




## Artificial Intelligence Based Halal Compliance Model Civil Law Perspective

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Article Info	ABSTRACT
<p><b>Keywords:</b> Halal Compliance Artificial Intelligence Civil Law.</p>	<p>The purpose of this study is to examine and analyze the role of the "Artificial Intelligence-Based Halal Compliance Model (AI) from a Civil Law Perspective." Specifically, this study identifies how AI can help ensure product compliance with halal standards in the context of Indonesian civil law. In addition, it also examines the role of contracts and agreements between producers, certification bodies, and consumers in influencing the effectiveness of the halal compliance system. Civil law is used to analyze legal implications, particularly regarding liability, contract validity (smart contract validity), and evidence arising from the application of the Halal Compliance Model based on AI, which plays an important role in ensuring the integrity and traceability of halal products throughout the supply chain. In civil contract law, AI is used to automate, analyze, and even execute contracts through the concept of Smart Contracts. The interconnection between civil law and AI raises new challenges and opportunities, especially in the issues of liability and legal personality.</p>
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### INTRODUCTION

This research has high urgency and relevance, both theoretically and practically, in responding to technological developments and public demand for product halal certification (Asmuni et al., 2020; Medaline et al., 2021; Zalukhu et al., 2024a). Practically, this research provides guidelines and recommendations that can be implemented by stakeholders (government, business actors, and consumers). Legal Certainty and Consumer Protection support the validity of certification in determining the legal force of halal certification issued or verified in real-time by AI systems, thereby increasing legal certainty for producers and consumers (Rafianti et al., 2024). Then, legal responsibility to formulate a civil liability framework when a non-halal incident occurs due to an error or malfunction of the AI system (Nurhayati et al., n.d., 2022; Rafianti et al., 2022). In practical terms, this research provides guidelines and recommendations that can be implemented by stakeholders (government, business actors, and consumers) (Nurhayati et al., 2021; Zalukhu et al., 2024b).

The crucial issues raised include:

- a. Legal Certainty and Consumer Protection: Support for the validity of certification is needed in determining the legal force of halal certification issued or verified in real time by AI systems
- b. Legal Liability: Formulating a civil liability framework in the event of a non-halal incident due to an error or malfunction of the AI system, which is crucial for consumer protection.
- c. Efficiency and Integrity of the Halal System: Providing a legal basis for the implementation of AI for more effective halal compliance monitoring and auditing, fast, efficient, and transparent, while reducing compliance costs

The results of this analysis are expected to provide input for the government, particularly the BPJPH (Halal Product Guarantee Agency), to support the comprehensive implementation of the Halal program (Aspan et al., 2017).

## **METHODS**

This study uses a descriptive-analytical and inductive qualitative legal approach. This methodology aims to gain an in-depth understanding of legal phenomena, viewing law as a dynamic social reality (Ramadani, 2017, 2023b, 2023a, 2024). The research material focuses on specific legal issues that require a rich contextual understanding.

Data Collection Techniques:

This study uses a mixed method:

- a. Literature Study/Documentation Secondary data collection processed from BPJPH, data scientists, and legal experts
- b. Direct Observation and Interviews/Focus Group Discussion (FGD): To collect data based on phenomena in the field

Data Analysis Methods are processed through qualitative data analysis, such as categorization and theme or pattern development, which are then presented in the form of rich and interpretive narratives.

## **RESULTS AND DISCUSSION**

### **Literature Review**

Halal compliance is defined as obedience, submission, and compliance with all rules, requirements, and regulations related to Halal Product Guarantee (JPH), both those regulated by Islamic law and legislation. Its aspects include Sharia Compliance, Regulatory Compliance (BPJPH certification), and Halal Assurance System (SJH) Compliance.

Artificial Intelligence (AI) is a field of computer science dedicated to solving cognitive problems associated with human intelligence, such as learning and reasoning. AI is used to improve efficiency and accuracy, especially in Halal Compliance, where it serves to monitor

the supply chain, detect cross-contamination in real-time (through sensors, IoT, blockchain), and automatically verify raw materials.

In the context of civil law, AI raises challenges regarding civil liability if AI systems cause losses, and legal questions regarding the validity of automatic contract execution through Smart Contracts. The relationship between the three (Civil Law, AI, and Halal Compliance) centers on information integrity, where data generated by AI/Blockchain can serve as valid evidence in civil disputes regarding halal claims.

The integration of AI in Halal Product Assurance (JPH) increases efficiency but raises civil law challenges related to liability for algorithmic audit errors.

### **Application of Civil Law Liability Principles:**

Halal compliance failures caused by AI systems require the adaptation of civil law to provide effective legal protection for consumers. It is recommended that the principle of strict liability be applied, whereby consumers only need to prove the loss and causal relationship with the incorrect halal certificate, without having to prove “errors” in the algorithm. The integration of Artificial Intelligence (AI) into the Halal Product Guarantee System (SJPH) transforms the audit and certification process, increasing the efficiency and accuracy of global supply chain traceability. However, this automation creates new legal complexities, particularly regarding civil liability for audit errors caused by algorithms. Errors, biases, or failures in AI systems that produce inaccurate halal certificates can harm consumers materially and spiritually, requiring fundamental adaptations in Indonesian civil law. Traditional civil law, which is based on proving “fault” or negligence, becomes inadequate when losses are caused by autonomous algorithmic decisions that “have no intent.” To provide effective legal protection for consumers, it is recommended that the principle of Strict Liability Through this approach, consumers only need to prove the existence of losses and a direct causal relationship with the incorrect halal certificate, without needing to prove negligence on the part of the operator or algorithm developer. In addition to Strict Liability, liability for unlawful acts (PMH) must be expanded through Multi-Layered Liability, which distributes the risk of liability between AI developers, platform providers, and end users (LPH/BPJPH). Meanwhile, liability for breach of contract needs to be strengthened through AI SLA (Service Level Agreement AI) clauses in contracts between businesses and AI system providers, to define performance standards and compensation in the event of system failure. This legal innovation must be balanced with mandatory algorithm transparency (Explainable AI/XAI) so that AI decisions can be accounted for and examined in civil disputes, ensuring fairness for consumers and the integrity of JPH. Liability for unlawful acts (PMH) must be expanded through multi-layered liability, while liability for breach of contract is strengthened by AI SLAs (Service Level Agreements).

### **Alternative Regulatory Model for Legal Certainty of Halal Causa:**

For proper integration, the BPJPH technical regulatory framework must be harmonized with the principles of liability and civil contracts. The alternative regulatory model required is:

- a. Algorithm Transparency (Explainable AI/XAI): Required so that AI decisions can be accounted for and examined in civil disputes.
- b. Mandatory Financial Guarantee Mechanism or AI Liability Insurance This mechanism will separate financial risk liability from contract causa proof. If the causa halal is defective (product is not halal) due to AI error, consumer losses can be covered by a special guarantee scheme without having to cancel the entire contract, thus providing strong legal certainty.

An Alternative Regulatory Model is needed to create legal certainty (halal causa) in line with the massive integration of AI in Halal Product Guarantee (JPH). The BPJPH technical regulatory framework must move beyond traditional audits to a regime that adopts the principles of Regulatory Sandbox or Agile Regulation. This model allows AI systems to be tested in a controlled and limited environment before being widely implemented, minimizing legal risks and ensuring the reliability of algorithms in determining halal status (sharia and technical) For proper integration, BPJPH must issue a Head Regulation (Perka) that specifically regulates the technical standards for AI input and output data, as well as ensuring data interoperability between AI systems and Halal Inspection Agencies (LPH) and business actors. Additionally, a special AI Ethics and Legal Committee for JPH is needed to serve as a mechanism for oversight and algorithm dispute mediation, ensuring the principles of accountability and Explainable AI (XAI). This proactive approach ensures that halal technology innovation can proceed without compromising consumer protection and sharia certainty in the digital age.

### **CONCLUSION**

AI integration requires adaptation of halal certification service agreements between Halal Inspection Agencies (LPH) and Business Operators (PU). Explicit adoption of a specific AI Service Level Agreement (SLA) clause is necessary to set algorithm accuracy limits and compensation schemes for risks of default due to AI system failure. In cases of consumer losses due to AI audit failures, PMH liability must be transferred to a Multi-Layered Liability model. This model involves AI Developers (as producers of defective software), LPH/Certification Bodies, and Business Operators.

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