

Public Policy Transformation in the Utilization of Artificial Intelligence in Sharia Financial Institutions in Indonesia

Mutia Pamikatsih^{1*}, Samsiar², Shiva Dwi Kartika Ahmad³

¹Department of Economics, Faculty of Economics UNUGHA Cilacap

Jl. Kemerdekaan Barat No.17, Kabupaten Cilacap, 53274, Jawa Tengah, Indonesia

²Department of Islamic Economics, Faculty of Islamic Economics and Business, UINSUKA Yogyakarta

Jl. Laksda Adisucipto, Papringan, Kabupaten Sleman, 55281, Daerah Istimewa Yogyakarta, Indonesia

³Department of Islamic Economics, Faculty of Islamic Economics and Business, UIN Ambon

Jl. Dr. H. Tarmizi Taher Jalan Kebun Cengkeh, Kota Ambon, 97128, Maluku, Indonesia

E-mail Correspondence Author: *mutiacilacap4560@gmail.com 

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ABSTRACT

This article critically examines the transformation of public policy in the utilization of Artificial Intelligence (AI) within Indonesia's Islamic financial institutions (IFIs). National Islamic banking assets reached IDR 980.30 trillion by the end of 2024 (market share 7.72%), while the Financial Services Authority (OJK) issued its AI Governance Handbook for banking in April 2025, marking a critical juncture at which technological innovation and shariah governance must advance together. This study employs a qualitative descriptive method with policy analysis, library research, document analysis, and content analysis applied to statutory regulations, OJK and Bank Indonesia regulations, DSN-MUI fatwas, national Islamic finance roadmaps, Indonesia's National AI Strategy, OECD AI Principles, the UNESCO Recommendation on the Ethics of AI, and official documents from the World Bank, IMF, Islamic Development Bank, AAOIFI, and IFSB, analysed using the Miles, Huberman and Saldana interactive model. The findings show that AI adoption among Indonesian IFIs remains exploratory and fragmented, concentrated on fraud detection, credit scoring, chatbot-based customer service, and operational-compliance automation, but not yet systemically integrated with algorithmic shariah-compliance oversight. Compared with Malaysia, the United Arab Emirates, and Saudi Arabia, Indonesia faces regulatory fragmentation, institutional gaps, and limited digital literacy among shariah supervisory personnel. The article proposes an eleven-stage Policy Transformation Framework and stakeholder-specific policy recommendations, contributing theoretically to digital-governance and Islamic-finance literature, practically to the industry, and directly to Indonesian AI policymakers.

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1. INTRODUCTION

Artificial Intelligence (AI) has evolved from a mere automation technology into a strategic instrument for transforming various sectors, including the financial industry. The utilization of AI enables financial institutions to enhance service efficiency, risk analysis, fraud detection, and data-driven decision-making [1]-[2]. However, this evolution also creates a need for governance frameworks that ensure transparency, accountability, security, fairness, and human oversight in the use of algorithmic systems [3]-[4]. Consequently, the advancement of AI requires not only technological readiness but also policies capable of managing risks and ensuring responsible AI usage. This transformation holds particular relevance for Sharia financial institutions (SFIs). Digitalization within SFIs has expanded into areas such as customer service, credit scoring, risk management, fraud detection, and the automation of compliance processes [5][6][7]. In Indonesia, these developments are occurring alongside the growth of the Sharia banking industry and the issuance of the Artificial Intelligence Governance Guidelines for Banking by the Financial Services Authority (OJK) [8]-[9]. Nevertheless, the use of AI in SFIs remains largely focused on operational functions and has not yet been fully integrated with Sharia oversight mechanisms. This situation highlights the need to align AI development with the requirement for "dual compliance" adherence to both financial regulations and Sharia principles. The issue is further complicated by the fact that AI governance in SFIs involves multiple dimensions, ranging from the fragmented authority among the OJK, Bank Indonesia, and the DSN-MUI, to concerns regarding data security and privacy, algorithmic bias, "shadow AI," and the limited digital literacy of Sharia Supervisory Boards (DPS) [8]-[10]-[11]-[12]. Simultaneously, the application of AI to support Sharia compliance faces limitations because Sharia knowledge and fatwas (religious rulings) are not yet fully available in machine-readable formats. While AI has the potential to assist in the analysis and retrieval of Sharia-related information, decisions carrying legal and Sharia implications still require human oversight and authority [13]-[14]. Therefore, the primary challenge lies not merely in adopting AI, but in integrating AI governance with Sharia governance. While numerous studies have addressed AI within Islamic finance and AI governance, a research gap persists regarding the integration of public policies across authorities within the Indonesian context. Existing studies tend to examine the technical aspects of AI usage, Fiqh (Islamic jurisprudence) issues, or AI governance principles in isolation. Few studies have systematically mapped the relationships among AI regulations, the governance of Islamic Financial Institutions (IFIs), Sharia supervisory mechanisms, and the coordination between the OJK (Financial Services Authority), Bank Indonesia, and the DSN-MUI (National Sharia Board–Indonesian Council of Ulama). Yet, experiences from countries such as Malaysia, the United Arab Emirates, Saudi Arabia, the United Kingdom, and Singapore demonstrate the importance of institutional coordination, regulatory experimentation, and regulatory learning in navigating rapid technological advancements [15]-[16]-[17]. This situation highlights an integration gap between AI governance and Sharia governance in Indonesia. Addressing these issues, this study aims to map the current state of AI utilization within Indonesian IFIs, analyze regulatory and governance gaps, and compare Indonesia's approach with that of selected benchmark countries. The study proposes an AI-Islamic Finance Public Policy Transformation (TKP-AIKS) framework comprising eleven stages: assessing the existing state, problem identification, regulatory analysis, stakeholder mapping, AI utilization, governance transformation, regulatory strengthening, implementation, monitoring, evaluation, and continuous improvement [16]-[17]. This framework is intended to serve as an adaptive approach for the government, regulators,

DSN-MUI, Sharia Supervisory Boards (DPS), and IFIs in building an AI ecosystem that is efficient, secure, and accountable, while remaining aligned with Sharia principles.

2. METHOD

This study employs a descriptive qualitative approach utilizing a policy analysis strategy combined with library research, document analysis, and content analysis. This approach was selected due to the exploratory-interpretative nature of the research problem, which seeks to understand how public policies regarding AI in Financial Services Institutions (LKS) are formulated, how they facilitate inter-institutional interaction, and how they might undergo transformation. The objects of analysis include: (1) statutory regulations (Law No. 4/2023, Law No. 27/2022, Law No. 11/2008) ; (2) OJK regulations and guidelines, including the AI Governance Handbook 2025 and POJK No. 1/2026 ; (3) Bank Indonesia regulations concerning payment systems and financial technology innovation; (4) DSN-MUI fatwas; (5) the Roadmap for the Development and Strengthening of Indonesian Sharia Banking 2023–2027 ; (6) the Indonesian National Strategy for Artificial Intelligence; (7) OECD AI Principles and OECD reports on AI regulation in finance in Asia ; (8) the UNESCO Recommendation on the Ethics of Artificial Intelligence; (9) official documents from the World Bank, IMF, Islamic Development Bank, AAOIFI, and IFSB; and (10) Scopus-indexed journal articles for analytical comparison. Data were collected through a systematic search of official documents published on the websites of relevant authorities (OJK, Bank Indonesia, DSN-MUI, Ministry of Communication and Digital Affairs, Bappenas, BPS), reputable academic journal databases, and official reports from international organizations, using relevant keywords in Indonesian and English and limiting the publication period to 2021–2026 to ensure temporal relevance. Data analysis follows the interactive model proposed by Miles, Huberman, and Saldaña: (1) data reduction sorting and focusing raw data into analytical categories; (2) data display organizing data into narratives, comparative matrices, and conceptual frameworks; and (3) conclusion drawing and verification through triangulation across document sources. Additionally, this study incorporates elements of Braun and Clarke’s thematic analysis during the coding of academic literature, identifying key themes such as operational efficiency, risk management, algorithmic Sharia compliance, regulatory challenges, and the digital literacy gap. The study conducts a descriptive comparative analysis of AI-Islamic finance policy frameworks across Indonesia, Malaysia, the United Arab Emirates, Saudi Arabia, the United Kingdom, and Singapore. The selection of the first three countries is based on their status as the most mature Islamic fintech ecosystems globally, according to the Global Islamic Fintech Index, while the United Kingdom and Singapore represent non-Muslim-majority jurisdictions with mature regulatory frameworks for AI in finance [18]-[19].

3. RESULTS AND DISCUSSION

3.1. Current State of Artificial Intelligence Implementation in Indonesian Sharia Financial Institutions

Document analysis indicates that the utilization of Artificial Intelligence (AI) within Sharia financial institutions (SFIs) in Indonesia is growing, though implementation remains exploratory and fragmented. AI usage is primarily observed in four domains: customer service via chatbots and virtual assistants, alternative data-based credit scoring, fraud and transaction anomaly detection, and the automation of certain operational compliance processes. These developments suggest that AI is increasingly positioned as a tool to enhance business process efficiency and expand access to formal financial services,

particularly for underbanked and unbanked populations [8]-[9]. Regarding customer service, AI is employed to handle product inquiries, routine transactions, and basic information requests. This technological adoption aligns with the broader digital transformation trend in the financial services industry, which positions AI as a means to improve customer experience quality and extend service access to segments of society that have historically been underserved [20]-[5]. However, AI implementation within Indonesian SFIs has not yet fully extended to strategic functions directly related to Sharia governance. In the realm of financing, AI plays a role in assessing customer eligibility through the use of alternative data. This approach is particularly relevant for micro and small-scale financing, as many prospective customers lack sufficient formal financial histories. Utilizing non-financial data enables financial institutions to gather additional information for assessing a prospective customer's risk profile. Consequently, AI holds the potential to foster financial inclusion while simultaneously enhancing the efficiency of the financing assessment process [6]-[7]. Nevertheless, findings reveal a disparity between AI utilization for operational functions and its application regarding Sharia compliance. The integration of AI into algorithmic and machine-readable Sharia audit mechanisms remains in its early stages. The validation of contracts and new products at most Sharia financial institutions (LKS) still relies on manual processes performed by the Sharia Supervisory Board (DPS). This situation indicates that the digital transformation of LKS has not yet fully shifted from mere process digitization toward technology-based Sharia governance transformation [3]-[4]. Consequently, the primary issue is no longer whether AI can be utilized by LKS, but rather how AI can be integrated into governance structures that ensure efficiency while upholding Sharia compliance principles. This is crucial because the nature of LKS necessitates compliance with both prudential regulations and Sharia principles.

3.2. Opportunities for Artificial Intelligence to Enhance Service Efficiency and Risk Management

Research findings indicate that AI offers significant potential to improve the operational efficiency of LKS. Areas that could benefit from AI implementation include the automation of back-office processes, the personalization of financing products based on risk profiles, and the optimization of liquidity management. In the financial sector more broadly, the use of AI is associated with enhanced efficiency, accessibility, and the capacity of financial institutions to process vast amounts of information [6]-[7]. Regarding risk management, machine learning can be employed to identify historical transaction patterns and provide early indicators of potential default. This approach is particularly relevant for micro and small-scale financing, which have historically faced limitations regarding formal data availability. By processing diverse data sources, AI can help construct more comprehensive risk profiles than assessment methods relying solely on conventional banking data [6]. These opportunities also align with the agenda for Sharia financial inclusion. When AI is used responsibly to enhance an institution's ability to assess prospective clients, the technology has the potential to assist individuals who previously faced barriers to accessing formal financing. Thus, AI offers not only economic efficiency benefits but also the potential to expand access to financial services [7]. However, increased efficiency cannot serve as the sole indicator of successful AI implementation in Sharia financial institutions (LKS). AI models must uphold principles of transparency, accountability, security, and fairness. AI risk management frameworks emphasize risk management throughout the AI system's lifecycle, while AI ethics principles position transparency, fairness, security, and accountability as essential elements in AI development and deployment [3]-[4]. Therefore, the adoption of AI in LKS needs to shift from a

technology-driven approach toward responsible AI governance. This means that technology is evaluated not only by its capacity to generate efficiency but also by the institution's ability to ensure that the resulting decisions are explainable, subject to oversight, and accountable.

3.3. Artificial Intelligence for Fraud Detection and Sharia Compliance

The use of AI for fraud detection holds a strategic position in the financial industry, as the technology can identify unusual transaction patterns much faster than manual reviews. In LKS, this function entails added complexity, as transactions must be assessed not only for financial risk but also for their alignment with Sharia principles. Regarding Sharia compliance, AI systems offer the potential to pre-screen transactions or contract structures that show indications of non-compliance with Sharia principles. Literature on AI and fatwa (religious rulings) indicates that technological advancements enable a more systematic analysis of legal sources and Sharia knowledge, although final decisions still require human authority and judgment [13]-[14]. This approach highlights the importance of the "explainable AI" concept in Sharia finance. It is insufficient for an AI system merely to generate a decision or a warning flag; it must also provide a rationale that is comprehensible to humans. This requirement becomes particularly critical when algorithmic output affects the Sharia compliance status of a product or transaction. In such contexts, algorithmic transparency becomes integral to the legitimacy of the decision, rather than merely a technical system issue [3]-[4]. Thus, AI should be positioned as a decision-support system for the Sharia Supervisory Board (DPS), rather than a replacement for Sharia authority. AI can perform initial screening, pattern identification, anomaly detection, and the provision of supporting information, while the final decision regarding Sharia compliance remains within governance mechanisms that possess institutional legitimacy.

3.4. AI in Customer Service and Financing Analysis

Regarding customer service, the implementation of AI in Indonesian Sharia financial institutions (LKS) tends to be dominated by early-generation, rule-based chatbots. These systems have relatively limited capabilities for deeply understanding linguistic context. This situation indicates room for development toward Natural Language Processing (NLP) systems that are more context-aware and better able to comprehend Sharia financial product terminology. Developing AI-based service systems offers the potential to enhance service speed and consistency. However, these systems must operate within clear boundaries when handling inquiries related to fatwas (religious rulings) or Sharia legal determinations. Questions requiring Fiqh (Islamic jurisprudence) assessment should not be left entirely to automated systems, given the potential for variations in contract contexts, transaction characteristics, and legal interpretations [13]-[14]. In financing analysis, AI can also accelerate the due diligence process for complex financing structures. This is particularly relevant for corporate and syndicated financing arrangements that involve multiple simultaneous contracts. AI systems can assist in identifying key elements within financing documents prior to in-depth review by authorized personnel. Consequently, the most appropriate model for Sharia financial institutions is not full automation, but rather human-AI collaboration. AI serves as an analytical tool and an initial filter, while humans retain control over strategic decisions and those carrying legal or Sharia-related consequences.

3.5. AI in Sharia Financial Institution Governance

At the institutional level, AI offers opportunities to strengthen the function of the Sharia Supervisory Board (DPS) through the development of decision support systems. Such systems can pre-screen products, contracts, and transactions before they undergo review by the DPS. This allows the DPS to focus its attention on cases involving higher levels of complexity and non-compliance risk. However, the analysis reveals the existence of a regulatory grey area. Existing AI governance frameworks do not explicitly specify how AI system outputs should be treated within the formal decision-making processes of the Sharia Supervisory Board (DPS). This situation raises questions regarding the status of AI recommendations, the extent of human accountability for algorithmic outputs, and the audit mechanisms applicable in the event of erroneous decisions [8]-[22]. These issues demonstrate that AI adoption requires a transformation in governance, not merely investment in technology. Organizational governance must define accountability for AI models, validation procedures, audit protocols, model change documentation, and methods for explaining algorithmic decisions to both regulators and customers. In the context of Sharia financial institutions (LKS), these requirements are further complicated by the need for dual compliance. LKS must adhere to both prudential regulations and Sharia principles. Consequently, Sharia-compliant AI governance requires a mechanism that integrates technology, risk management, compliance, and Sharia oversight functions.

3.6. Challenges: Regulation, Data Security, Privacy, Algorithmic Bias, and Digital Literacy

Document analysis identifies five key challenges regarding AI development within Indonesian Sharia financial institutions. First, the fragmentation of authority. Oversight of the financial sector, payment systems, technological innovation, and Sharia compliance involves multiple institutions, including the Financial Services Authority (OJK), Bank Indonesia, and the National Sharia Council of the Indonesian Ulema Council (DSN-MUI). Each holds a distinct mandate, necessitating specific coordination mechanisms to address Sharia-AI issues [8]-[10]-[11]. Second, data security and privacy. AI systems in the financial sector require vast amounts of data. For Sharia financial institutions, this data may encompass transaction details and financial activities with unique characteristics. While personal data protection frameworks provide a legal basis for data management, applying these principles to AI systems requires clear technical governance particularly regarding data usage, processing, storage, and utilization for model training [15]. Third, algorithmic bias. The use of alternative data in credit scoring offers benefits by expanding access to financing, yet it can also introduce bias if the historical data employed contains patterns of inequity. Such risks may result in certain groups receiving disproportionate risk assessments. Consequently, the development of AI systems necessitates fairness testing and periodic evaluation of model performance [3]. Fourth, "shadow AI." The use of AI applications by employees without organizational approval or oversight can create risks regarding information security and data leakage, as well as complicate audit processes. This phenomenon highlights that AI governance must encompass not only official systems developed by the organization but also the use of AI by individuals within it. Fifth, the digital literacy gap. Sharia Supervisory Boards (DPS) play a crucial role in ensuring Sharia compliance; however, the technical expertise required to understand and audit algorithmic systems is not necessarily evenly distributed. This situation underscores the need to enhance DPS capacity through training in AI governance, algorithmic auditing, data governance, and explainable AI. These five challenges demonstrate that the obstacles facing Indonesia's Sharia-AI transformation are multidimensional. The issues involved extend

beyond technology to encompass institutional, regulatory, ethical, data security, and human resource aspects. Therefore, a policy approach focused solely on technology adoption is insufficient to address such complexities.

3.7 International Comparative Analysis

Comparative analysis reveals differences in approach between Indonesia and the countries used for comparison. Malaysia demonstrates a relatively robust model for integrating Sharia governance with fintech development. Its more centralized Sharia governance structure provides an institutional foundation for overseeing technology-driven financial innovation. Malaysia's experience offers a vital lesson: fintech innovation requires the integration of financial regulators and Sharia oversight mechanisms [16]. The United Arab Emirates (UAE) exhibits a more experimental approach, combining banking sector regulation with the development of financial zones that offer greater scope for innovation. This approach highlights the importance of regulatory experimentation in navigating rapidly evolving technologies [15]-[17]. Saudi Arabia is placing greater emphasis on digital infrastructure development and the coordination of digital transformation as part of its economic diversification strategy. This approach demonstrates that the development of financial technology requires not only regulation but also institutional capacity and cross-functional policy coordination. Meanwhile, the UK and Singapore offer lessons on the use of principle-based approaches and regulatory sandboxes. Regulatory sandboxes allow new technologies to be tested in a controlled environment before wider implementation. This approach is relevant for AI because regulators can gain empirical experience regarding technological risks while avoiding regulations that quickly become obsolete [15]-[17]. Compared to these countries, Indonesia's position can be categorized as intermediate. Indonesia possesses a large Shariah financial market and a growing fintech sector, yet formal integration between AI governance and Shariah oversight remains limited. The OJK's AI Governance Handbook has established a foundation for AI governance in the banking sector but has not specifically addressed the relationship between algorithmic outputs and Shariah oversight mechanisms [8]. These findings indicate that Indonesia's primary gap is not merely a technological one, but an institutional integration gap. While Indonesia possesses various regulatory instruments, they are not yet fully interconnected within a unified AI-Shariah finance governance architecture.

3.8 Integration Gap between AI Governance and Shariah Governance

Based on the overall analysis, this study finds that the main challenge in AI development within Indonesian Shariah financial institutions (LKS) lies in the lack of integration between AI governance and Shariah governance. AI governance focuses on issues such as security, transparency, accountability, risk, and data protection, whereas Shariah governance focuses on compliance regarding contracts (akad), products, transactions, and Shariah principles. Historically, these two systems have tended to operate along separate tracks. AI regulation falls within the domain of technology and financial services regulators, while Shariah compliance relies on fatwa mechanisms and oversight by the Shariah Supervisory Board (DPS). As AI begins to be used for analysis or to provide recommendations regarding Shariah-compliant transactions and products, the boundaries between these two domains are becoming increasingly blurred. In this context, an integration mechanism is required to translate Shariah principles into parameters that AI systems can process without compromising human authority. Developing a structured and machine-readable fatwa database is a crucial prerequisite. With this structure, AI can be

utilized to assist in the processes of searching, matching, and filtering Sharia-related information, while the final decision remains the prerogative of legitimate authorities [13]-[14]-[11]. These findings further reinforce the need for an adaptive governance model. AI regulations cannot be treated as static, immutable rules, given the continuous evolution of technology, business models, and algorithmic risks. The concept of "regulatory learning" emphasizes the importance of learning processes and policy adjustments based on implementation experience [16]-[17].

3.9 AI-Sharia Finance Public Policy Transformation Framework (TKP-AIKS)

Based on the analysis, this study proposes the AI-Sharia Finance Public Policy Transformation Framework (TKP-AIKS), comprising eleven stages: Existing Conditions → Problem Identification → Regulatory Analysis → Stakeholder Mapping → AI Utilization → Governance Transformation → Regulatory Strengthening → Policy Implementation → Monitoring → Evaluation → Continuous Improvement [16]-[17]. The first stage, "Existing Conditions," serves to map current AI usage, technological maturity levels, and the institutional capacity of individual Sharia financial institutions (LKS). This mapping is crucial because the capabilities of Sharia commercial banks, Sharia rural banks (BPRS), Sharia micro-finance cooperatives (BMT), and Sharia fintech entities vary significantly. The second stage is "Problem Identification," covering issues such as regulatory fragmentation, data security, algorithmic bias, shadow AI, and the digital literacy gap. This stage ensures that policies are not formulated based on generalized assumptions about AI, but rather on actual problems identified within the Sharia financial ecosystem. The third stage, "Regulatory Analysis," involves mapping the alignment and gaps between regulations concerning the financial sector, data protection, AI governance, and Sharia fatwas (religious rulings). The objective of this stage is to identify areas requiring harmonization or the development of derivative regulations [8]-[22]-[15]. The fourth stage is stakeholder mapping, which encompasses the OJK, Bank Indonesia, the Ministry of Communication and Digital Affairs, DSN-MUI, Sharia financial institutions (LKS), Sharia fintech entities, academics, and the public as service users. This mapping is crucial because the Sharia-AI transformation cannot be implemented by a single institution in isolation. The fifth stage, AI utilization, focuses on use cases deemed viable and beneficial for financial inclusion, risk management, and Sharia compliance. Consequently, AI adoption extends beyond administrative automation to enhance governance quality. The sixth stage, governance transformation, necessitates changes to the internal structures of Sharia financial institutions (LKS). This involves strengthening AI ethics functions and enhancing the competence of the Sharia Supervisory Board (DPS) regarding algorithmic audits. Collaboration between technology experts and Sharia scholars is crucial to ensure AI systems can be understood and overseen from both perspectives [3]-[4]. The seventh stage involves regulatory strengthening through the development of specific instruments addressing AI within Sharia financial institutions. These regulations can complement existing banking AI governance frameworks by incorporating provisions on explainability, algorithmic audits, human oversight, and integration with Sharia compliance mechanisms [8]-[22]. The eighth stage entails the phased implementation of policies. Implementation must account for capacity disparities among Sharia commercial banks, Sharia rural banks (BPRS), Sharia micro-finance cooperatives (BMT), and Sharia fintech entities. A phased approach is essential to prevent regulations from imposing disproportionate compliance burdens on institutions with limited resources. The ninth stage, monitoring, is conducted through periodic reporting, compliance evaluations, and inspections of AI systems. The tenth stage, evaluation, measures policy effectiveness based on indicators regarding

prudential standards, security, transparency, Sharia compliance, and Maqashid Sharia (the objectives of Sharia). The eleventh stage is continuous improvement. Evaluation results serve as input to update the mapping of existing conditions and identify emerging issues. Thus, the TKP-AIKS framework is not a linear model but a cyclical one, enabling policies to adapt to technological changes. This cyclical nature is what primarily distinguishes the TKP-AIKS framework from conventional regulatory models. In a rapidly evolving technological landscape, policies must be designed as a continuous learning process. This approach aligns with the concepts of anticipatory governance and regulatory learning, which emphasize the importance of experimentation, evaluation, foresight, and policy adjustment [16]-[17].

3.10. Policy Implications and Stakeholder Role Allocation

Research findings indicate that the AI-driven transformation of Islamic finance requires a clear division of roles. The Financial Services Authority (OJK) holds a strategic position in developing AI governance standards that specifically account for the characteristics of Islamic financial institutions (LKS). Bank Indonesia plays a role in financial technology innovation and payment systems, while the National Sharia Board of the Indonesian Council of Ulama (DSN-MUI) plays a crucial role in ensuring that Sharia principles are systematically translated into the digital environment [8]-[10]-[11]. On the industry side, Islamic financial institutions need to establish internal AI governance frameworks covering model oversight, data security, algorithmic auditing, and human oversight mechanisms. Islamic banks with greater technological capacity can act as pioneers, establishing best practices that can subsequently be adapted by Sharia Rural Banks (BPRS) and Sharia Micro-Finance Institutions (BMT). Meanwhile, the DSN-MUI has a strategic opportunity to develop a more structured fatwa (religious ruling) database that can serve as a knowledge source for digital systems. This step does not replace the function of ulama (Islamic scholars) or Sharia Supervisory Boards (DPS); rather, it provides a knowledge infrastructure that enables faster and more consistent initial analysis processes. A regulatory sandbox can also serve as an instrument for testing Sharia-compliant AI models prior to widespread implementation. The sandbox approach creates space for regulators, the industry, academics, and Sharia authorities to directly assess technological risks while developing standards based on implementation experience [15]-[17]. Consequently, policies regarding AI in Islamic finance should aim to create an ecosystem that integrates technology, regulation, Sharia authorities, the industry, and public oversight. Such integration is a prerequisite for ensuring that digital transformation not only enhances the efficiency of Islamic financial institutions but also strengthens trust in and the legitimacy of Islamic finance.

4. CONCLUSION

This study concludes that the public policy transformation regarding Artificial Intelligence (AI) utilization in Indonesian Sharia financial institutions is at a critical juncture; while consistent growth in Sharia financial assets and the issuance of an AI governance framework by the OJK (Financial Services Authority) are evident, the two remain unsystematically integrated. Current conditions show AI usage concentrated on customer service, credit scoring, and fraud detection, with minimal integration regarding algorithmic Sharia compliance. Regulatory analysis confirms fragmented authority among the OJK, Bank Indonesia, and the DSN-MUI (National Sharia Board-Indonesian Council of Ulama), which lack a formal coordination mechanism specifically addressing AI in Sharia finance. Comparative analysis reveals that Indonesia lags behind Malaysia in institutional

integration between fintech regulations and Sharia authorities, despite possessing a large domestic market base. The proposed eleven-stage AI governance framework and policy recommendations offer an operational roadmap for stakeholders to accelerate this transformation in a coordinated manner. Academically, this study extends the conceptual frameworks of adaptive governance and responsible AI into the specific context of dual compliance in Sharia finance. Practically, it provides a concrete roadmap for Sharia financial institution management to design AI adoption strategies aligned with Sharia principles. Regarding policy, it underscores the urgent need for regulators to bridge inter-institutional coordination gaps before AI practices in these institutions expand further without an adequate supervisory framework. This study has limitations: (1) as a document-based analysis, findings lack primary data from Sharia financial industry practitioners; (2) the international comparative analysis is descriptive and based on public documents, lacking quantitative analysis of policy effectiveness; (3) the highly dynamic AI regulatory landscape means some findings may change rapidly following this article's publication, given that key regulations such as POJK Number 1 of 2026 are relatively new; and (4) the study did not conduct direct technical audits of AI systems used by specific Sharia financial institutions.

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