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Artificial intelligence and Islamic finance: A Scopus-based literature mapping through a PRISMA protocol

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Abstract

Purpose – This study examines the development of copus-based literature on the application of Artificial Intelligence (AI) in Islamic finance with a specific focus on its legal-normative implications within the framework of Islamic law (Sharia). It seeks to identify prevailing trends, technological implementations, and multidisciplinary approaches shaping this emerging field while assessing how these developments interact with and potentially influence Sharia compliance standards, fatwas, and governance mechanisms in Islamic finance.

Methodology – A Systematic Literature Review (SLR) based on the PRISMA protocol was applied. Data were retrieved exclusively from Scopus, using strict inclusion criteria to ensure relevance and quality.

Findings – Academic interest in AI integration into Islamic finance has grown markedly since 2020, with conference proceedings dominating the output. AI technologies such as blockchain, cloud computing, and Natural Language Processing (NLP) have been explored in diverse contexts. Research reflects a multidisciplinary lens covering the technical, ethical, legal, and Sharia compliance dimensions. AI is viewed as a strategic enabler for financial inclusion, social fund management automation, and enhancement of *maqāṣid al-sharīʿah*–oriented services.

Implications – The findings underscore the importance of scholars, regulators, and Sharia governance bodies in ensuring that AI adoption upholds fiqh muʿāmalāt and ethical imperatives. This mapping provides a foundation for future research and policymaking toward innovative Sharia-compliant AI systems.

Originality – This research is among the first systematic reviews that explicitly map copus-based academic discourse on AI applications in Islamic finance using a PRISMA-based SLR approach. This emphasizes the interdisciplinary nature and growing international engagement in developing Sharia-compliant AI solutions.

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Introduction

The rapid advancement of digital technology, particularly in the field of Artificial Intelligence (AI), has brought about significant transformation across various sectors, including the financial industry (Hentzen et al., 2022). AI has emerged as a critical component of the Fourth Industrial Revolution, playing a central role in automating processes, enhancing efficiency, and supporting data-driven

decision making (Sarea et al., 2021). In the financial sector, AI is applied across a wide range of services such as robo-advisory, risk management, fraud detection, credit analysis, and transaction automation. Its ability to process vast amounts of data and learn autonomously positions AI as a strategic tool for developing financial systems that are faster, more adaptive, and more personalized (Zamani et al., 2023).

Within the context of Islamic finance, the application of AI presents substantial opportunities to enhance both the efficiency and the inclusivity of the Sharia-compliant financial system (Sarea et al., 2021). AI enables the rapid and accurate development and customization of Islamic financial products in response to user needs, including aspects such as Sharia compliance, halal screening, and the management of zakat, waqf, and Islamic microfinance. This technology can also reinforce public trust through greater transparency and automated processes aligned with the principles of Islamic commercial jurisprudence (*mu'āmalah*) (Arsyad et al., 2025; Ashraf, 2023; Hamadou et al., 2024). Nevertheless, the integration of AI into Islamic finance has introduced several challenges. One of the most pressing concerns is ensuring that algorithm-based systems and AI technologies adhere to the Sharia principles (Ashraf, 2023). For instance, the use of smart contracts in financial agreements, validity of machine-generated decisions, and legitimacy of algorithms used for transaction filtering in accordance with Islamic law are critical issues that require the attention of Sharia scholars, technologists, and regulators (Arsyad et al., 2025). The imbalance between the rapid pace of technological innovation and preparedness of regulatory and fatwa frameworks remains an unresolved issue.

In recent years, interest in the synergy between AI and Islamic finance has grown, as reflected in an increasing number of scholarly publications examining the intersection of normative, practical, and technological perspectives, particularly in efforts to improve business processes and financial performance in the Islamic banking sector. Various studies indicate that AI technologies can significantly optimize operational efficiency and enhance financial strategies within Islamic financial institutions. One notable application of AI in Islamic banking is the development of early warning systems to predict financial outcomes. Research suggests that Artificial Neural Networks (ANNs) outperform traditional methods, such as support vector machines, in forecasting profit-sharing ratios in Islamic banks, offering higher accuracy in managing financial variability during periods of economic uncertainty (Anwar & Ali, 2018). This capability is particularly important for Islamic banks operating under strict Sharia principles, in which financial miscalculations can affect both profitability and ethical compliance.

Moreover, the integration of AI strengthens the risk assessment processes in Islamic finance. Recent studies discuss how AI tools, including deep learning models, are being employed to detect fraud and develop investment strategies aligned with Islamic financial principles, thereby improving investor confidence and financial performance (Kılıç, 2023). The use of big data analytics and machine learning algorithms supports Islamic banking institutions in reducing risk and improving the accuracy of their financial operations (Sarea et al., 2021).

Islamic banks' performance is also influenced by the adoption of fintech innovations that utilize AI to enhance customer engagement and service delivery. For example, mobile banking applications have been specifically designed to meet the needs of Islamic banking clients by integrating features that comply with Sharia, thereby expanding access to financial services (Yusron & Suryandari, 2022). Furthermore, AI's role of AI in organizational learning and transformational leadership highlights its potential to facilitate strategic changes within Islamic banks. Research has revealed that AI-supported knowledge management contributes to the development of more effective transformational leadership, which is essential for fostering a culture of innovation within these institutions (Rianto et al., 2021). These findings underscore the necessity for Islamic banks to leverage AI capabilities to cultivate a culture of continuous improvement and agility in responding to the rapidly evolving financial landscape. In conclusion, the convergence of AI and Islamic finance not only enhances efficiency, risk management, and service quality but also aligns with'slamic banking the ethical imperatives. The ongoing adaptation and implementation of this technology are expected to play a vital role in strengthening Islamic banking institutions' financial

performance, while ensuring compliance with Sharia principles and addressing the demands of modern finance.

Despite the growing body of research on Artificial Intelligence (AI) and Islamic finance, there remains a notable scarcity of studies that systematically and comprehensively map the global literature on the intersection of these two fields using structured methodological approaches such as the Systematic Literature Review (SLR) guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol. The PRISMA-based SLR approach offers distinct advantages in ensuring transparency, accuracy, and replicability of the review process, thereby providing a holistic and objective overview of the existing research landscape (Moher et al., 2010, 2015). The absence of such a comprehensive synthesis poses a challenge for both academics and practitioners in strategically directing the development of AI technologies in alignment with Islamic finance principles.

A thorough and systematic review of the diverse approaches and studies conducted globally is essential to understanding the complexity and advancement of AI applications within the domain of Islamic finance. With the rapid advancement of AI technologies and increasing demand for innovation in Sharia-compliant financial services and management, the exploration of AI integration into Islamic finance has become both timely and critically important. Accordingly, this study was conducted to address several key research questions to guide the investigation in a structured and comprehensive manner. The research questions (RQs) posed are as follows:

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RQ1: What are the dynamics of publication and diversity of scholarly approaches in studies applying AI to Islamic finance?

RQ2: What AI applications have been discussed in academic literature related to Islamic finance, and how do these applications address, interpret, or operationalize Islamic legal principles and *maqāṣid al-sharī'ah*?

Based on these research questions, this study set forth two interrelated objectives. First, we identify and map the trends in publications as well as the various scientific approaches employed in AI-related Islamic finance research from 2015 to March 2025 (RQ1). Using the PRISMA-based SLR methodology, this study systematically explores academic developments and perspectives that contribute to the understanding of AI integration in Islamic finance, encompassing both national and international literature. In doing so, this study pays particular attention to works addressing regulatory compliance under national financial authorities (e.g., OJK) and Sharia governance bodies (e.g., DSN-MUI), as these directly relate to the implementation and interpretation of Islamic law in the digital financial ecosystem. Second, we classified and analyzed the types of AI applications and implementations discussed in the existing literature (RQ2). This analysis seeks to uncover the characteristics, contexts, and benefits of AI adoption across key areas of Islamic finance, such as Sharia compliance, service enhancement, and operational efficiency. Special emphasis is placed on AI systems designed for Sharia screening, automated fatwa compliance checks, and RegTech solutions for real-time verification of Islamic contracts—applications that directly operationalize Islamic legal principles into financial transactions.

This study not only serves as a well-organized repository of literature but also functions as a strategic navigation tool for academics, Islamic finance practitioners, and policymakers to interpret the evolving research landscape of AI in Islamic finance. Given that AI applications can directly affect the interpretation, enforcement, and operationalization of Islamic law in finance, this

review provides insights into how technological adoption aligns with maqāṣid al-sharīʿah and existing Sharia rulings. Accordingly, this study makes significant contributions to both theoretical and practical perspectives.

In terms of its benefits, this study is expected to contribute across two dimensions. Theoretically, it enriches scholarly discourse by offering a methodologically rigorous, systematically documented, and comprehensive synthesis of literature, thereby establishing a strong academic foundation for future studies in the domains of AI and Islamic finance. The findings of this study are intended to serve as a strategic reference for Islamic financial institutions, technology developers, regulators, and other stakeholders in formulating effective, efficient, and Sharia-compliant AI policies, innovations, and applications. Based on reliable data and scientific analysis, Islamic finance practitioners can make more informed and optimal decisions to navigate the opportunities and challenges of digitalization.

Literature Review

Artificial Intelligence (AI) and its intersection with Islamic finance offer transformative potential to enhance the efficiency and accessibility of financial services while adhering to Sharia principles. The recent literature suggests that AI applications can significantly impact decision-making processes within Islamic banks by providing better compliance checks and risk assessments relevant to Sharia law (Abdullah et al., 2024). Moreover, the integration of AI can foster operational efficiency and cost-effectiveness by automating processes that are traditionally manual, thus alleviating the workload of Sharia committees and financial advisors within these institutions (Harun et al., 2024; Judijanto et al., 2024). This development underscores the necessity for Islamic financial institutions to adapt to technological advancements, positioning them as competitive entities in the global financial landscape (Supriadi et al. 2023).

Fintech innovations such as blockchain and robo-advisory services have emerged as pivotal tools that facilitate the integration of technology within Islamic finance frameworks. These technologies can be leveraged to ensure compliance with Sharia regulations, while enhancing transparency and trust in transactions (Putri & Hanif, 2024; Rakhman et al., 2022). Blockchain technology, in particular, offers secure transaction-recording mechanisms that align with the ethical considerations of Islamic finance, thus potentially revolutionizing traditional practices (Unal & Mustapha, 2020; Unal & Aysan, 2022). The rise of fintech is not limited to enhancing operational mechanisms but also extends to improving customer access to Sharia-compliant financial products, which are essential for fostering financial inclusion among underbanked populations (Baber, 2019; Judijanto et al., 2024).

The literature also indicates challenges inherent in the adoption of AI and Fintech solutions in the Islamic finance sector. These challenges primarily revolve around ensuring Sharia compliance and protecting consumer interests amid a rapidly evolving digital landscape (Amalia et al., 2024; Posumah, 2024). Some studies argue that while fintech presents opportunities for growth, the lack of standardized regulatory frameworks can hinder its effectiveness in Islamic finance (Santoso et al., 2019). Nevertheless, robust frameworks for monitoring and ensuring compliance can help mitigate these challenges, leading to a more extensive embrace of technology-driven solutions across Islamic financial institutions (Rakhman et al., 2022).

Overall, the synergy of AI and Fintech within Islamic finance embodies a significant paradigm shift that can lead to increased inclusivity, innovation, and resilience in the sector. This evolution is critical in addressing the needs of diverse communities within the Islamic financial landscape while remaining steadfast in adhering to ethical and Sharia-compliant imperatives.

Research Methods

This study adopted a Systematic Literature Review (SLR) approach guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework developed by Moher et al. (2015). PRISMA is widely recognized as a comprehensive and reliable standard protocol for ensuring transparency, accountability, and reproducibility in the process of selecting

and analyzing scholarly literature (Ahmad et al., 2023; Ashiq et al., 2022; Safdar et al., 2021). By utilizing the PRISMA protocol, this study systematically followed the stages of identifying relevant literature sources, selecting studies based on rigorous inclusion and exclusion criteria, assessing eligibility, and conducting final inclusion, analysis, and synthesis. This approach enables the filtering of relevant, academically valid, and methodologically sound literature for further analysis, thereby enhancing the validity and reliability of the study's findings and providing a strong foundation for generalizing the results (Parums, 2021).

The data for this study were sourced from the Scopus database, which focuses on global scholarly literature that explores the intersection between Artificial Intelligence (AI) and Islamic Finance. This review encompasses the application of AI to products, services, regulations, risk management, and innovation within the Islamic financial sector. The publication window was set from 2015 to March 2025 to capture the recent developments over the past decade. A systematic search strategy was employed using the following keyword syntax: ((TITLE-ABS-KEY(artificial AND intelligence) AND TITLE-ABS-KEY(Islamic AND finance))), applied to article titles, abstracts, and keywords to ensure the inclusion of relevant and representative literature.

For the literature selection process, strict inclusion and exclusion criteria were established (see Table 1).

Table 1. Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Topic	Studies discussing applications, impacts, or integration of AI in the context of Islamic finance	Studies unrelated to AI and/or Islamic finance
Publication type	Peer-reviewed journal articles, conference proceedings, research reports	Opinion pieces, editorials, news articles, popular essays, reviews, book chapters
Language	English	Non-English
Publication period	2015 to March 2025	Publications prior to 2015
Study methodology	Empirical studies, literature reviews, conceptual models related to AI and Islamic finance	Irrelevant or non-systematic studies

Source: Author's Criteria

The literature selection process is conducted in three stages. The first stage involved initial identification, where all retrieved articles were screened based on their titles and abstracts to assess their relevance to the research focus. The second stage involved more in-depth screening, during which the full texts of the articles that passed the first stage were thoroughly reviewed to ensure alignment with the research objectives and methodological criteria. The third stage was an eligibility assessment, involving a final evaluation to confirm that the articles specifically addressed the relationship between Artificial Intelligence and Islamic finance, thereby qualifying them for systematic analysis.

Each stage of the selection process was meticulously documented in a PRISMA flow diagram, which illustrated the number of articles identified, screened, excluded, and ultimately included in the analysis.

Data from the selected articles were systematically extracted and coded using a manual process supported by Microsoft Excel to ensure accuracy and traceability (Moher et al., 2015). The extracted information included publication details (title, authors, year, and source), research objectives, methodological approaches, types of AI applications in Islamic finance, as well as key findings and scholarly contributions. The coding process followed an inductive thematic analysis approach outlined by Andreini and Bettinelli (2017) and Braun and Clarke (2006). The initial codes were generated manually by identifying recurring concepts and patterns across the extracted data. These codes were then compared, refined, and grouped into broader categories, which were subsequently synthesized into overarching themes that reflected the main areas of AI application, emerging trends, and challenges within the context of Islamic finance. The entire process of theme

generation and refinement was conducted collaboratively by the authors to minimize bias, with discussions held at each stage to ensure consistency and agreement on code assignments. Where applicable, descriptive bibliometric analysis was conducted to map the temporal, geographical, and institutional distribution of the analyzed publications. The integration of thematic and bibliometric approaches ensured that the findings were both rich and analytically robust. All steps, from the development of the search strategy to the final synthesis of themes, were systematically documented for transparency and replicability.

Based on the initial search conducted in the Scopus database, 48 documents were identified as potentially relevant to the research topic, namely the application of Artificial Intelligence (AI) in Islamic finance. Following the identification process and removal of duplicate entries, three duplicate documents were found, resulting in 45 unique articles eligible for further analysis.

The next stage involved screening the documents based on their titles and abstracts. Each document was carefully examined to ensure alignment with the research focus in terms of topic, objectives, and scope. The screening process revealed that 31 articles were not relevant, either because they addressed issues related to Islamic finance without specifically discussing AI or because they did not directly examine the application, impact, or integration of AI within the context of Islamic finance. Consequently, 14 articles remained.

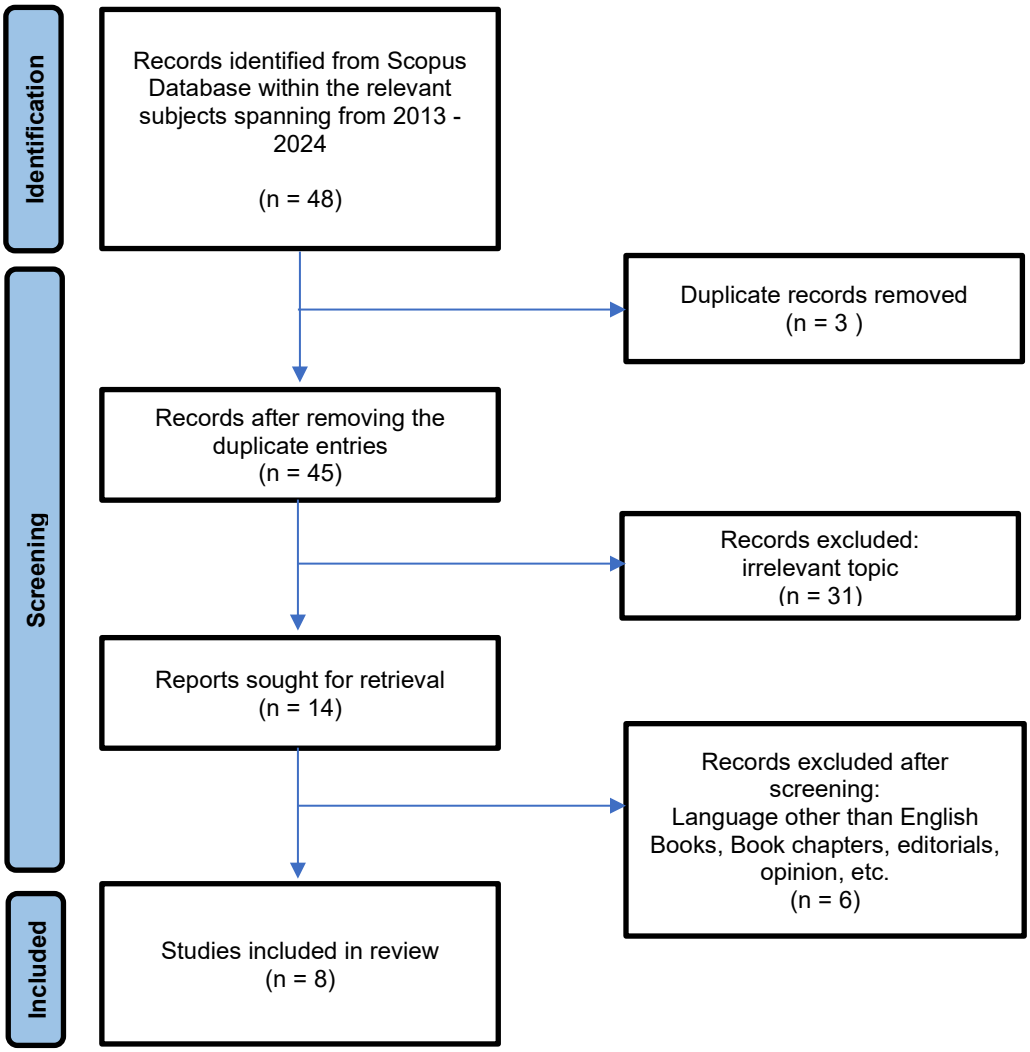

Figure 1. Flow of searched information (PRISMA statement)
Source: Author's Analysis

The subsequent phase consisted of a comprehensive full-text review of articles that passed the initial screening. This evaluation was guided by the remaining inclusion criteria, such as methodological appropriateness, use of English, full-text accessibility, and the presence of

analyzable data or arguments. As a result, 23 articles were excluded for reasons including availability only in abstract form, being written in languages other than English or Indonesian, being classified as opinion pieces, editorials, news articles, popular essays, reviews, book chapters, or lacking findings relevant to the study's focus.

Ultimately, through a rigorous selection process, eight articles met all established criteria and were deemed suitable for systematic analysis. The selected articles form the foundation for identifying key themes, mapping strategic directions, and drawing the main conclusions of this study (see Figure 1).

Results and Discussion

Publication dynamics and diversity of studies

This study aims to identify and analyze the strategies that have been implemented or developed for the application of AI in Islamic finance through an SLR approach. The article selection process involved a thorough search of the Scopus database, resulting in eight core documents that are relevant and published between 2015 and March 2025. These articles reflect the diversity of approaches, models, and challenges concerning the application of AI in Islamic finance across different regions.

Table 2. List of articles, year, and document type

No.	Title	Authors	Year	Document type
1	An artificial intelligence and NLP based Islamic FinTech model combining zakat and Qardh-Al-Hasan for countering the adverse impact of COVID 19 on SMEs and individuals	Syed M.H.; Khan S.; Rabbani M.R.; Thalassinos Y.E.	2020	Article
2	Chatbot as islamic finance expert (CaIFE): When finance meets artificial intelligence	Khan S.; Rabbani M.R.	2020	Conference paper
3	Wıll Artıfıcıal Intellıgence Rejuvenate Islamıc Fınance? A Versıon of World Academıa; [Yapay Zeka İŭslamıƐ Finansa Canlılık Katabilecek mi? Bir Dünya Akademisi Örneği]	Abbas K.; Hafeez M.	2021	Article
4	ABCD technology-AI, Blockchain, Cloud computing and Data security in Islamic banking sector	Swain S.; Gochhait S.	2022	Conference paper
5	Ethical Concerns in Artificial Intelligence (AI): The Role of RegTech and Islamic Finance	Rabbani M.R.; Sarea A.; Khan S.; Abdullah Y.	2022	Conference paper
6	The Law Alteration on Artificial Intelligence in Reducing Islamic Bank's Profit and Loss Sharing Risk	Yuspin W.; Wardiono K.; Budiono A.; Gulyamov S.	2022	Article
7	Analysis and Visualization of Scientific Research on Islamic Banking and Artificial Intelligence	Skibińska E.; Tayachi T.	2023	Conference paper
8	AI in the Financial Sector: The Line between Innovation, Regulation and Ethical Responsibility	Ridzuan N.N.; Masri M.; Anshari M.; Fitriyani N.L.; Syafrudin M.	2024	Review

Source: Scopus.com (Data processed, 2025)

As shown in Table 2, eight documents on the topic of Artificial Intelligence (AI) in the context of Islamic finance were retrieved from the Scopus database. The types of documents collected varied, although conference proceedings dominated (four documents), followed by three journal articles and one review article. This composition suggests that the topic of AI in Islamic

finance is still relatively new and evolving, with much of the current research being presented in academic forums, such as conferences, before being further developed into more comprehensive journal publications.

Several studies highlight the broader integration of advanced technologies within the Islamic financial sector. For example, Swain and Gochhait (2022) discussed the implementation of ABCD technologies—Artificial Intelligence, Blockchain, Cloud Computing, and Data Security—in Islamic banking. Meanwhile, an innovative, solution-oriented approach was presented by Syed et al. (2020), who developed an AI- and Natural Language Processing (NLP)-based Islamic fintech model that integrates Zakat and *Qardh al-Hasan* to address the socioeconomic impact of the COVID-19 pandemic on SMEs and individuals. This study illustrates how AI can be optimized to uphold Islamic finance principles, particularly in times of crises.

From an ethical and regulatory perspective, Rabbani et al. (2022) addressed ethical concerns arising from AI use and explored how regulatory technology (RegTech) and Islamic financial principles can help mitigate these risks. Legal and jurisprudential aspects are also explored, as in Yuspin et al. (2022), who examine the impact of legal changes on AI in the context of profit- and loss-sharing risks in Islamic banking.

The temporal distribution of publications revealed a gradual increase in scholarly attention. The topic began gaining traction in 2020, with two publications, followed by a peak in 2022, with three published documents. This indicates growing academic interest in exploring AI from an Islamic finance perspective in recent years. The years 2023 and 2024 each contributed one additional publication, signaling a continuing trend, albeit still in a relatively early stage of scholarly development.

Overall, the findings of this literature review suggest that the application of AI in Islamic finance entered an early growth phase. The dominant research themes are technological applications, ethics, regulation, and the development of AI-based Islamic financial models. This review provides a foundational understanding of Scopus-based research dynamics in this field and opens opportunities for further exploration, particularly concerning the technical, normative, and practical aspects of integrating AI into a Sharia-compliant financial system.

Table 3. Publication outlets

No.	Publication outlets
1	International Journal of Economics and Business Administration
2	ACM International Conference Proceeding Series
3	Hitit Theology Journal
4	2022 International Conference on Sustainable Islamic Business and Finance, SIBF 2022
5	Lecture Notes in Networks and Systems
6	Legality: Jurnal Ilmiah Hukum
7	IET Conference Proceedings
8	Information (Switzerland)

Source: Scopus.com (Data processed, 2025)

Publication media serving as dissemination channels for research on Artificial Intelligence (AI) and Islamic finance are notably diverse, as illustrated in Table 3.

Among the eight documents identified in this study, articles were distributed across various types of scholarly outlets, including internationally indexed journals and reputable conference proceedings. Several articles have been published in accredited and internationally recognized academic journals such as the *International Journal of Economics and Business Administration* and *Information (Switzerland)*. This indicates growing attention from the academic communities of both economics and technology to the integrative topics of AI and Islamic finance. These journals provide essential platforms for both conceptual and empirical studies that intersect with Islamic economics and information technology.

Other documents were published through international conference proceedings such as the *ACM International Conference Proceeding Series*, the *2022 International Conference on Sustainable Islamic Business and Finance (SIBF 2022)*, and the *IET Conference Proceedings*. This indicates that the

development of AI studies within the context of Islamic finance is also gaining recognition in dynamic and up-to-date academic forums. The presence of articles in such proceedings signifies that this topic is still emerging, and is currently undergoing active exploration by researchers from diverse backgrounds. Interestingly, some publications have appeared in journals with Islamic and legal orientations, such as the *Hitit Theology Journal* and *Legality: Jurnal Ilmiah Hukum*. This demonstrates that the integration of AI into Islamic finance is not solely approached from technological or business perspectives, but also incorporates normative and ethical dimensions rooted in Islamic law. This diversity in publication venues enriches the analytical landscape and highlights the need for a multidisciplinary approach to address this subject matter.

Overall, these findings indicate that research on AI and Islamic finance is not confined to a single disciplinary domain, but spans multiple fields, including technology, economics, law, and theology. This finding affirms that the application of AI in Islamic financial systems is a cross-disciplinary issue that requires collaborative efforts across various fields to ensure comprehensive and sustainable development.

Table 4. List of authors' institutions and countries of origin

No	Institution	Country
1	College of Computing and Informatics, Saudi Electronic University, Dammam	Arab Saudi
2	Department of Information Technology, University College of Bahrain	Bahrain
3	Department of Finance and Accounting, College of Business Administration, Kingdom University	Bahrain
4	College of Business Administration, University of Bahrain, Zallaq	Bahrain
5	Ahlia University, Manama	Bahrain
6	University College of Bahrain, Saar	Bahrain
7	Gulf University for Science and Technology	Kuwait
8	Faculty of Management and Administrative Sciences, University of Sialkot	Pakistan
9	Symbiosis Institute of Digital and Telecom Management, Constituent of Symbiosis International University	India
10	Faculty of Law, Department of Law, Universitas Muhammadiyah Surakarta, Central Java	Indonesia
11	Department of Private International Law, Tashkent State University of Law, Toshkent	Uzbekistan
12	College of Business Administration, American University in the Emirates, Dubai	Uni Emirat Arab
13	School of Business & Economics, Universiti Brunei Darussalam, Bandar Seri Begawan	Brunei Darussalam
14	Department of Artificial Intelligence and Data Science, Sejong University, Seoul	Korea Selatan

Source: Scopus.com (Data processed, 2025)

Table 4 presents the institutions and countries of origin of the authors who contributed to publications on Artificial Intelligence (AI) and Islamic finance. These data reveal both geographical and institutional diversity, reflecting cross-national engagement with the topic and signaling that the integration of AI into Islamic finance is attracting global attention.

Regionally, Bahrain stands out with the highest number of contributing institutions, comprising four distinct universities: the University College of Bahrain, the Kingdom University, the University of Bahrain, and Ahlia University. This indicates the strong interest and active involvement of higher education institutions in the Gulf region in the study of Islamic financial technology. Saudi Arabia, as a prominent hub for Islamic finance and scholarship, is also represented by the contribution of the Saudi Electronic University.

Furthermore, South and Southeast Asian countries, such as Pakistan, India, and Indonesia, are actively engaged in this discourse, represented by institutions such as the University of Sialkot, Symbiosis International University, and Universitas Muhammadiyah Surakarta. This demonstrates the ongoing commitment of Muslim-majority countries to examine the technological implications of Islamic economic practices.

In addition, author participation from institutions in the United Arab Emirates, Kuwait, Uzbekistan, Brunei Darussalam, and South Korea illustrates that this topic has also received attention from countries focused on digital innovation and the global development of Islamic finance. The involvement of Sejong University (South Korea) and the Tashkent State University of Law (Uzbekistan) adds a unique dimension, highlighting contributions from countries with Muslim minority populations that nonetheless show a high level of concern for Islamic finance and technology studies.

With representation spanning four regions, Asia, the Middle East, South Asia, and Southeast Asia, these findings underscore the strategic significance of AI in Islamic finance as a topic that transcends geographical and disciplinary boundaries. The diversity of institutions also suggests that a multidisciplinary and cross-national collaborative approach is essential for the future development of both the literature and practice in technology-driven Islamic finance.

Applications and implementation of AI in Islamic finance

Based on a systematic literature review of eight key studies, it was found that the application and implementation of Artificial Intelligence (AI) in Islamic finance are evolving across several strategic domains (see Table 5). These studies not only demonstrate the functional diversity of AI within the context of Islamic finance but also highlight ethical, regulatory, and policy-related challenges. From the data analyzed, three major categories of AI applications have emerged, which overlap and form a consistent thematic pattern: (1) AI for Financial Inclusion and Islamic Customer Services; (2) AI in Automation, Sharia Compliance Monitoring, and Risk Management; and(3) Legal Dynamics, Governance, and Future Research Directions.

Table 5. Research data on the application and implementation of AI in Islamic finance

No.	Author(s)	Year	Research method	AI Application/implementation in Islamic finance	Conclusion
1	Syed M.H.; Khan S.; Rabbani M.R.; Thalassinos Y.E.	2020	Exploratory study with a conceptual approach; proposed an AI- and NLP-based Islamic FinTech model integrating Zakat and Qardh-Al-Hasan.	AI- and NLP-based Islamic FinTech model for effective, efficient, and targeted distribution of Zakat and Qardh-Al-Hasan.	AI and Islamic FinTech play a crucial role during economic crises. Integration of Zakat and Qardh-Al-Hasan has potential to support vulnerable groups.
2	Khan S.; Rabbani M.R.	2020	Case study development of the interactive CaIFE chatbot using AI and machine learning.	AI chatbot providing automatic 24/7 responses to Islamic finance queries, enhancing accessibility to Islamic financial services.	CaIFE is effective in education and customer service, improving efficiency and accessibility in the Islamic finance sector.
3	Abbas K.; Hafeez M.	2021	Purposive sampling; data collected from Islamic finance experts via WhatsApp, Facebook, and email; analyzed using narrative analysis.	AI for banking service automation, robo-advisors, auto-trading, credit rating, financial applications, and contract supervision.	AI holds broad potential in Islamic finance but cannot replace human trust-building. Significant research opportunities remain.
4	Swain S.; Gochhait S.	2022	Systematic literature review on Islamic and conventional financial technologies.	AI for AML (Anti-Money Laundering), KYC (Know Your Customer), vulnerability	Advanced technologies are revolutionary but pose risks; mitigation and system security

No.	Author(s)	Year	Research method	AI Application/implementation in Islamic finance	Conclusion
				detection; blockchain for transaction efficiency; cloud computing for adaptive ecosystems.	are essential to maintain public trust.
5	Rabbani M.R.; Sarea A.; Khan S.; Abdullah Y.	2022	Exploratory survey using structured questionnaires distributed to GCC scholars.	RegTech and AI applied in customer data analysis to support Sharia compliance.	RegTech reduces ethical issues in AI; there is a significant correlation between AI ethics and Islamic finance.
6	Yuspin W.; Wardiono K.; Budiono A.; Gulyamov S.	2022	Evaluative qualitative study examining the legal aspects of AI in Indonesian Islamic finance.	AI enhances transaction efficiency, but legal frameworks have yet to adapt to technological developments.	AI has great potential in Indonesian Islamic finance, but comprehensive legal reforms are necessary.
7	Skibińska E.; Tayachi T.	2023	Bibliometric study using Scopus data (2006–2022); analyzed with VOSviewer software.	Visualization of research trends on AI in Islamic finance, mapping active scholars and countries.	Malaysia and Indonesia are the most active contributors; study provides a roadmap for future AI-Islamic finance research development.
8	Ridzuan N.N.; Masri M.; Anshari M.; Fitriyani N.L.; Syafrudin M.	2024	Descriptive analysis of recent literature reviews.	AI applied in financial crime prevention, risk management, and financial services.	Study encourages strengthening AI governance and guiding national policies in the Islamic finance sector.

Source: Scopus.com (Data processed, 2025)

AI for financial inclusion, literacy, and Islamic customer services

In the evolving landscape of Islamic finance, the application of Artificial Intelligence (AI) has ushered in a new era of efforts to expand financial inclusion, enhance public literacy, and strengthen customer services grounded in Sharia values. AI is increasingly recognized not merely as a tool for operational efficiency but also as a means of social empowerment that enables Islamic finance to reach segments of the population previously underserved, whether due to geographic constraints, low financial literacy, or administrative barriers.

One notable innovation in this area is the use of artificial intelligence (AI) and natural language processing (NLP) technologies such as zakat and *qard al-hasan*. For instance, Syed et al. (2020) propose an AI-based FinTech model capable of integrating the collection and distribution mechanisms of Islamic social funds into an intelligent digital system. This system is designed to identify eligible recipients (*mustahiq*) more accurately and efficiently through the analysis of community needs datadrawn from digital aid request platforms as well as other external sources. Such an approach not only enhances the efficiency and transparency of the zakat distribution but also increases fairness by minimizing human bias in the selection process.

Models such as these become particularly relevant during times of crisis, when the speed and accuracy of aid delivery are crucial. For example, during the pandemic, the demand for social assistance surged dramatically, while the capacity of zakat institutions to manually reach *mustahiq* was severely limited. With AI, distribution systems can operate automatically based on real-time

needs assessments, broadening the scope of aid delivery while maintaining adherence to the Sharia principles. Beyond the distribution of social funds, AI also plays a significant role in improving Islamic financial literacy among the public. A practical example of this is the development of AI-based chatbots, such as CaIFE the Conversational AI for Islamic Financial Education) by Khan and Rabbani (2020). This chatbot is designed to provide real-time interactive information on Islamic finance, responding automatically to user inquiries regarding financial products, contracts (*akad*), and Sharia rulings. Such features are especially valuable in the digital age, where the younger generations prefer quick and easily accessible information channels.

The presence of Islamic chatbots not only enhances communication efficiency between Islamic financial institutions and their customers but also creates broader opportunities for Islamic education and *dakwah*. AI enables the delivery of personalized information tailored to users' specific needs, fostering greater awareness and understanding of Sharia compliant economic principles. This represents a form of financial literacy that is both informative and transformative, as it educates the public within the context of Islamic values in a contextual and sustainable manner. Moreover, AI in Islamic finance serves a strategic role as a bridge between the normative principles of Sharia and the demands of modern digital services that prioritize speed, convenience, and efficiency. AI-driven systems can be designed not only to consider financial factors but also ethical dimensions such as honesty, accountability, and compliance with Sharia. In this way, AI functions not merely as a technological tool but also as a digital embodiment of the spirit of Sharia.

From a legal normative perspective, AI applications in Islamic finance must operate within a dual compliance framework that adheres to both national financial regulations and the rules of recognized Sharia authorities. For instance, in Indonesia, the Financial Services Authority (*Otoritas Jasa Keuangan*—OJK) governs the licensing, supervision, and risk management standards for digital financial services, while the National Sharia Council (*Dewan Syariah Nasional – Majelis Ulama Indonesia*, DSN-MUI) issues fatwas and Sharia compliance guidelines. AI-based zakat distribution systems or Islamic chatbots that offer contract guidance (akad) would therefore require not only technical validation but also formal Sharia endorsement to ensure that their rulings are authoritative and binding. Additionally, data governance policies, privacy safeguards, and algorithmic transparency must comply with the Personal Data Protection Law (UU PDP) and be adapted to reflect the ethical imperatives of *maqāṣid al-shari'ah*. This integrated governance approach ensures that AI innovations do not merely operate legally but also preserve the moral and spiritual objectives of Islamic finance.

However, the implementation of AI in Islamic finance remains challenging. These include limited digital infrastructure in some Muslim-majority countries, a shortage of professionals proficient in both technology and Islamic law, and algorithmic risks such as data bias or misuse of information. Addressing these issues demands a regulatory ecosystem that fosters innovation while safeguarding Sharia compliancethrough mechanisms such as regulatory sandboxes for Islamic FinTech, mandatory Sharia audits of AI systems, and cross-institutional training programs for "AI-Sharia Compliance Officers." In the long term, the development of AI for Islamic financial inclusion holds substantial potential for creating a more just, transparent, and welfare-oriented financial system. Rather than serving merely as a digital solution to technical problems, AI paves the way for a paradigmatic transformation in financial services, from being profit-centered to being more attuned to justice, equity, and the holistic ethical values of Islam.

Service automation, Sharia supervision, and risk management

In the dynamic transformation of Islamic finance in the digital era, one of the most critical areas of focus is the automation of services, alongside the enhancement of effectiveness in Sharia supervision and risk management. In this context, artificial Intelligence (AI) emerges not merely as a technical tool but also as a catalyst for structural reform in how Islamic financial institutions operate and ensure compliance with Sharia principles.

Research conducted by Abbas and Hafeez (2021) demonstrated that AI is capable of executing a variety of complex functions that are traditionally reliant on human intervention. These range from acting as robot advisors providing Sharia-compliant investment recommendations to

auto-trading systems that execute market transactions based on specific algorithms while avoiding elements of *gharar* (uncertainty) and *maysir* (speculation). In addition, the application of AI for Sharia screening has become increasingly significant, swiftly and automatically evaluating and classifying business entities or financial instruments for their compliance with Islamic principles. More impressively, AI is being employed to assess the validity of contracts (*akad*) in transactions, ensuring that they conform to the pillars and conditions prescribed by Islamic jurisprudence.

However, while these advancements offer remarkable efficiency, this study also emphasizes that the role of human actors—particularly scholars (*ulama*) and Islamic finance practitioners—remains irreplaceable. This is because decisions in Islamic finance are not merely technical but also normative, deeply rooted in context, intention, and the objectives of *maqāṣid al-sharīʿah*. Public trust in Islamic financial institutions is built not only on speed and efficiency but also on the assurance that ethical and religious values are upheld in every business decision. Therefore, AI in this domain must serve as a support system, not as a substitute for the Sharia authority.

Swain and Gochhait (2022) broadened the scope of AI applications by highlighting its capacity to detect and prevent risks that could compromise the integrity of financial institutions. AI-powered systems such as Anti-Money Laundering (AML) and Know Your Customer (KYC) have proven effective in identifying suspicious transaction patterns in real-time. For Islamic financial institutions, such systems are not only matters of financial security, but are also integral to safeguarding moral reputation and legal compliance. Transactions involving illicit elements or manipulative behavior violate not only state regulations but also Islamic ethical standards. Thus, AI has become an essential tool for anticipating and mitigating the risks that threaten institutional credibility and sustainability. Further, a study by Khan et al. (2022) introduced the concept of RegTech—regulatory technology powered by AI, which marks a new chapter in Sharia supervision. In an increasingly complex financial landscape, auditing and regulatory compliance processes no longer rely solely on manual methods. RegTech enables rapid and accurate processing of large volumes of data, significantly facilitating the monitoring of transaction compliance with Sharia principles. Moreover, such systems empower Sharia supervisory boards to evaluate the permissibility of emerging financial products and services.

Nonetheless, researchers caution that the integration of AI into Sharia supervision and risk management should be accompanied by strong ethical considerations. Fully automated decision making can become counterproductive if not carefully monitored, especially when systems contain biases in data collection or processing. Hence, the development of AI in the Islamic financial context must uphold principles of justice, transparency, and accountability. AI systems must be designed to be inclusive, sensitive to customer diversity, and free from discriminatory practices in the decision-making processes.

AI holds great potential in bridging the operational efficiency needs of Islamic financial institutions with the demands of the Sharia law and ethics. However, the adoption of this technology is not merely a technical undertaking; it encompasses institutional governance, scholarly interpretive capacity, and synergy between innovation and values. Without a robust governance framework and sensitivity to the complexities of Islamic law, automation risks obscure the principles underlying Islamic finance. Therefore, the development and implementation of AI in this domain must be approached prudently, fostered through interdisciplinary collaboration, and guided by a long-term vision rooted in Islamic ethical values.

Regulatory dynamics, governance, and the development roadmap of AI in Islamic finance

The dynamic advancement of artificial intelligence (AI) in Islamic finance is inseparable from the principles and sources of Islamic law (*fiqh muʿāmalāt*) and the regulatory and governance frameworks that safeguard Sharia compliance in the digital economy. While the adoption of AI promises efficiency, inclusion, and improved service quality, there remains a significant gap between the rapid pace of technological innovation and the preparedness of regulatory and public policy structures—particularly in Muslim-majority countries. From the perspective of Islamic law, this gap raises pressing questions regarding the legal validity (*ṣiḥḥah*) of AI-assisted contracts, the enforceability of algorithm-driven transactions, and the safeguarding of rights in cases of dispute—

issues that directly relate to the objectives of maqāṣid al-sharīʿah, especially the protection of wealth (*ḥifẓ al-māl*) and intellect (*ḥifẓ al-ʿaql*).

Yuspin et al. (2022) highlight the specific case of Indonesia, a country actively developing its Islamic finance and digital sectors, yet still facing normative gaps in AI regulation. As financial transactions are increasingly executed through algorithm-driven systems, the absence of explicit fatwas or DSN-MUI resolutions on certain AI applications creates the potential for legal uncertainty (*ghumūḍ*) and ambiguity (*shubuhāt*). This is especially critical when AI is used in financing, risk analysis, or digital contract validation, which operate at speeds and complexities that surpass those of conventional regulatory review mechanisms. Consequently, there is a growing risk of undermining public trust in Sharia-based innovation.

This concern is further reinforced by the analysis of Ridzuan et al. (2024), who called for a holistic and forward-looking national governance framework. They argue that the development of AI in Islamic finance should be guided by regulations that address not only technical aspects, but also explicit Sharia compliance audits, the integration of fatwa-based parameters into algorithmic decision-making, and consumer protection measures rooted in the principles of fairness (*ʿadl*) and transparency (*ṣafāfiyyah*). They advocate the active involvement of the Financial Services Authority (OJK), Bank Indonesia, and the National Sharia Council of the Indonesian Ulema Council (DSN-MUI) in formulating binding ethical-legal guidelines for AI use, including algorithm audits and transparency in automated decision-making processes.

From an academic perspective, Skibińska and Tayachi (2024) provided a macro-level overview of how research on AI and Islamic finance has evolved, revealing that Malaysia and Indonesia are among the leaders in publication volume and collaboration. However, the relative underrepresentation of *fuqahā'* and Islamic legal experts in AI-fintech research signals a structural gap in ensuring that technological advancements remain anchored in Sharia's legal theory (*uṣūl al-fiqh*) and its application in contemporary contexts. Bridging this gap requires collaborative mechanisms, such as Islamic FinTech sandboxes under Sharia supervision, or joint committees between AI engineers and Sharia compliance officers, which ensure that technological solutions are normatively sound as well as technically advanced.

In this light, the dynamics of regulation, governance, and AI development in Islamic finance must be seen as inherently tied to the normative objectives of Islamic law. Overly rigid regulation may stifle creativity, whereas insufficient governance risks compromise the integrity of Sharia. The most urgent challenge is the formulation of a national and transnational Sharia-compliant AI governance blueprint that harmonizes innovation with Islamic legal principles and *maqāṣid al-sharīʿah*, requiring close cooperation among governments, industry players, academia, and the Sharia community.

Future challenges

In general, findings from various studies confirm that Artificial Intelligence (AI) has emerged as a strategic instrument that plays a key role in accelerating the digitalization of the Islamic finance sector. From optimizing the distribution of zakat-based social funds and *Qardh al-Hasan*, to enhancing public financial literacy through Islamic chatbots, and the rise of RegTech for real-time Sharia compliance, AI has become a bridge connecting Sharia values with the fast-paced, accurate, and responsive demands of modern financial services. This phenomenon indicates that AI is not merely an assistive technology but a transformational element capable of reconstructing the Islamic finance landscape from upstream to downstream.

However, this rapid technological advancement did not have any consequences. Several fundamental challenges still overshadow the integration of AI into Islamic financial systems. One of the primary challenges lies in ethical and legal issues, particularly in ensuring that AI-driven systems remain aligned with *maqāṣid al-sharī'ah*. AI operates based on algorithms inherently shaped by data and programming logic, whereas Islamic law emphasizes intention, social context, and moral considerations in every financial decision (Rifai, 2020). The tension between deterministic digital logic and the normative principles of *fiqh* must be bridged through a mature, multidisciplinary epistemological approach.

Regulatory aspects also constitute critical determinants of the successful and holistic integration of this technology. A lack of regulatory readiness to accommodate the dynamics of AI could lead to legal vacuums, ultimately weakening consumer protection and creating market uncertainty (Andanni and Santoso, 2025). Without a comprehensive and adaptive legal framework, the potential of AI could turn into a double-edged sword, introducing systemic risks, such as data privacy violations, biased automated decisions, or even manipulation by irresponsible actors. Therefore, policy-oriented roadmaps are essential. For example, at the national level, the Financial Services Authority (*Otoritas Jasa Keuangan*, OJK) could establish AI-specific supervisory guidelines covering algorithmic transparency, auditability, data governance, and ethical use standards for Islamic financial institutions. Similarly, the National Sharia Council (*Dewan Syariah Nasional – Majelis Ulama Indonesia*, DSN-MUI) could develop Sharia governance protocols for AI-based products and services, ensuring that system design, training data, and decision outputs remain consistent with *maqāṣid al-sharī'ah*. Integrating these policies into existing regulatory and governance frameworks would create legal certainty while safeguarding Sharia's integrity in the digital era.

Equally significant is the challenge of human resource preparedness. Many Islamic financial institutions still lack both the technological capacity and skilled personnel to effectively manage and utilize AI (Chhabra & Malhotra, 2024; Zhang, 2024). This limitation involves not only technical aspects, such as programming or data analysis, but also an integrative understanding of Islamic values that must be embedded in every system developed. Therefore, capacity building has become a strategic agenda that cannot be postponed achievable through formal education, professional training, and cross-sector strategic partnerships. For instance, joint certification programs between OJK, DSN-MUI, and leading universities could be established to train "AI-Sharia Compliance Officers" capable of bridging technological expertise and religious mandates.

In this context, collaborative approaches have become increasingly urgent. Synergy among industry players with practical insights, *ulama* who safeguard Sharia integrity, regulators ensuring legal soundness, and academics driving research-based innovation serves as the main foundation for building a smart, ethical, and inclusive Islamic financial ecosystem. It is no longer sufficient for Islamic financial institutions to merely follow the digitalization trend—they must actively shape it, with a transformative vision that positions AI not just as a tool of efficiency, but as a means of promoting justice, empowering communities, and upholding Sharia trust in every pulse of innovation.

Therefore, the future of AI integration in Islamic finance is not merely a technological discourse but also a domain of ethical struggle, regulatory adaptation, and social collaboration. Its success will largely depend on how far all stakeholders can move in unison, define a common direction, and build systems that are not only technologically advanced but also spiritually and socially meaningful. Ultimately, the primary objective of Islamic finance is not merely to generate profit, but to bring forth benefits that are sustainable for the entire human community.

Conclusion

Based on the analysis and discussion, it can be concluded that studies on scientific publications regarding the application of Artificial Intelligence (AI) in Islamic finance show a growing dynamism and diversity in terms of approaches, topics, and sources. Although still a relatively new field, interest in integrating AI into Islamic financial systems continues to rise, as reflected in the increasing trend of publications since 2020 and the dominance of conference proceedings, indicating that this topic is currently in the exploratory and early development phases.

This study identified eight documents from Scopus published between 2015 and March 2025, encompassing technological approaches such as AI, blockchain, cloud computing, and Islamic fintech models based on Natural Language Processing (NLP). Ethical, regulatory, and legal aspects have also received attention, highlighting the importance of a multidisciplinary approach in this area. These publications were found across reputable journals and proceedings in various fields—technology, economics, law, and theology—demonstrating that the application of AI in Islamic finance is a cross-disciplinary issue. Contributions come from institutions in multiple countries, particularly from the Gulf region, such as Bahrain and Saudi Arabia, as well as South and

Southeast Asia, including Pakistan, India, and Indonesia, reflecting global attention to AI integration aligned with the Sharia principles.

Second, AI now holds a strategic role in transforming the Islamic finance industry, not merely as an efficiency tool but also as a catalyst for structural, social, and ethical transformation. AI can expand financial inclusion by reaching underserved communities and automating the management of social funds such as *zakat* and *Qardh al-Hasan* more rapidly, justly, and accurately in accordance with *maqāṣid al-sharīʿah*. Concrete examples, such as the CaIFE chatbot, demonstrate how AI can enhance Islamic financial literacy in a real-time and interactive manner. In addition, AI strengthens the operations of Islamic financial institutions through service automation, responsive Sharia supervision, and Islamic value-based risk management.

Nonetheless, the role of *ulama* and practitioners remains crucial to ensure that AI decisions align with the Sharia principles, making AI a complement to ethical reasoning rather than a replacement. Regulatory, ethical, and digital infrastructure challenges must also be addressed to enable AI to be optimally utilized without causing inequality or data misuse, thus making the integration of technology, religious rulings (*fatwa*), and public policy essential.

This study contributes significantly to the understanding of the development and application of Artificial Intelligence (AI) in Islamic finance, a relatively new but highly promising field. The findings show that AI serves not only as a technological tool but also as a driver of structural, social, and ethical transformation, expanding financial inclusion and enhancing the efficiency of social fund management in accordance with Sharia principles. Practically, Islamic financial institutions can adopt AI technology to optimize services, improve Sharia supervision, and implement more responsive risk management based on Islamic values. Furthermore, this study emphasizes the importance of interdisciplinary collaborationbetween technology, economics, law, and theology, as well as the active involvement of *ulama* and practitioners, to ensure that AI implementation remains consistent with Sharia principles and ethical norms. Adaptive policies and regulations must also be developed to anticipate the emerging ethical and technical challenges.

This study is based exclusively on the literature indexed in the Scopus database, which, while ensuring the inclusion of peer-reviewed and reputable sources, inherently limits the scope of the review. As a result, relevant studies indexed in other scholarly databases such as Web of Science, IEEE Xplore, or Google Scholar may have been excluded. Moreover, only eight eligible publications were found and reviewed between 2015 and early 2025, indicating that research on AI in Islamic finance is in its early exploratory stage. The limited number of studies constrains the comprehensiveness of thematic mapping and generalizability of the conclusions. In addition, the focus on English-language and Scopus-indexed publications may exclude literature published in other languages or in non-indexed journals, potentially overlooking contributions from certain regions or perspectives. Accordingly, the findings should be interpreted as copus-based mapping rather than global mapping of AI applications in Islamic finance.

Future research should broaden its scope by incorporating literature from multiple reputable databases, local journals, non-English publications, and case studies on AI implementation across various countries, particularly developing nations. Expanding the search strategy and diversifying the data sources would help capture a more comprehensive and representative body of knowledge. Furthermore, in-depth investigations into the regulatory, ethical, and governance aspects of AI in Islamic finance are necessary to provide concrete guidance for practitioners and policymakers. Empirical studies examining the real-world impact of AI adoption on financial inclusion and Islamic social fund management are highly valuable. Finally, collaboration among academics, ulama, and industry players should be further strengthened to ensure that AI development in Islamic finance progresses in alignment with the principles of *maqāṣid al-sharīʿah* and the needs of modern society.

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