Shariah Compliant Blockchain Based Smart Contracts for Enhancing Transparency and Risk Mitigation in Islamic Banking Digital Ecosystems

Fakhrudin Sukmawan [1], Fa'iqah Salsabil Qadiriyyah [2]
Email: f.sukmawan@gmail.com [1], faiqahsalsabil27@gmail.com [2]

Abstract. The rapid digital transformation of Islamic banking institutions has accelerated the adoption of financial technologies, particularly blockchain-based smart contracts. However, the integration of blockchain within Shariah-compliant financial systems remains underexplored in terms of governance, risk mitigation, and regulatory alignment. This study proposes a conceptual and empirical framework for implementing Shariah-compliant smart contracts to enhance transparency, reduce information asymmetry, and mitigate operational risks in Islamic digital banking ecosystems. Using a mixed-method approach combining structural equation modeling (SEM) and expert-based Shariah validation, the study evaluates the impact of blockchain adoption on trust, compliance assurance, and financial performance. Findings indicate that distributed ledger transparency significantly strengthens Shariah governance efficiency and reduces gharar (uncertainty) through automated contract execution. Moreover, smart contracts improve operational cost efficiency while maintaining compliance with Islamic jurisprudential principles. The study contributes to the emerging literature on Islamic fintech by integrating Maqasid al-Shariah objectives with decentralized financial technologies. Policy implications suggest the need for standardized Shariah audit protocols for blockchain systems and collaborative regulatory sandboxes to foster innovation while ensuring compliance. This research provides a strategic roadmap for Islamic financial institutions seeking sustainable digital transformation.

Keywords: Islamic fintech, blockchain, smart contracts, Shariah governance, digital banking.