

## A Sharia Perspective on the Use of Artificial Intelligence (AI) in Sharia Investment Decision-Making

Sandi Andika<sup>1</sup>

<sup>1</sup> Institut Agama Islam Negeri Datuk Laksemana Bengkalis

[sandi.andika@gmail.com](mailto:sandi.andika@gmail.com)

### Abstract

This research is motivated by the rapid development of artificial intelligence (AI) technology, which offers high efficiency but requires in-depth study from a Sharia perspective. The study aims to describe the use of AI in investment decision-making in modern markets and analyze its alignment with Islamic legal principles. Employing a qualitative approach, specifically a literature review and normative-juridical analysis, data were gathered through the examination of relevant literature. The findings indicate that AI integration can mitigate elements of *\*gharar\** (uncertainty) through precise, real-data-based predictions, enhance transparency, and support the preservation of wealth (*\*hifdz al-maal\**). However, a primary challenge lies in "black box" algorithms, which necessitate transparency through Explainable AI (XAI) and human intervention ("human-in-the-loop") to uphold ethical standards. The study concludes that the use of AI in Sharia-compliant investment is permissible and beneficial, provided that algorithmic parameters are strictly supervised by Sharia authorities to avoid *riba* (usury), *\*maysir\** (gambling), and involvement in non-halal industries, and that investment transactions adhere to the provisions of a valid *syirkah* (partnership) contract.

**Keywords:** Artificial Intelligence; Sharia Investment; Modern Market; Gharar Mitigation.

### Introduction

The world of technology is advancing rapidly. (Hendarti et al., 2024) "Research findings indicate that Artificial Intelligence (AI) based models, specifically machine learning models, can significantly enhance the accuracy of market predictions and investment returns within real-time trading environments. These results demonstrate that utilizing AI technology offers advantages not only in data processing speed but also in improving the quality of analysis for investment decision-making. This suggests that integrating intelligent technologies into modern financial systems—including within the context of Sharia finance—holds great potential to drive efficiency, transparency, and the optimization of investment outcomes in a more measurable and systematic manner. Nevertheless, implementing this technology requires further study to ensure alignment with Sharia principles, which prioritize fairness and transparency while avoiding elements of *gharar* (uncertainty/ambiguity), *maysir* (gambling/speculation), and *riba* (usury/interest). These findings, supported by research, show that AI technology offers advantages not only in data-processing speed but also in improving the quality of analysis for investment decision-making. (Prabhakaran, 2024).

Investors can leverage advanced algorithms to analyze market trends and formulate investment strategies for digital assets such as Bitcoin and Ethereum. The evolution of cryptocurrency—particularly through decentralized finance (DeFi) systems has been a

significant global monetary innovation over the past decade. As the pioneering cryptocurrency, Bitcoin introduced a decentralized, peer-to-peer payment system that operates without intermediaries like banks or central authorities, distinguishing it from conventional currency systems. Furthermore, blockchain technology—the fundamental basis of cryptocurrency—offers transparency and security through an immutable record-keeping system. This aligns with Islamic finance principles that emphasize honesty and openness in transactions. Moreover, blockchain-based digital platforms create broader opportunities for Sharia-compliant investments by enhancing accessibility, efficiency, and transparency. This technology also reduces transaction costs and accelerates investment processes, further supporting the development of modern Sharia financial systems. (Rahmawan & Mafruhah, 2023). This aligns with other research indicating that implementing Artificial Intelligence in Sharia financial institutions can enhance operational efficiency by automating transaction processes and enabling rapid, accurate data management, thereby reducing operational costs and boosting productivity. (Nurul Ilahi & I Nyoman Budiono, 2024).

Artificial Intelligence (AI) is a rapidly evolving technology that plays a crucial role across sectors, including finance. AI refers to computer systems' ability to mimic human intelligence by processing information, analyzing data, and making automated decisions. In finance, AI is used to process vast amounts of data (big data), identify market patterns, and help investors make more effective and efficient investment decisions (Prabhakaran, 2024). In practice, AI is widely implemented through machine learning models that learn from historical data and improve prediction accuracy over time. Using this technology in modern financial markets offers a competitive advantage, particularly in the speed of analysis and the ability to manage investment risks. This is supported by research (Sunil Kumar Das, 2024) which states that applying AI in investment can improve decision-making quality and operational efficiency in the financial sector.

Alongside AI, blockchain technology plays a crucial role in transforming modern financial systems. Blockchain is a decentralized, transparent, and immutable digital record-keeping system that enhances security and trust in financial transactions. This technology underpins the development of cryptocurrencies and decentralized finance (DeFi) systems, which offer financial alternatives that operate without intermediaries (Sunil Kumar Das, 2024). In this context, blockchain has the potential to support the principles of transparency and accountability, which align with the values of Sharia finance. Blockchain technology enables the tokenization of physical assets—such as real estate or gold—into smaller digital units, thereby enhancing accessibility and liquidity within Sharia capital markets. This aligns with Islamic principles on tangible asset ownership and helps reduce transaction costs while speeding up the investment process. Smart contracts on blockchain networks can automate investment agreements instantly once conditions are met, reducing risk and ensuring transparent adherence to initial terms. The immutable nature of blockchain record-keeping protects against the manipulation of transaction data; this supports the principle of honesty in Islamic finance and fosters a more secure investment ecosystem for both retail and institutional investors. Furthermore, blockchain-based digital platforms create broader opportunities for Sharia-

compliant investment by expanding service reach, particularly in areas with limited access to conventional technology.

From an Islamic economic perspective, technology use in economic activities must remain grounded in Sharia principles. A key concept is *maqashid sharia*—the fundamental objectives of Islamic law—which encompass preserving religion, life, intellect, lineage, and property. In investment, AI applications must generate public benefit (*maslahah*) and avoid practices prohibited under Sharia, such as excessive speculation (*maysir*) and high levels of uncertainty (*gharar*). Therefore, while AI can enhance efficiency, its use requires oversight to ensure it does not deviate from Sharia values. Furthermore, transparency in financial systems is a primary concern in Islamic economics; technologies such as blockchain can support this principle because of their open and tamper-proof nature. This aligns with research (Taherdoost & Drazenovic, 2024) stating that the integration of AI and digital technologies in investment can enhance trust and efficiency within modern financial systems.

This study aims to describe and analyze the suboptimal use of technologies such as Artificial Intelligence (AI) and digital transactions across various regions. The research seeks to identify measures to enhance technology adoption, develop the sharia economy, and examine how limited technology use affects the efficiency and reach of sharia financial services. Additionally, it aims to identify the barriers hindering technology adoption within *sharia* financial institutions, particularly in areas with limited access.

This research clarifies the importance of leveraging technologies such as Artificial Intelligence (AI) and digital transactions to support the development of the Sharia economy. It can serve as a reference for Sharia financial institutions seeking to enhance efficiency and decision-making accuracy, as well as to expand service outreach to the public, particularly in areas with limited technological access. Furthermore, the findings help identify various obstacles to technology adoption, enabling the formulation of appropriate solutions to optimize its use.

Thus, this research is expected to improve the quality of Sharia financial services, strengthen competitiveness, and support more equitable financial inclusion in the digital era. Furthermore, it aims to provide a comprehensive overview of the role and application of Artificial Intelligence (AI) in investment decision-making within modern Sharia markets, assess its alignment with Sharia principles, and evaluate its contribution to fostering an Islamic economy that is more inclusive, efficient, and sustainable.

## Research Methods

This study employs a qualitative approach—specifically a descriptive-analytical method—to provide an in-depth overview and comprehensive understanding of the role and application of Artificial Intelligence (AI) in investment decision-making within modern Sharia markets. The research methodology is a literature review, in which data were gathered by searching and examining relevant literature—such as scholarly journals, books, and prior research on the effectiveness of neural networks in market prediction—as well as documents on blockchain technology and cryptocurrency. Here, "Neural Networks" refers to Artificial Neural Networks (ANN). These are not biological

neural networks like those found in the human brain; rather, they are mathematical and computational models that mimic how human nerve cells (neurons) process information.

Data collection involved a literature review to identify barriers to technology adoption and the impact of restricted access to Sharia-compliant financial services. After data collection, the study conducted a qualitative analysis including data reduction, systematic presentation, and conclusion drawing to assess how digital technology aligns with Sharia principles such as honesty, transparency, and the public interest (*maslahah*). Furthermore, this study employed a normative-juridical approach (a legal analysis method) to examine whether AI mechanisms and digital transactions in modern markets meet Sharia compliance standards—specifically regarding the absence of *gharar* (uncertainty), *maysir* (gambling/speculation), and *riba* (usury)—thereby serving as a reference for financial institutions seeking to enhance efficiency and financial inclusion in the digital era.

To ensure data integrity, this study uses source triangulation by comparing references from journals, books, and prior research. Selecting credible literature from trustworthy sources also enhances the study's validity and reliability. Consequently, the findings are expected to provide an accurate, scientifically sound analysis.

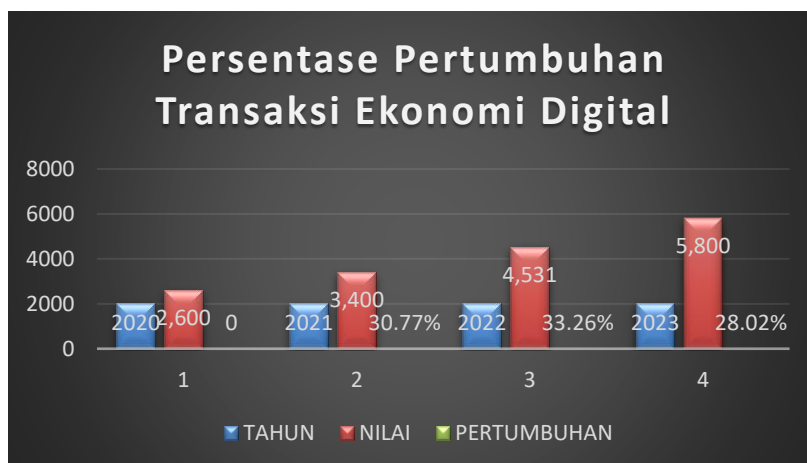
## Results And Discussion

Based on secondary data from the Financial Services Authority (OJK), digital technology in Indonesia's financial sector has grown significantly. This is evidenced by the rising number of users of digital financial services, including fintech and technology-based investments (OJK, 2023) Noting that the transaction value of fintech lending in Indonesia has reached over IDR 300 trillion, reflecting the high level of technology adoption in the public's financial activities.

In addition, data from (Bank Indonesia, 2022) indicates that the value of Indonesia's digital economic transactions continues to rise annually. In 2022, the value of digital transactions reached approximately IDR 4,531 trillion and is projected to keep growing alongside technological advancements and rising public digital literacy. This demonstrates that technology—including Artificial Intelligence (AI)—plays a crucial role in accelerating transactions and enhancing the efficiency of the financial system.

In investment, AI has been shown to improve efficiency and accuracy in decision-making. This aligns with research (Prabhakaran, 2024) which states that AI can help investors analyze market data more quickly and accurately. In addition, research (Sunil Kumar Das, 2024) It also demonstrates that AI plays a role in portfolio management and price prediction, thereby enhancing the quality of investment decisions.

The following is an example of data that can be visualized in the form of a graph:



Based on the calculations, the growth of digital economic transactions in Indonesia shows a significant annual trend. Growth reached 30.77% in 2021, rose to 33.26% in 2022, and remained high at 28.02% in 2023.

This shows a consistent rise in digital technology adoption within the financial sector. Such rapid growth indicates an increasing reliance on technology for economic activities, including investment decision-making. This trend also reinforces the potential to integrate Artificial Intelligence (AI) into modern financial systems; as the volume of generated data grows, so does the need for technology that can manage and analyze it quickly and accurately. Consequently, AI emerges as a relevant solution for enhancing the efficiency and quality of investment decisions.

Integrating Artificial Intelligence (AI) into modern Sharia markets is not merely a matter of technical efficiency; it must also address challenges related to Islamic legal compliance. Based on an analysis of the literature, there are three crucial points concerning the implementation of AI that align with Sharia principles:

#### Mitigating Gharar (Uncertainty) through Precision Prediction

In Sharia-compliant investment, *gharar* refers to prohibited levels of uncertainty or excessive risk. Machine learning algorithms can mitigate information asymmetry, a common source of *gharar*. AI analyzes complex market variables in real time, ensuring investment decisions are grounded in factual data rather than speculation. This aligns with research indicating that algorithmic transparency in risk analysis can enhance Sharia compliance in digital financial transactions. (Putri Agustiyani et al., 2025)

One element of *gharar* arises from *jahl*—or a party's lack of knowledge—regarding the subject matter of the contract. Through predictive analytics systems, AI not only provides numerical forecasts but also breaks down investment outcome probabilities into easily understandable visualizations. Consequently, investors gain a clearer picture of risk profiles and potential returns, directly reducing uncertainty in decision-making..

Automated screening of issuers also helps mitigate *gharar*. AI can process financial reports at scale to ensure interest-based debt ratios and non-halal income remain below the thresholds set by the National Sharia Board. This ensures investment assets

consistently remain within the bounds of Sharia compliance, rather than meeting requirements only during the annual reporting period.

### AI as a Tool for Implementing Maqashid Sharia

The utilization of AI in investment decision-making must be directed toward achieving *hifdz al-maal* (the preservation of wealth). With AI's capability to detect anomalies and potential fraud, investor assets can be safeguarded against market manipulation. Research indicates that intelligent technology can foster an investment ecosystem that is more inclusive and secure—elements that lie at the heart of the public good (*maslahah*) within the Islamic economy (Kurniawan & Lampung, 2025).

Implementing Artificial Intelligence (AI) technology within the Sharia investment ecosystem plays a crucial role in mitigating *gharar* (uncertainty) through precise predictive capabilities. Machine learning algorithms can reduce information asymmetry—often the primary source of *gharar*—by analyzing complex market variables in real-time. This ensures every investment decision is grounded in factual data rather than speculation, aligning with algorithmic transparency to support Sharia compliance. (Kasim, 2023). Furthermore, this technology can analyze outcome probabilities through accurate data visualization, reducing the element of *\*jahil\** (uncertainty or lack of knowledge) regarding the subject matter of the contract. With the Dynamic Risk Assessment system, investment managers can detect market manipulation or anomalous price movements early, shifting the investment paradigm from reactive to proactive to safeguard the public interest (Nirmala et al., 2025).

Within the framework of *Maqashid Sharia*, AI use must be strategically directed toward achieving *hifdz al-maal* the preservation of wealth. AI serves as a security tool that automatically detects anomalies and potential fraud, thereby safeguarding investors' assets against detrimental manipulative practices.

### Ethical and Algorithmic Accountability Challenges

While AI offers accuracy, challenges arise regarding "black box" algorithms. From a Sharia perspective, every transaction must possess clarity (*\*bayyan\**). Therefore, implementing AI in the Sharia capital market requires oversight from the Sharia Supervisory Board (DPS) to ensure the AI's parameters do not involve elements of *\*riba\** (usury) or support non-halal industrial sectors. Sharia financial institutions must ensure human intervention—a "human-in-the-loop" approach—to uphold ethics and morality in every automated decision. (RISKA, 2024).

A primary challenge with "black box" algorithms is ensuring that humans can understand the logic behind investment decisions. In Islam, such ambiguity risks compromising the contract's validity. Consequently, the Sharia finance industry is shifting toward Explainable AI (XAI). This technology provides transparent explanations of the parameters behind every prediction, satisfying the requirement for *Bayyan* (clarity) and avoiding *Gharar* (uncertainty) arising from a lack of insight into the underlying processes.

The "human-in-the-loop" concept ensures that automated decisions remain under the control of human legal subjects (*\*mukallaf\**). Investment managers and the Sharia

Supervisory Board (DPS) serve as the ultimate arbiters, ensuring that – even when figures indicate high returns – decisions do not violate principles of social welfare (*maslahah*) or environmental ethics mandated by Sharia.

Accountability does not end when the system is created; it must be maintained throughout the system's operation. Sharia financial institutions need to implement "Digital Sharia Audit" mechanisms. This entails routinely examining the training data used by AI to ensure no bias toward prohibited sectors, such as the tobacco industry, gambling, or interest-based (*riba*) financial institutions.

## Conclusion

Based on the analysis, this study concludes that implementing Artificial Intelligence (AI) significantly enhances market prediction accuracy, operational efficiency, and the quality of risk analysis within the financial ecosystem. From an Islamic legal perspective, this technology plays a crucial role in mitigating *gharar* (uncertainty/ambiguity) by reducing information asymmetry through the real-time analysis of complex market variables and by providing investors with transparent visualizations of outcome probabilities. Furthermore, AI supports the realization of *Maqashid Sharia* – specifically the objective of *hifdz al-maal* (preservation of wealth) – by detecting anomalies and potential fraud, thereby safeguarding asset security.

The primary advantage of AI is its ability to process big data rapidly and objectively, ensuring investment decisions are grounded in factual data rather than speculation. The system also enables automated, consistent screening of issuers, ensuring that all investment instruments remain compliant with the standards set by the National Sharia Board. Despite these technical advantages, this study identifies a fundamental accountability challenge stemming from the "black box" nature of algorithms, which risks introducing ambiguity (*\*jahl\**) into the contractual (*\*aqd\**) process. Since AI lacks moral consciousness (*\*dhamir\**), human intervention – through a "human-in-the-loop" approach – remains essential to oversee the ethical and moral aspects of every automated decision.

As a next step in development, a more in-depth study is needed on standardizing "Digital Sharia Audits" for the training data used by AI to prevent bias toward prohibited sectors. Furthermore, optimizing Explainable AI (XAI) technology has become urgent to ensure that every algorithmic parameter can be explained transparently, thereby satisfying the principle of *bayyan* (clarity) and upholding the validity of transactions in Sharia investments.

## Daftar Pustaka

- Bank Indonesia. (2022). Statistik Ekonomi dan Keuangan Indonesia. In *Bank Indonesia* (Vol. 2010, pp. 300–301). <https://www.bi.go.id/id/statistik/ekonomi-keuangan/seki/Default.aspx>
- Hendarti, Y., Winarno, B., & Primbang Aprilianto, M. (2024). Use of Blockchain Technology and AI in Sharia Financial Risk Management. *Jurnal Ekuisci*, 1(3), 155–163. <https://doi.org/10.62885/ekuisci.v1i3.165>

- Kasim, R. S. R. (2023). A SMART SHARIAH-BASED DECISION-MAKING IN ISLAMIC FINTECH. *I-IECONS e-Proceedings*, 731–737.
- Kurniawan, A., & Lampung, B. (2025). *Saat Artificial Intelligence ( AI ) Bertemu Akuntansi Syariah : Inovasi Cerdas atau Dilema Etis ?* 10(2), 267–290.
- Nirmala, D., Chidambaram, P. K., Singh, B., Badhouthiya, A., Deorari, R., & Husseyn, M. (2025). AI-Driven Insights for Accurate and Reliable Risk Assessment in the Stock Market. *2025 International Conference on Technology Enabled Economic Changes (InTech)*, 152–157.
- Nurul Ilahi, & I Nyoman Budiono. (2024). Penerapan Artificial Intelligence Sebagai Inovasi Di Era Disrupsi Dalam Mengurangi Resiko Keuangan. *Moneta: Jurnal Manajemen & Keuangan Syariah*, 3(1), 19–30. <https://doi.org/10.35905/moneta.v3i1.10145>
- OJK. (2023). *Otoritas Jasa Keuangan*.
- Prabhakaran, D. P. (2024). Revolutionizing Stock Trading: The Impact of AI on Decision-Making and Efficiency. *International Journal for Research in Applied Science and Engineering Technology*, 12(8), 849–852. <https://doi.org/10.22214/ijraset.2024.64018>
- Putri Agustiyani, V., Renaldo, R., & Baza, I. (2025). Inovasi Teknologi Keuangan Syariah melalui Fintech Syariah, Digitalisasi Layanan dan Crowdfunding Halal di Era Digital (Studi Kasus di Bank Riau Kepri Syariah Provinsi Riau). *Journal of Accounting and Finance Management*, 6(3), 1569–1580. <https://doi.org/10.38035/jafm.v6i3.2274>
- Rahmawan, B. A., & Mafruhah, A. Y. (2023). *Pengaruh Cryptocurrency terhadap Aktivitas Ekonomi : Sebuah Tinjauan Pustaka Sistematis*. 61–68.
- RISKA. (2024). *ANALISIS PENERAPAN FINTECH SYARIAH TERHADAP EFISIENSI OPERASIONAL DAN KEPATUHAN SYARIAH PADA PERBANKAN SYARIAH DI INDONESIA*.
- Sunil Kumar Das. (2024). The Role of AI in Financial Markets: Impacts on Trading, Portfolio Management, and Price Prediction. *Journal of Electrical Systems*, 20(6s), 1000–1006. <https://doi.org/10.52783/jes.2804>
- Taherdoost, H., & Drazenovic, G. (2024). *Impact of Artificial Intelligence on Investment: A Narrative Review BT - Evolutionary Artificial Intelligence* (D. Asirvatham, F. M. Gonzalez-Longatt, P. Falkowski-Gilski, & R. Kanthavel (eds.); pp. 275–286). Springer Nature Singapore.