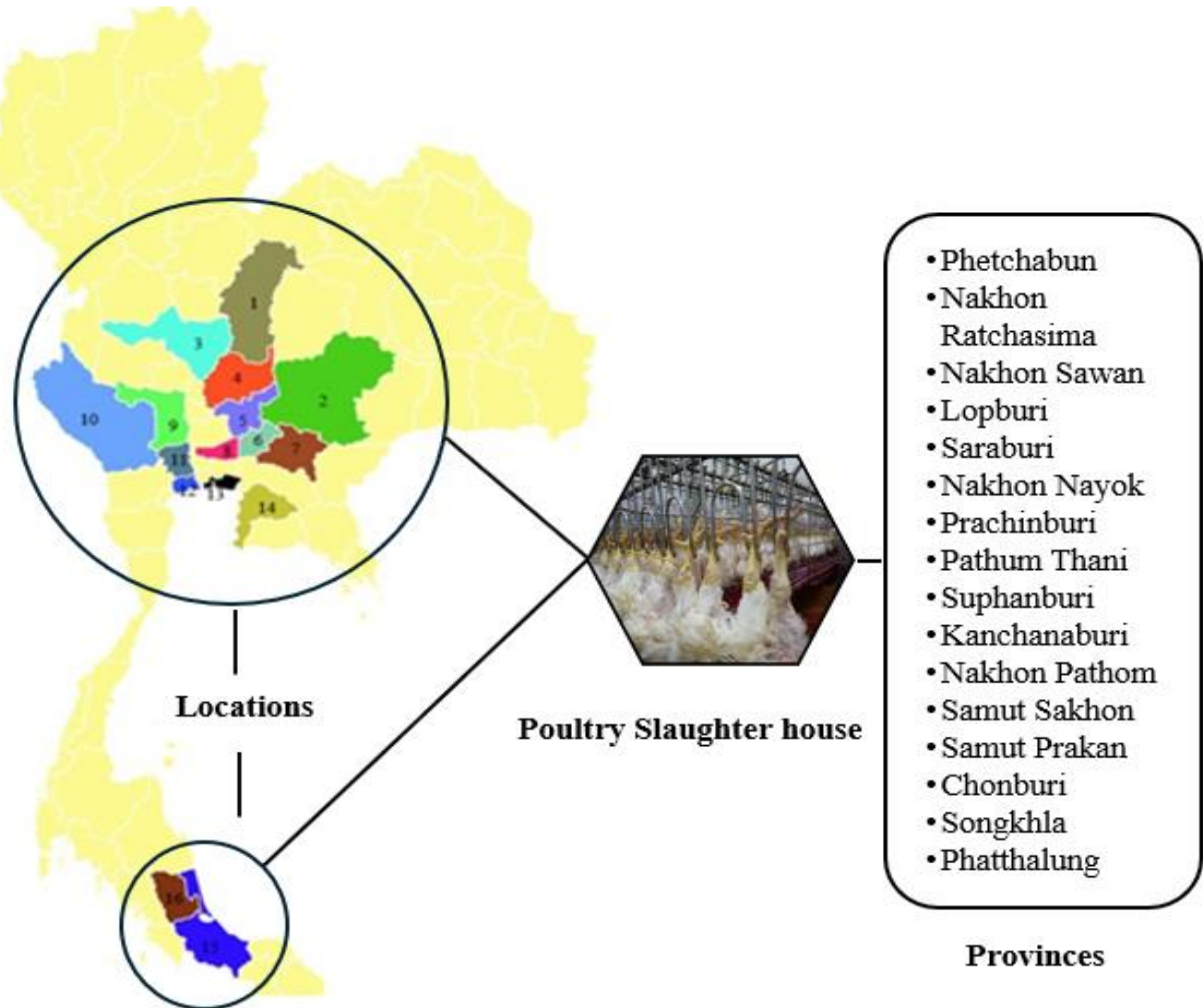
For the present study, ethical approval was obtained from the research ethics committee for humanities, social sciences, and education, Prince of Songkla University, Pattani Campus, Thailand (Rec No. psu.pn.2-052/67), and all participants provided informed consent before data collection. Given the religious sensitivity of halal poultry operations, particularly the controversial aspect of pre-slaughter stunning, interviews explicitly addressed how stunning was conducted in accordance with the Malaysian protocol for halal meat and poultry production to ensure halal compliance. All responses were maintained with strict confidentiality and anonymity and were utilized solely for the current study.

### Study design

A single case study design was utilized, focusing on a halal-certified poultry processing plant in Thailand. This

facility was officially registered with the DVS and JAKIM for exporting poultry products to Malaysia. The selected plants met the criteria for inclusion, as they fully adhere to

halal guidelines, traceability protocols, and veterinary and religious compliance procedures.



**Figure 1.** Location of the export-oriented slaughterhouse across 16 provinces in Thailand

### Data collection

The present study utilized a qualitative case study approach, following the principles of interpretivist inquiry, to explore the differences of halal beliefs, organizational practices, and compliance with Malaysia's halal regulations, which are constantly evolving (Creswell and Poth, 2018). The present study analyzed documentary sources, including official Malaysian halal certification standards such as MS 1500:2019 (MHMS, 2020), HACCP, GMP, and internal halal audit documents. These were supplemented by semi-structured interviews, which were designed and pilot-tested to ensure clarity, relevance, and alignment with the objective of the study. In-depth

interviews were conducted with key personnel utilizing semi-structured guides. Data collection occurred at a 24 Halal poultry slaughterhouse with export orientation across 16 provinces in Thailand (Figure 1). The study was conducted from September 2024 to February 2025.

The study encompassed a total of 25 participants, with five individuals representing each key role category, including halal executive, halal supervisor, halal checker, slaughtermen, and quality control (QC) officer. Participants were required to have at least three years of experience in halal poultry processing and be involved in ensuring compliance with Malaysian halal guidelines. Interviews lasting 60-90 minutes were conducted to

understand their operational practices and religious compliance.

### Data analysis

The data were analyzed employing thematic analysis as described by [Braun and Clarke \(2006\)](#). The analysis started with inductive immersion in the data, including transcripts and documents, to establish a comprehensive understanding of the context. Then followed the initial coding and the development of preliminary conceptual themes, such as slaughter, stunning, documentation, and training. Essential themes, according to the Malaysian halal guidelines, were defined, focusing on the implementation of HCPs within designated processing zones, internal halal auditing and governance procedures, and internal traceability systems. Finally, a framework was established to assess the usability and consistency of these themes through reviewing the documents and the observations of the investigators. Thematic categories were subsequently refined using manual coding and memos. The data was coded and then verified by an independent Halal Systems team expert. The data were coded and checked using thematic categories derived from reflexive coding, memoing, and participant input verification. Any discrepancies or contradictions across interviews, observations, or documentation were resolved with clarification, discussion with participants to garner clarity and consensus, and ensured trustworthiness and credibility ([Denzin, 2012](#)). To ensure accuracy, participants were asked to review and validate the present findings.

## RESULTS AND DISCUSSION

### Convergence of religious and technical standards

A key theme emerging from the present findings was the alignment of Islamic jurisprudential principles (fiqh) with technical food safety systems. The Muslim-trained slaughtermen, the invocation of Allah's name, and the complete cutting of the trachea, esophagus, and major blood vessels reflected the traditional Islamic slaughtering rules. These were integrated into the statutory operating procedures supported by structured audits and controlled documentation. Shariah principles were integrated into the audit process by including criteria for ritual compliance. Each auditor confirmed that each slaughterman was a Muslim, had received training, and they recited the tasmiyyah before slaughtering. The integration of Shariah with systems such as HACCP and GMP signified that religious and scientific epistemologies can coexist within contemporary poultry processing ([Bonne and Verbeke, 2008](#)). In contrast, facilities that do not follow these

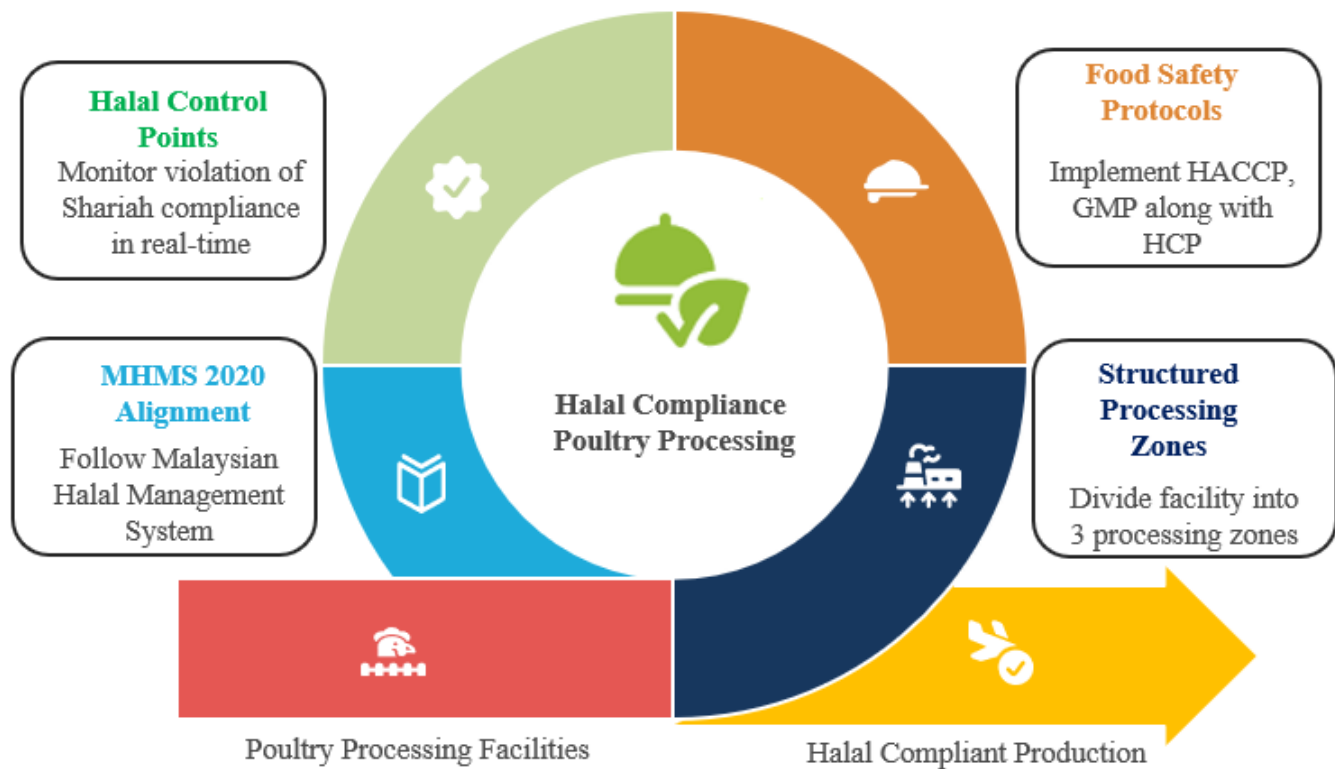
guidelines may have changes at critical stages, such as stunning, slaughtering, and bleeding, leading to violations of Shariah compliance and food safety, and increasing the risk of losing halal certification penalties. Therefore, facilities maintain active internal audit processes to prevent non-compliance and protect their halal status certification.

### Poultry processing and halal compliance

The present study revealed that, to meet the halal poultry export demands, particularly to Malaysia, the poultry processing facility has adopted a comprehensive production system that includes halal compliance, different operational zones, HCPs, food safety protocols, industry hygiene, and MHMS. It covered the entire process to guarantee that both religious and health standards were maintained. The poultry slaughtering and processing facility functioned through a systematic workflow comprising 59 sequential stages, which were categorized into three operational phases. The unclean zone covered initial handling stages, including transportation, reception, and lairage, during which risks of contamination and animal stress were observed at their highest. The clean zone included slaughtering, bleeding, washing, and inspection. The chilled/export zone included chilling, packaging, and storage to prepare traceable and compliant products for export.

Figure 2 highlights key features of a halal-compliant poultry production, showcasing HCPs that monitor Shariah compliance in real-time, along with relevant halal practices aligned with the Malaysian HMS ([MHMS, 2020](#)), operational zones for processing, as well as food safety systems such as HACCP and GMP. It demonstrated how all these contribute to constructing the comprehensive framework of a poultry processing facility that adheres to halal-compliant production guidelines. This systematic approach highlighted the establishment's efforts to integrate Shariah compliance into modern food safety systems, facilitating the follow of food safety regulations and plans. Prior studies have established that halal assurances rely on religious compliance and technical compliance. The combination of operational zoning, HCP monitoring, and MHS strategies provided another facility that exports to Malaysia, ensuring its models meet the strict requirements needed for Malaysia's halal standards imports. However, compliance requires ongoing training, completing documentation, and conducting internal audits to ensure that no violations occur, which could invalidate the process ([Umar and Parakkasi, 2025](#)).





**Figure 2.** Poultry production with Halal compliance slaughtering and processing facilities.

#### Halal control point and risk management

To maintain halal authenticity, the facility introduced HCPs at key stages such as slaughtering and evisceration, focusing on potential Shariah violations (e.g., najis-ritually impure substances prohibited in Islamic law, improper slaughter, non-Muslim slaughterer). Unlike traditional Critical Control Points (CCPs), HCPs are designed to address religious non-compliance in real time, overseen by trained Halal Checkers. These controls are integrated with food safety protocols under HACCP, GMP, and Good Hygiene Practices (GHP), covering temperature regulation, sanitation routines, staff hygiene, and physical separation across zones. Consistent with the Malaysian Halal Management System (MHMS, 2020), the facility applies a structured compliance regime that includes Halal Committees, Muslim-trained personnel, Standard Operating Procedures (SOPs), and continuous internal audits to a unique Shariah-based production ideology (Desa et al., 2022). This study identified eight HCPs within a 59-step operational workflow, each marking a point of potential religious or hygienic non-compliance. Table 1 presents the corresponding risks and mitigation strategies. The integration of trained personnel, institutional Standard Operating Procedures (SOPs), and real-time monitoring provides an appropriate halal assurance framework (Alqudsi, 2014; Asa, 2017). It exemplifies effective halal risk management, aligning Islamic jurisprudence with industrial standards, and offers

a replicable model for producers and certification bodies in halal-sensitive export markets.

#### Halal management system implementation

The current study indicated that the Malaysian government plays a significant role in the halal industry through its establishment of halal standards, control mechanisms, and incentives, which speed up industry development and growth (Rashid and Bojei, 2020). While Malaysia's Halal Management System (HMS) focuses primarily on domestic certification and regulating imports, Thailand's HMS is designed to facilitate international trade compliance (Shafii and Zubir, 2018). Consequently, Thai poultry exporters should operationalize their halal standards in alignment with both Thailand's CICOT procedures and the specific requirements of the Malaysian market. In response to Malaysia's stringent halal import regulations, Thailand's poultry facilities have adopted an integrated HMS, synthesizing religious, technical, and operational standards across all phases of production.

The present study indicated that the Thai poultry industry employed a multi-variable HMS approach, tailored explicitly to Malaysian halal practices encompassing regulatory, religious, and operational compliance. These guidelines ensured that all critical control points, from live poultry handling and Shariah-compliant slaughter to final packaging hygiene, were rigorously maintained. Therefore, the implementation of a

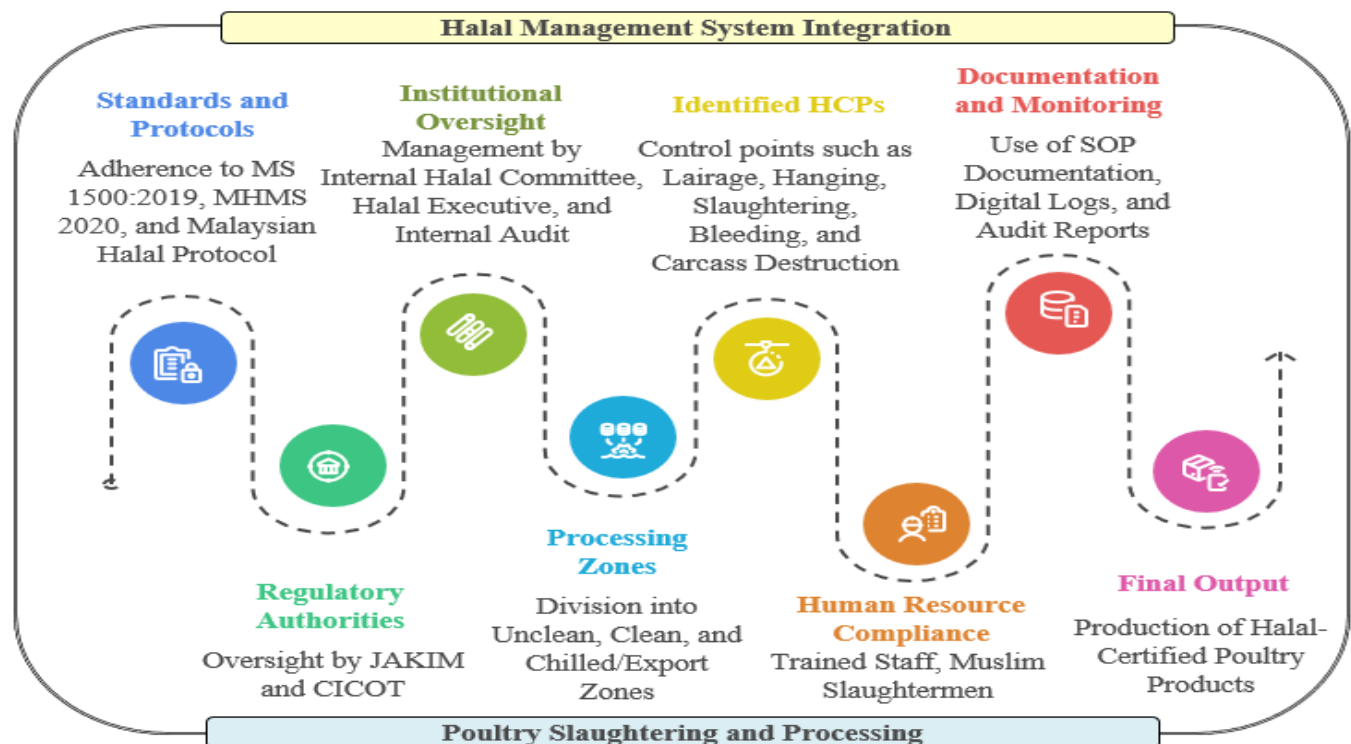
Malaysian-standard HMS required several key components, including an internal governance structure with a halal committee, executive, and auditors, enforced SOPs for segregated unclean, clean, and chilled/export zones, and the management of eight HCPs throughout the slaughter process. Furthermore, facilities underwent regular audits by both Thailand's CICOT and Malaysia's JAKIM to maintain certification and ensure ongoing compliance. The integrated halal management system framework for the export-oriented poultry slaughtering

and processing facilities in Thailand was illustrated in Figure 3. The framework highlighted the important connections between regulatory, institutional, and operational aspects, which included identifying HCPs, utilizing digital traceability tools, maintaining proper documentation, and involving trained Muslim personnel. By integrating these elements with Malaysia's HMS, the facility demonstrated its appropriate commitment to blending religious obligations with international food safety standards, particularly for export markets.

**Table 1.** Halal control point and risk mitigation strategies

HCP	Process step	Location	Risk addressed	Control measures
HCP1	Lairage	Holding area	Stress, respiratory distress	Rest poultry for $\geq 30$ mins; control temperature and humidity
HCP2	Hanging	Shackling section	Inclusion of dead/ infected poultry	Train staff; separate dead or infected poultry
HCP3	Stunning	Stunning station	Over-stunning or pre-slaughter death	Calibrate voltage; confirm recovery within 5 minutes
HCP4	Slaughtering	Slaughter hall	Improper slaughter; non-Muslim personnel	Use a sharp knife; trained Muslim slaughterman; recite <i>Bismillah</i>
HCP5	Bleeding	Bleeding tunnel	Residual blood; insufficient bleeding time	Monitor bleeding for $\geq 180$ seconds; visual inspection by Halal Checker
HCP6	Red carcass inspection	Inspection point	Incomplete bleeding; visual impurities (najis)	Inspect and remove red/incomplete carcasses
HCP7	Carcass washing	Washing section	Contamination from blood or impure water	Use clean, cold water; visual cleanliness check
HCP8	Carcass destruction	Condemnation area	Improperly slaughtered carcass inclusion	Heat $\geq 85^{\circ}\text{C}$ (internal temp $\geq 75^{\circ}\text{C}$ ); grind condemned carcasses

HCP: Halal control point



**Figure 3.** Integrated halal management system framework for halal poultry production in Thailand aligned with Malaysian standards.

### Stakeholder perspectives on halal compliance

The thematic analysis of stakeholder interviews revealed a high organizational commitment to balancing religious integrity with regulatory compliance. A key finding emphasized a dual responsibility, including meeting technical requirements while upholding core Shari'ah principles. Participants described a system of integrated governance that includes regular internal audits and close collaboration with authoritative organizations such as JAKIM and CICOT to ensure compliance. The slaughtering process was consistently identified as the most critical and sensitive HCP. Participants demonstrated a clear understanding of the precise ritual requirements, strictly following the MS 1500:2019 standard. This included employing trained Muslim slaughtermen who ritually recite the Tasmiyah (Bismillah) before each cut, underscoring the religious significance beyond mere procedural duty. Strict documentation protocols at each control point further demonstrated operational clarity. Any case of improper bleeding was carefully documented, resulting in the carcass being culled. This reflected a systematic approach to risk management, especially regarding blood retention and cleanliness, acting as a continuous preventative and corrective measure to ensure Shariah compliance throughout the production line. According to the QC officer, the collaboration between the halal and hygiene teams highlighted the operational synergy needed to meet religious and food safety

requirements, further confirming the integrated approach of the HMS in Thai poultry slaughter facilities.

### Halal compliance gaps

#### Poultry supply chain

The current study identified significant gaps in halal compliance across upstream and downstream activities of the poultry supply chain, although midstream processing generally followed halal requirements. Although inputs such as animal feed and vaccines underwent a degree of regulatory supervision, they frequently did not possess formal certification from an accredited halal body. Moreover, downstream products, particularly ready-to-eat items, lacked halal certification for export to Malaysia, reflecting an absence of a comprehensive halal assurance system from farm to fork. To meet Malaysia's halal processing standards, several Thai poultry producers encountered challenges involving regulatory interpretation, operational alignment, and procedural problems in the certification process (Tieman, 2011; Talib et al., 2014; Ngah et al., 2015).

In addition, recruiting and training qualified Muslim slaughtermen is still difficult in Thailand, where the majority of the population is non-Muslim (Talib et al., 2014). Discrepancies between local documentation and Malaysia's halal certification requirements caused procedural delays and increased costs. These findings aligned with the findings of Ngah et al. (2015), highlighting the importance of legal harmonization and bilateral technical cooperation in solving halal compliance and logistical issues.

**Table 2.** Strategic recommendations for enhancing halal system management for export-oriented Thailand's poultry industry

Focus area	Objective	Key actions	Expected outcomes
<b>Capacity building</b>	Enhance skills in halal operations	Train slaughtermen, auditors; develop SOPs	Improved compliance; reduced non-conformance
<b>Traceability systems</b>	Boost transparency and verification	Adopt blockchain, QR codes, sync with audits	Higher traceability; greater stakeholder trust
<b>Regulatory alignment</b>	Harmonize Thai–Malaysia standards	Conduct CICOT–JAKIM–DVS dialogues; align audits	Fewer delays; smoother certification process
<b>Halal R&amp;D</b>	Foster innovation in halal compliance	Study stunning, feed, audit models; form study consortia	Evidence-based practices; academic–industry links
<b>Policy integration</b>	Mainstream halal in national agendas	Draft halal masterplan; offer incentives to exporters	Institutional support; increased market access
<b>Bilateral collaboration</b>	Deepen Thai–Malaysia cooperation	Run joint training, forums, and share inspection expertise	Regional capacity-building; mutual recognition

SOPs: Standard operating procedures, QR codes: Quick response codes, CICOT: The Central Islamic Council of Thailand; JAKIM: Department of Islamic Development Malaysia, DVS: Department of Veterinary Services (Malaysia), R&D: Research and development.

### Strategic implications

The current study offered a scalable halal governance model for the international poultry trade. The model

included staff training, internal halal committees, and maintained controlled records related to export compliance. The sustainability of the industry requires

commitment to capacity building, the integration of an online traceability system, alignment with regulatory frameworks, and the establishment of robust legal structures to facilitate ethical and sustainable halal practices (Ramli *et al.*, 2023; Rahman *et al.*, 2024).

To improve Thailand's halal system to make it suitable for export, the current study has identified several strategic measures as priorities. These included training Muslim slaughterers, halal supervisors, and auditors to increase technical capacity; introducing traceability technologies, such as blockchain and QR codes; and promoting greater partnerships between CICOT, JAKIM, and DVS for regulatory harmonization (Nashirudin and Ulfah, 2024). Additionally, the halal industry should invest greater engagement in halal-related studies and development through university-industry collaboration partnerships, and promote halal considerations in national trade policies, offering financial incentives to foster halal trade relationships (Rahman and Ahmad, 2024). Training Muslim slaughterers, supervisors, and auditors is one of these priorities and a short-term, urgent move that offers immediate compliance benefits. On the other hand, implementing blockchain-based traceability and advanced R&D programs are long-term strategic priorities that require significant investment and infrastructure. As a result, the interview and document analysis identified six strategic priority areas for improving Thailand's halal system to support export-oriented poultry production. These priorities emerged directly from observed gaps in operational capacity, traceability, regulatory alignment, policy integration, and bilateral collaboration. Table 2 presents the strategic recommendations for enhancing halal system management in Thailand's export-oriented poultry industry.

## CONCLUSION

The current study indicated that Thai poultry slaughtering facilities have effectively implemented halal HMS and HCPs that adhere to Malaysia's rigorous halal standards in applying religious requirements alongside food safety measures across 59 operational bodies. The Thai poultry industry, which adhered to halal standards, was compromised by upstream and downstream uncertainties, such as uncategorized feed sources and ready-to-eat products. Despite high midstream compliance, these gaps indicated the critical lack of an integral farm-to-fork halal assurance system. The issues outlined in the present study highlighted the need to certify additional components, improve digital traceability, and strengthen regulator

communication through bilateral engagement. These improvements aim to preserve religious and hygienic guidelines while boosting Thailand's global competitiveness in halal market sectors. Furthermore, the study offered other producers and policymakers a replicable model that aligns operational goals with Shariah-compliant methods for the international halal industry. To improve halal assurance across the supply chain, Thai certification bodies should expand the scope of certification to cover feed suppliers, veterinary drug manufacturers, and poultry farms. Policymakers should implement mandatory halal standards for upstream inputs, following Malaysia's integrated halal framework. Future studies should examine the long-term effectiveness of these strategic measures, especially in enhancing supply chain resilience and ensuring cross-border compliance. Additionally, further studies could explore consumer perspectives on Thai halal poultry in Malaysia to demonstrate how governance improvements influence purchasing decision behavior.

## DECLARATIONS

### Acknowledgments

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### Authors' contributions

Hafit Khamnurak conducted the study as part of his doctoral studies, overseeing data collection, analysis, and the development of the halal control point model. Asman Taeali served as the academic supervisor, providing essential guidance on the application of Islamic jurisprudence and Shariah principles throughout the study process. Md. Mahfujur Rahman offered supervisory support with an emphasis on halal compliance and the integration of Halal Control Points within the management system of poultry production. All authors participated in refining the manuscript and approved the final edition.

### Ethical considerations

Ethical approval was obtained from the institutional research board at Prince of Songkla University. Informed consent was secured from all participants before data collection, and confidentiality was maintained throughout the study. The authors affirmed that all ethical issues have been addressed, including plagiarism, consent to publish, misconduct, double publication and/or submission, and redundancy.



### Availability of data and materials

The data obtained in this study can be obtained upon reasonable request.

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### Competing interests

The authors declared no conflicts of interest in publishing this article.

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