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REVOLUTIONISING ISLAMIC FINANCE WITH ARTIFICIAL INTELLIGENCE: A BIBLIOMETRIC AND STRATEGIC ANALYSIS

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Abstract

This study examines the development of Artificial Intelligence (AI) research in Islamic finance and analyses its regulatory and institutional implications for central banks and financial supervisory authorities. Specifically, the study maps scholarly trends on AI-enabled Islamic finance and assesses regulatory strengths, weaknesses, opportunities, and threats faced by public financial authorities in governing AI adoption. Using bibliometric analysis of Scopus-indexed publications from 2017 to 2024, the study identifies research trends, key contributors, institutional affiliations, and thematic evolution in this field. The findings show a steady increase in scholarly output, with 47 publications over the past decade, led by authors including Shahnawaz Khan and Mohammad Irfan, and significant contributions from institutions in Malaysia and Bahrain. Topic mapping reveals that AI adoption in Islamic finance is increasingly associated with innovation, blockchain integration, and sustainable development, raising significant regulatory concerns. To support this objective, a SWOT analysis is employed and reframed as a regulatory and institutional assessment that evaluates how central bank innovation mandates and supervisory instruments constitute strengths and opportunities, while legal uncertainty, algorithmic bias, data protection, and supervisory capacity represent key weaknesses and threats. The study concludes that although AI holds substantial potential to enhance efficiency and governance in Islamic finance, its effective deployment depends on coherent regulatory frameworks, strengthened coordination between central banks and Sharia authorities, and sustained capacity-building to manage emerging legal and institutional risks.

Keywords: *artificial intelligence, islamic finance, bibliometrics, digital transformation, SWOT*

I. INTRODUCTION

The advancement of Artificial Intelligence (AI) technology has had revolutionary impacts across various sectors, including Islamic finance, which is a key pillar of the global Sharia-based economy.[1] In the Islamic financial sector, AI is not merely a supporting tool but a primary driver of innovation.[2] This technology enables financial institutions to deliver more personalised, responsive, and data-driven services, which are necessities in today's increasingly competitive digital era.[3] AI implementation spans a wide range of applications, from credit risk analysis to assess customer eligibility,[4] market predictions for Sharia-compliant investments,[5] portfolio management optimisation tailored to risk profiles, and the detection of suspicious financial activities to prevent fraud and money laundering.[6] This technology empowers Islamic financial institutions to offer services that are not only efficient and innovative but also aligned with Sharia principles.

Specifically, AI applications in Islamic finance include analysing Sharia-compliant financing risks to evaluate customer creditworthiness, forecasting trends in Islamic financial markets to support halal investment decisions, optimising Sharia-compliant investment portfolios, and detecting suspicious financial activities to ensure adherence to Islamic values.[7] For instance, machine learning (ML) can be used to identify transaction patterns that comply with Sharia rules. At the same time, natural language processing (NLP) can be employed to analyse *fatwa* texts and Islamic legal documents to ensure operational compliance.[8] Furthermore, AI demonstrates exceptional

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1 M. Kabir Hassan et al., "Islamic Fintech and Bahrain: An Opportunity for Global Financial Services," in *Fintech in Islamic Financial Institutions: Scope, Challenges, and Implications in Islamic Finance,* ed. M. Kabir Hassan et al. (Springer Books, 2022), 65–87, DOI: 10.1007/978-3-031-14941-2_4.

2 Janin Karoli Hentzen et al., "Artificial Intelligence in Customer-Facing Financial Services: A Systematic Literature Review and Agenda for Future Research," *International Journal of Bank Marketing* 40, no. 6 (2022): 1299–1336, DOI:10.1108/IJBM-09-2021-0417.

3 Albérico Travassos Rosário and Joana Carmo Dias, "How Has Data-Driven Marketing Evolved: Challenges and Opportunities with Emerging Technologies," *International Journal of Information Management Data Insights* 3, no. 2 (2023): 100203, DOI:10.1016/j.jjimei.2023.100203.

4 Alessandra Amato et al., "How Can Artificial Intelligence Help Customer Intelligence for Credit Portfolio Management? A Systematic Literature Review," *International Journal of Information Management Data Insights* 4, no. 2 (2024): 100234, DOI:10.1016/j.jjimei.2024.100234.

5 Mohammad Irfan et al., *Fintech Applications in Islamic Finance: AI, Machine Learning, and Blockchain Techniques* (IGI Global, 2023), DOI: 10.4018/979-8-3693-1038-0.

6 Dattatray Vishnu Kute et al., "Deep Learning and Explainable Artificial Intelligence Techniques Applied for Detecting Money Laundering–a Critical Review," *IEEE Access* 9 (2021): 82300–317, DOI:10.1109/ACCESS.2021.3086230.

7 Irfan et al., *Fintech Applications in Islamic Finance.*

8 Mohd Noor Omar and Auwal Adam Sa'ad, "Exploring the Potential of Artificial Neural Network in Sharīʿah Decision-Making for Digital Banking: A Literature Review," *TAFHIM: IKIM Journal of Islam and the Contemporary World* 17, no. 2 (2024): 105–30, https://doi.org/10.56389/tafhim.vol17no2.5.

capabilities in processing data swiftly and accurately, facilitating innovations such as digital management of *zakat*, *infaq*, *sadaqah*, and *waqf*.[9] It also enhances efficiency in managing *sukuk* and aligning halal investment portfolios with the dynamic needs of the market.[10] Additionally, AI-powered chatbots can quickly and accurately communicate with customers.[11]

While AI offers revolutionary opportunities, its implementation comes with significant challenges that demand serious attention. The growing reliance on AI technology introduces operational risks that can have systemic impacts on the financial sector.[12] For instance, system disruptions caused by technological failures, such as server malfunctions or algorithmic errors, can lead to substantial financial losses, erode customer trust, and undermine financial market stability. A notable example is the extreme market volatility caused by algorithmic errors in automated trading systems (high-frequency trading) during past incidents.[13] One fundamental issue in AI implementation is also algorithmic bias, which arises when data lacks diversity or reflects certain tendencies. This bias can result in unfair decisions, such as discrimination against specific groups in credit risk assessments.[14] For instance, if historical data disproportionately represents the behaviour of certain demographic groups, AI models may unintentionally reinforce existing inequalities, even without the developers' awareness.[15] This issue has serious ethical and legal implications, especially in light of increasingly stringent regulations requiring fair treatment of customers.

Maintaining data privacy and security is also a critical challenge, as the financial sector frequently handles sensitive customer information, such as

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[9] Raja Suzana Raja Kasim and Wan Fariza Azima Che Azman, "Sustainable Entrepreneurship Model in Islamic Fintech: A Systematic Literature Review," *Journal of Humanities and Social Sciences Research*, 2023, https://doi.org/10.37534/BP.JHSSR.2023.V5.N1.ID1200.P9.

[10] Mustafa Raza Rabbani et al., "Dynamic Connectedness, Spillover, and Optimal Hedging Strategy among FinTech, Sukuk, and Islamic Equity Markets," *Global Finance Journal* 58 (2023): 100901, https://doi.org/10.1016/j.gfj.2023.100901.

[11] Muhammad Dharma Tuah Putra Nasution et al., "AI-Driven Chatbots in Halal Marketing Communication—Challenges and Opportunities," in *Global Islamic Marketing Conference* (Springer, 2023), 403–21, DOI:10.1007/978-981-97-5400-7_22.

[12] Victor Galaz et al., "Artificial Intelligence, Systemic Risks, and Sustainability," *Technology in Society* 67 (2021): 101741, https://doi.org/10.1016/j.techsoc.2021.101741.

[13] Tanveer Ahmad et al., "Artificial Intelligence in Sustainable Energy Industry: Status Quo, Challenges and Opportunities," *Journal of Cleaner Production* 289 (2021): 125834. https://doi.org/10.1016/j.jclepro.2021.125834.

[14] Rubén González-Sendino et al., "A Review of Bias and Fairness in Artificial Intelligence," *International Journal of Interactive Multimedia and Artificial Intelligence* 9, no. 1 (2023): 5-17, DOI:10.9781/ijimai.2023.11.001.

[15] Nima Kordzadeh and Maryam Ghasemaghaei, "Algorithmic Bias: Review, Synthesis, and Future Research Directions," *European Journal of Information Systems* 31, no. 3 (2022): 388–409, DOI:10.1080/0960085X.2021.1927212.

personal identification, transaction histories, and financial holdings.[16] With the rise of cyber threats, including malware attacks and data breaches, financial institutions must ensure that their AI systems are secured to the highest standards. Failure to protect such data not only causes direct harm to customers but also significantly damages an institution's reputation. In some cases, data breaches have resulted in billions of dollars in losses, including financial compensation and reputational harm. Additionally, increasing reliance on AI poses the risk of the problem of explainability or the "black box problem," where the decisions generated by algorithms are difficult for humans to explain or understand.[17] In the financial sector, transparency in decision-making is critical, particularly concerning regulatory or audit requirements. The inability of institutions to logically explain their AI model outputs can lead to trust issues and difficulties in meeting legal compliance standards. Another challenge is the high cost of implementing and maintaining AI technology. While many large financial institutions can afford to adopt these technologies, smaller institutions often face financial and technical barriers.[18] This disparity can widen the gap between major players and smaller ones in the financial sector, ultimately impacting overall market competition.

Numerous studies on the application of AI in the financial sector have been published, highlighting the immense potential of this technology to revolutionise the industry's operations. For example, Debidutta Pattnaik, Sougata Ray, and Raghu Raman[19] conducted a bibliometric analysis to explore the application of AI and ML in the financial services industry. The study examined publication trends, author contributions, and collaboration patterns to provide a comprehensive overview of the topic's development. The findings reveal a significant rise in AI and ML adoption in the financial sector in recent years, driven by their potential to enhance efficiency, improve data analysis accuracy, and support data-driven decision-making. Key areas of where AI and ML have been applied include risk management, fraud detection, and personalised financial services. However, the study also highlights major challenges, such as algorithmic bias, limited access to high-quality data, and

[16] Hitmi Khalifa Alhitmi et al., "Data Security and Privacy Concerns of AI-Driven Marketing in the Context of Economics and Business Field: An Exploration into Possible Solutions," *Cogent Business & Management* 11, no. 1 (2024): 2393743, https://doi.org/10.1080/23311975.2024.2393743.

[17] Shuang Wang et al., "Data Privacy and Cybersecurity Challenges in the Digital Transformation of the Banking Sector," *Computers & Security* 147 (2024): 104051, https://doi.org/10.1016/j.cose.2024.104051.

[18] Omar H. Fares et al., "Utilization of Artificial Intelligence in the Banking Sector: A Systematic Literature Review," *Journal of Financial Services Marketing* 28 (2023): 835-852, DOI:10.1057/s41264-022-00176-7.

[19] Debidutta Pattnaik et al., "Applications of Artificial Intelligence and Machine Learning in the Financial Services Industry: A Bibliometric Review," *Heliyon* 10, no.1 (2024): e23492, https://doi.org/10.1016/j.heliyon.2023.e23492.

privacy concerns. The authors underscore the importance of interdisciplinary collaboration to address these challenges and foster the development of more innovative solutions.

Vijaya Kanaparthi[20] provides a comprehensive bibliometric analysis of the application of AI and ML in financial technologies (fintech) and financial services. The study evaluates publication trends, patterns of author collaboration, and emerging research themes to identify the transformative impact of AI and ML in this sector. The research highlights AI's role in improving operational efficiency, personalising financial services, and mitigating risks through advanced fraud detection and real-time data analysis. Key findings include growing attention to AI-driven innovations such as blockchain, robo-advisors, and automated asset management. The study also notes significant gaps in areas like regulation, data security, and algorithmic bias, emphasising the need for further exploration to address these challenges.

Using scientometric and bibliometric methods, Rajat Gera et al.[21] examine the role of AI and fintech in advancing financial inclusion. The study maps research trends, author collaborations, and relevant AI and fintech application domains to improve access to financial services for underserved communities. The study examines how AI and fintech address barriers to financial inclusion, including limited infrastructure, data access, and financial literacy. Findings reveal that AI supports the development of data-driven financial services, including personalised microcredit, automated risk management, and more inclusive digital payments. The study also highlights the potential of blockchain and machine learning to create innovative solutions that promote transparency, efficiency, and reliability in the financial sector. However, challenges such as regulatory uncertainties, data security risks, and high implementation costs in remote areas require collaborative efforts among governments, industry, and researchers to be addressed effectively.

Despite these significant contributions, important gaps remain in the existing literature. Most studies on AI in Islamic finance focus on technological adoption, efficiency gains, or firm-level strategic considerations. At the same time, research that systematically examines AI implementation from a regulatory and institutional perspective remains limited. In particular, analyses that assess AI adoption through the lens of strengths, weaknesses, opportunities, and threats (SWOT) as they relate to the mandates, responsibilities, and governance

[20] Vijaya Kanaparthi, "Transformational Application of Artificial Intelligence and Machine Learning in Financial Technologies and Financial Services: A Bibliometric Review," *ArXiv:2401.15710*, 13, no. 1 (2024), https://doi.org/10.48550/arXiv.2401.15710.

[21] Rajat Gera et al., "A Scientometric and Bibliometric Review of Impacts and Application of Artificial Intelligence and Fintech for Financial Inclusion," in *Artificial Intelligence, Fintech, and Financial Inclusion*, ed. Rajat Gera et al. (CRC Press, 2024), 82–111, https://doi.org/10.1201/9781003125204.

roles of central banks and financial supervisory authorities are still scarce. This gap is significant, given the distinctive characteristics of Islamic finance, which require technological innovation to be aligned not only with efficiency and competitiveness, but also with Sharia compliance, financial stability, consumer protection, and public trust. Moreover, although bibliometric approaches are increasingly used to map global research trends, collaboration networks, and thematic developments, they are rarely applied to identify regulatory blind spots, institutional capacity constraints, or emerging supervisory challenges in AI-enabled Islamic finance.[22] As a result, existing bibliometric studies provide valuable descriptive insights but offer limited guidance to public financial authorities responsible for governing digital transformation in Islamic financial systems. To address these limitations, this study integrates bibliometric analysis with a SWOT framework, explicitly reframed as a regulatory and institutional assessment.[23]

Bibliometric analysis is employed to map the evolution of AI research in Islamic finance, identify dominant themes, key contributors, and underexplored areas that carry regulatory significance. Complementarily, the SWOT analysis evaluates AI adoption in Islamic finance in relation to central bank innovation mandates, supervisory tools, and policy frameworks, while also identifying weaknesses and threats associated with legal uncertainty, algorithmic bias, data protection, supervisory capacity, and regulatory coordination among central banks, Sharia advisory bodies, and fintech regulators. By combining these two approaches, the study moves beyond technology trend mapping and sector-wide strategic analysis, offering a governance-oriented perspective on AI in Islamic finance. This integration contributes to the literature by situating AI adoption within the discourse on central banking law, financial regulation, and institutional design, while also providing policy-relevant insights for central banks, financial supervisory authorities, and Sharia governance institutions navigating the AI-driven transformation of Islamic finance.

Based on the above discussion, this study is designed to make a substantive contribution to the understanding of how the adoption of artificial intelligence (AI) in Islamic finance reshapes regulatory mandates, supervisory responsibilities, and institutional roles of central banks and financial authorities. Rather than merely mapping technological developments, this study's central research question asks how the growing integration of AI into Islamic financial institutions generates new regulatory challenges,

[22] Naveen Donthu et al., "How to Conduct a Bibliometric Analysis: An Overview and Guidelines," *Journal of Business Research* 133 (2021): 285–96, https://doi.org/10.1016/j.jbusres.2021.04.070.

[23] Richard Puyt et al., "Origins of SWOT Analysis," *Long Range Planning* 56, no. 3 (2023): 102304, https://doi.org/https://doi.org/10.1016/j.lrp.2023.102304.

governance demands, and policy implications for monetary authorities and financial supervisors. To address this question, the study's first objective is to employ a bibliometric analysis to examine the evolution of scholarly discourse on AI in the Islamic financial sector. This analysis maps publication trends, dominant themes, collaborative networks, and geographical distributions of research. The bibliometric findings serve not as an end in themselves, but as empirical evidence to identify regulatory blind spots, institutional gaps, and underexplored policy dimensions related to AI governance in Islamic finance, particularly from the perspective of central banks and supervisory authorities. The second objective is to evaluate the implications of AI implementation in Islamic finance through a SWOT analysis, with a regulatory and institutional lens. This analysis assesses strengths such as improved supervisory technology, enhanced compliance monitoring, and more efficient risk assessment; weaknesses, including regulatory lag, algorithmic opacity, and limited institutional readiness; opportunities related to AI-enabled regulatory innovation and Shariah-compliant financial oversight; and threats arising from data governance risks, ethical concerns, systemic vulnerabilities, and cross-border regulatory inconsistencies. Building on the integration of bibliometric insights and strategic analysis, the final objective of this study is to formulate policy-oriented and institutional recommendations for central banks, financial supervisory authorities, and related stakeholders. These recommendations support the development of adaptive regulatory frameworks, strengthen supervisory capacity, and ensure that AI-driven transformation in Islamic finance remains aligned with financial stability objectives, Shariah principles, and public trust.

This study offers several key benefits that deepen understanding of the regulatory and institutional implications of AI adoption in the Islamic financial sector, particularly for central banks and financial supervisory authorities. *First*, this study provides evidence-based insights into how the academic discourse on AI in Islamic finance has evolved and how this evolution reflects emerging regulatory and institutional challenges. By employing a bibliometric analysis, the study maps global research trends, dominant themes, collaborative networks, and geographical patterns in AI-related Islamic finance studies. These findings serve as a diagnostic tool for regulators and policymakers to identify regulatory blind spots, underexplored governance issues, and gaps between technological innovation and existing supervisory frameworks. *Second*, the study offers strategic and policy-relevant insights to support central banks and financial supervisory authorities in adapting their mandates and supervisory functions in response to AI-driven transformation. Through a SWOT analysis framed from a regulatory and institutional perspective, the study evaluates the strengths of AI in enhancing supervisory effectiveness

and regulatory compliance, the weaknesses related to institutional readiness and regulatory lag, the opportunities for developing AI-enabled regulatory and supervisory technologies (RegTech and SupTech), and the threats posed by data governance risks, ethical concerns, and systemic vulnerabilities.

These insights provide a structured basis for designing adaptive, risk-sensitive, and Shariah-compliant regulatory strategies. *Third*, the study contributes to the academic literature by advancing an integrative analytical framework that connects bibliometric evidence with strategic regulatory analysis. This framework moves beyond descriptive trend mapping and offers a replicable approach for examining how emerging technologies reshape regulatory roles and institutional responsibilities. While applied in the context of Islamic finance, the framework can be extended to other regulated sectors—such as conventional finance, fintech ecosystems, healthcare, and digital governance—where AI adoption raises similar concerns about oversight, accountability, and institutional capacity. The study benefits not only scholars but also central banks, financial supervisory authorities, and policymakers by providing actionable insights to ensure that AI adoption in Islamic finance supports financial stability, regulatory effectiveness, and adherence to Shariah principles.

II. RESEARCH METHODOLOGY

This study adopts a mixed-methods approach that integrates two primary methodologies: bibliometric and SWOT analyses. These methods are employed comprehensively to map research trends related to AI in the Islamic financial sector and to assess AI implementation by identifying existing strengths, weaknesses, opportunities, and threats.

II.A. Bibliometric Analysis

This study utilises a bibliometric approach to identify trends in research related to AI and the Islamic financial sector. By leveraging bibliometric analysis, relevant publications are examined to identify research trends, key concepts, and significant keywords.[24] The study explores the scientific literature and examines methodologies and trends within the topic. Researchers employ bibliometric mapping to gain deeper insights into the research area.[25]

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[24] Brij Mohan Gupta and Sujit Bhattacharya, "Bibliometric Approach towards Mapping the Dynamics of Science and Technology," *DESIDOC Journal of Library & Information Technology* 24, no. 1 (2004), DOI:10.14429/dbit.24.1.3616; Christine L. Borgman and Jonathan Furner, "Scholarly Communication and Bibliometrics," *Annual Review of Information Science and Technology* 36, no. 1 (2002): 2-72.

[25] Borgman and Furner, "Scholarly Communication."

Data is sourced from Scopus, a leading database that indexes a vast range of international journals and provides comprehensive access to research data, including titles, abstracts, and keywords. [26] Data collection follows these steps:

1. Keyword Identification: relevant keywords, such as Artificial Intelligence AND Islamic Finance (TITLE-ABS-KEY ("artificial intelligence") AND TITLE-ABS-KEY ("Islamic finance")), are used to locate appropriate publications.
2. Database Selection: the selected database includes platforms with broad coverage, encompassing leading journals indexed by Scopus.
3. Inclusion and Exclusion Criteria: selected publications are those published in prominent international journals indexed by Scopus within the last ten years (2017–2024). Editorials and non-peer-reviewed articles are excluded. It should be noted that no publications meeting these inclusion criteria were identified for the year 2018; therefore, this year is not represented in the dataset and subsequent analysis.
4. Data Cleaning: the collected data undergoes a rigorous verification process to ensure consistency and accuracy. This includes removing duplicates, verifying metadata (e.g., titles, authors, institutions, and abstracts), and coding the main topics of each publication.

After data collection, a bibliometric analysis is conducted using specialised software, VOSviewer, to identify patterns and trends in the literature. The analysis involves the following steps:

1. Publication Analysis: identifying the number of publications per year to determine research trends over time.
2. Author Analysis: identifying the most productive and influential authors in the field of AI implementation in Islamic finance.
3. Institution and Country Analysis: identifying the most active institutions/affiliations and countries contributing significantly to related research.
4. Keyword and Topic Analysis: identifying frequently occurring keywords and main topics in the literature to understand research focus and trends.

The results of the bibliometric analysis are presented as network maps, graphs, and tables to facilitate interpretation. This helps in understanding relationships and patterns within the data and identifying areas requiring further research. To ensure the reliability of the findings, the data and results from the bibliometric analysis are validated through triangulation with other sources, such as additional relevant literature.[27]

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[26] Arezoo Aghaei Chadegani et al., "A Comparison between Two Main Academic Literature Collections: Web of Science and Scopus Databases," *Asian Social Science* 9, no. 5 (2013), DOI:10.5539/ass.v9n5p18 ; Matthew E. Falagas et al., "Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and Weaknesses," *The FASEB Journal* 22, no. 2 (2008): 338–42. DOI: 10.1096/fj.07-9492LSF.

[27] Nees Jan Van Eck and Ludo Waltman, *VOSviewer Manual: Manual for VOSviewer Version 1.6.18* (Universitet Leiden and CWTS Meaningful Metrics, 2022).

II.B. SWOT Analysis

The application of qualitative methods in this study involves conducting a SWOT analysis to identify strengths, weaknesses, opportunities, and threats. Meanwhile, quantitative methods are used to assign weights, determine matrix positions, and formulate strategic program steps within the SWOT framework.

SWOT analysis is a systematic approach for identifying key factors that inform strategic decision-making.[28] This method operates on the principle of optimising strengths and opportunities while concurrently mitigating weaknesses and threats.[29] By employing this framework, organisations can navigate evolving challenges, ensuring stability and enhancing productivity.[30] The analysis juxtaposes external factors, such as opportunities and threats, with internal elements, namely strengths and weaknesses, to generate viable strategic options. Recognised as a robust tool for strategic analysis, the effectiveness of SWOT analysis hinges on an organisation's ability to capitalise on strengths and exploit opportunities while addressing weaknesses and mitigating threats.[31]

The data analysis techniques applied in this study include the Internal Factor Analysis Summary (IFAS) and the External Factor Analysis Summary (EFAS); wherein final scores are derived through weighting and rating. Subsequently, the position of AI implementation within the Islamic financial sector is determined using the Internal-External (IE) Matrix.[32] Following this step, the SWOT analysis is employed to identify and develop strategic alternatives. The results of this analysis yield multiple strategic options, as depicted in Figure 1.

In this approach, weights are assigned based on the relative importance, significance, or urgency of each factor, using a scale of 1 to 5 (where 1 denotes minimal importance and 5 indicates critical importance). The weights for strengths and weaknesses are aggregated to compute the relative weight of each indicator within these categories, ensuring that the total weight sums to 1 or 100%. A similar procedure is applied to determine the relative weights for opportunities and threats. Following the weighting process, ratings are assigned to evaluate the likelihood of occurrence within a short-term period (e.g., one year). The rating scale for strength variables ranges from 1 to 5, with higher scores reflecting superior performance compared to major competitors.

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[28] Puyt et al., "Origins."

[29] Puyt et al., "Origins;" Freddy Rangkuti, *Analisis SWOT Teknik Membedah Kasus Bisnis* (Jakarta: Gramedia Pustaka Utama, 2015).

[30] Ifediora Christian Osita et al., "Organization's Stability and Productivity: The Role of SWOT Analysis an Acronym for Strength, Weakness, Opportunities and Threat," *International Journal of Innovative and Applied Research* 2, no. 9 (2014): 23–32.

[31] Abel Meza et al., "Perspectives and Strategies for LNG Expansion in Qatar: A SWOT Analysis," *Resources Policy* 76 (2022): 102633, https://doi.org/10.1016/j.resourpol.2022.102633.

[32] Rangkuti, *Analisis SWOT Teknik*.

Conversely, the rating scale for weakness variables spans from 1 to 2, where lower scores signify more pronounced weaknesses relative to competitors. Notably, the rating assignments for weaknesses and threats are inverse to those for strengths and opportunities. The score for each variable is computed by multiplying its assigned weight by its respective rating. The cumulative scores for all variables determine their placement within the IE Matrix, which subsequently informs the selection of optimal strategies.

Graphic 1. IE Matrix SWOT[33]

		Internal Factors		
		High (3,0-4,0)	**Medium (2,0-2,99)**	**Low (1,0-1,99)**
External Factors	High (3,0-4,0)	I Growth: Concentration through Vertical Integration	II Growth: Concentration through Horizontal Integration	III Retrenchment: Turn-round Strategy
	Medium (2,0-2,99)	IV Stability	V Growth: Concentration through Horizontal Integration or Stability Profit Strategy	VI Retrenchment: Divestment Strategy
	Low (1,0-1,99)	VII Growth Concentric Diversification	VIII Growth: Conglomerate Diversification	IX Liquidation

III. RESULTS AND DISCUSSION

III.A. Bibliometric Analysis

III.A.1. Publication Trends

After extracting and mapping scientific publication data related to AI and Islamic finance from the Scopus database, the data on the development of publication numbers is presented in Table 1.

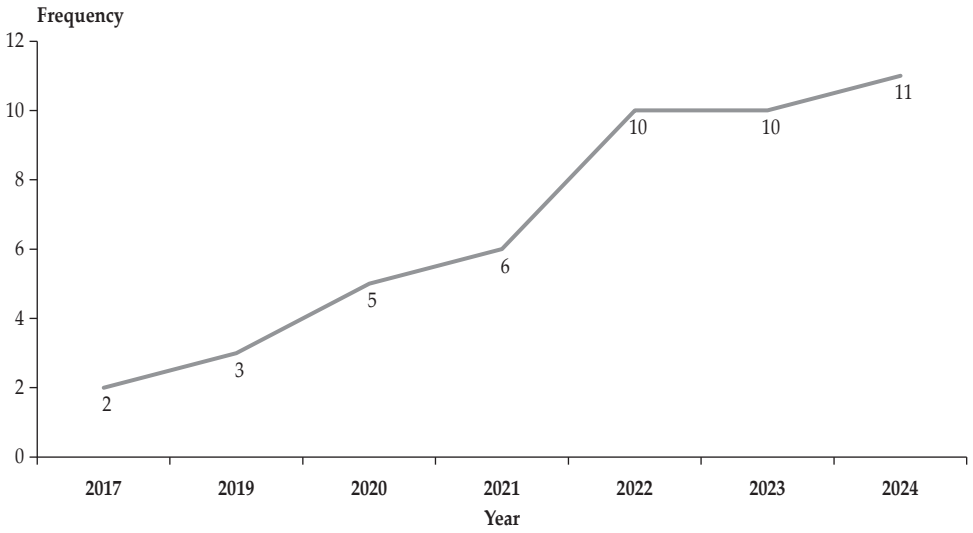
Table 1.
Publication Trends

Year	Frequency	Percentage
2017	2	4.26
2019	3	6.38
2020	5	10.64
2021	6	12.77
2022	10	21.28
2023	10	21.28
2024	11	23.40
Total	47	100.00

Source: Scopus.com (Processed Data, 2025)

[33] Ni Putu Lusiana Pratiwi and Made Sudiarta, "Alternative Marketing Strategies for Low Season Period at Courtyard by Marriott Bali Seminyak Resort," *Journal of Applied Sciences in Travel and Hospitality* 2, no. 2 (2019): 109–19, /https://dx.doi.org/10.31940/jasth.v2i2.1424.

Figure 1. Development of Publication Trends



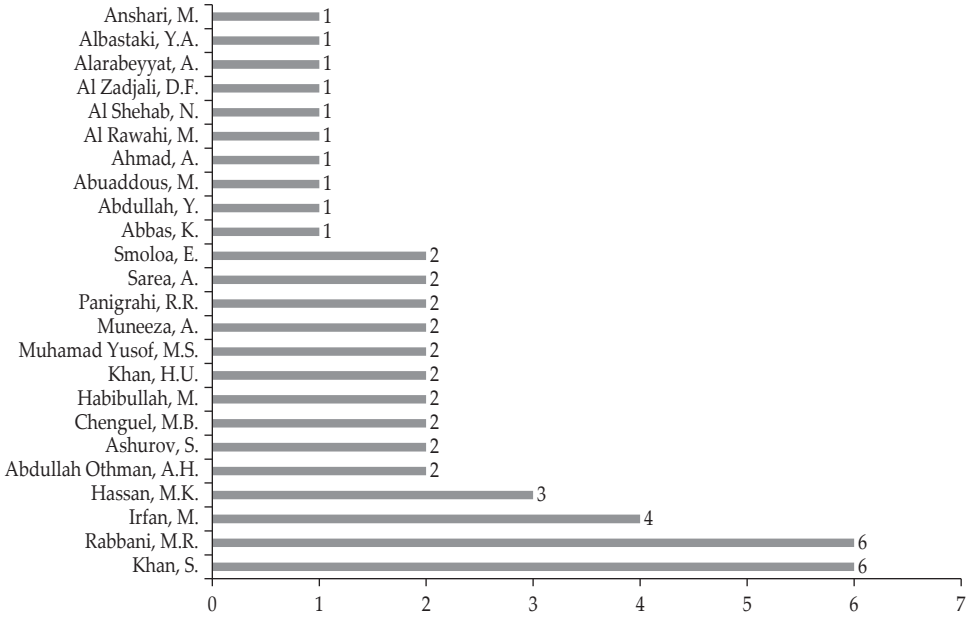
Source: Scopus.com (Processed Data, 2025)

Table 1 and Figure 1 illustrate the trends in studies on AI and Islamic finance published between 2017 and 2024, based on the Scopus database. In 2017, there were only two publications, marking the lowest number within the observed period. Over the subsequent years in the study, the number of publications trended upward. In 2019, the number of publications increased to three, followed by six in 2021. This growth continued, reaching 10 publications in 2020 and further rising to 11 by the end of 2024. Overall, from 2017 to 2024, the total number of publications related to AI and Islamic finance was 47. This reflects growing research interest and the availability of academic literature exploring various aspects of AI and Islamic finance, including policies, implementation, and evaluations. This trend offers opportunities for further analysis to understand the factors influencing research interest in this topic over time and its implications for the development of AI and Islamic finance policies. In this context, the data sourced from Scopus provides valuable insights for evaluating research dynamics and academic interest in AI and Islamic finance from reputable international publications.

III.A.2. Authors and Citations

From the authors' perspective, there are several researchers whose works are more numerous than others.

Figure 2. Number of Publications by Author



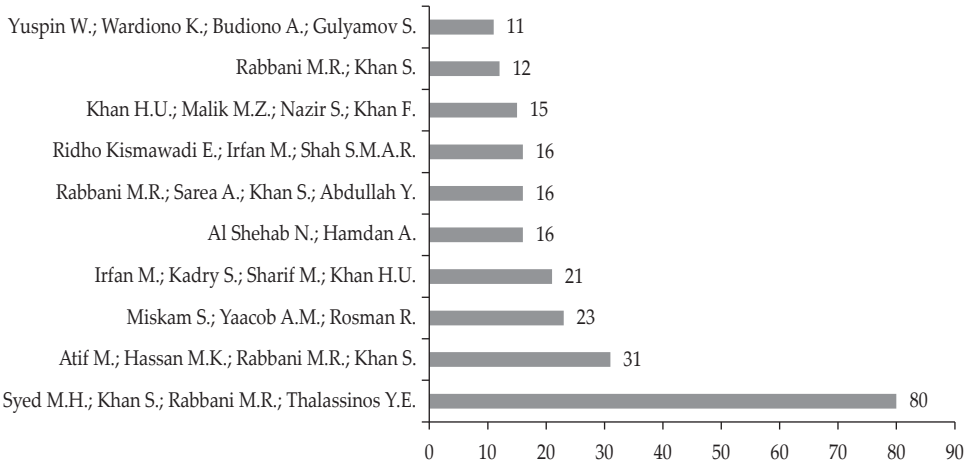
Source: Scopus.com (Processed Data, 2025)

Figure 2 above presents a summary of the authors with the highest number of publications, based on the Scopus database in 2024. Two prominent researchers, namely Khan, Shahnawaz (Scopus ID 57203386251), and Irfan, Mohammad (Scopus ID 57221767823), published six papers each, indicating their significant contribution to the field of scientific publications related to artificial intelligence and Islamic finance. Irfan, M., has four publications, reflecting his consistent contribution to the academic world. Hassan, M.K., follows with three publications, showing his meaningful contribution as well. There are 10 other authors, each with two publications, including Abdullah Othman, A.H., Ashurov, S., Chenguel, M.B., Habibullah, M., Khan, H.U., Muhamad Yusof, M.S., Muneeza, A., Panigrahi, R.R., Sarea, A., and Smoloa, E. This number demonstrates a significant contribution from these authors in enriching the body of scientific literature.

Additionally, there are 13 authors, each with one publication, such as Abbas, K., Abdullah, Y., Abuaddous, M., Ahmad, A., Al Rawahi, M., Al Shehab, N., Al Zadjali, D.F., Alarabeyyat, A., Albastaki, Y.A., and Anshari, M. While their contributions in terms of quantity are smaller, their work remains important in supporting the diversity and enrichment of research in this field. Figure 2 paints a clear picture of the most influential and productive authors in the study of AI and Islamic finance based on the number of documents they have published and indexed by Scopus. This information is useful for identifying

key figures in research, understanding collaboration trends, and assessing individual contributions to the advancement of knowledge, particularly in the field of AI and Islamic finance. The figure provides an insight into the contributions of researchers within the landscape of academic publishing, highlighting their essential role in the development of research in these areas.

Figure 3. Top Ten Most Cited Publications (Listed by Authors)



Source: Scopus.com (Processed Data, 2025)

Figure 3 illustrates the citation counts of various authors whose works contribute to the academic discourse on AI and Islamic finance. The length of the horizontal bars represents the number of citations, with the authors' names displayed on the left side of the figure. Figure 3 highlights that the research team comprising Syed M.H., Khan S., Rabbani M.R., and Thalassinos Y.E. holds the highest citation count, with 80 citations for their study titled *"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."* This work, published in the *International Journal of Economics and Business Administration* in 2020, has had a substantial academic impact and is frequently referenced by scholars in the field.

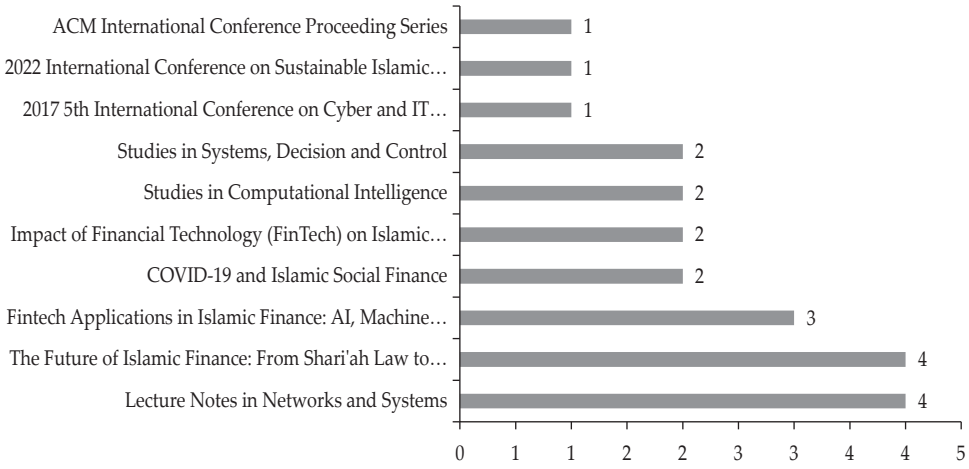
Following closely, the study *"Islamic FinTech: The Digital Transformation Bringing Sustainability to Islamic Finance,"* authored by Atif M., Hassan M.K., Rabbani M.R., and Khan S., ranks second with 31 citations. Published in *COVID-19 and Islamic Social Finance* in 2021, this research underscores the significance of digital transformation in fostering sustainability within Islamic finance. The presence of this work among the most-cited publications reflects the authors' valuable contributions to the scholarly literature. The subsequent positions in

the ranking feature various research teams with citation counts for each of their publications ranging from 11 to 23. Although the number of citations varies, these studies collectively demonstrate a notable impact and relevance within the academic community. Overall, the figure not only presents the citation frequency of scholarly publications but also underscores the substantial contributions of these researchers to the advancement of knowledge in their respective domains. This data offers a comprehensive perspective on the influence of their research, highlighting both the key contributors and the extent to which their work has shaped contemporary academic literature.

III.A.3. Publication Media, Affiliations, and Countries

Based on an analysis of 48 publications retrieved from the Scopus database, the top 10 publication media are identified in Figure 4 below.

Figure 4. Top 10 Publication Media and Number of Publications



Source: Scopus.com (Processed Data, 2025)

Figure 4 highlights the distribution of publication media used for disseminating research related to AI and Islamic finance. Each horizontal bar represents the number of publications issued in various media, with the names of the media listed on the left. In this chart, *Lecture Notes in Networks and Systems* and *The Future of Islamic Finance: From Shari'ah Law to Fintech* stand out as the top sources, each hosting four publications, reaffirming their prominence as key outlets for research dissemination. Following closely, *Fintech Applications in Islamic Finance: AI, Machine Learning, and Blockchain Techniques* accounts for three publications, reflecting its strong reputation as a productive source for sharing research and innovations in the fields of artificial intelligence and Islamic finance.

Similarly, other publications, such as *COVID-19 and Islamic Social Finance*, *Impact of Financial Technology (FinTech) on Islamic Finance and Financial Stability*, *Studies in Computational Intelligence*, and *Studies in Systems, Decision and Control*, are notable, each with two publications. Although these numbers are slightly lower than the top sources, their contributions remain significant in advancing knowledge in their respective domains. Additionally, platforms like the *2017 5th International Conference on Cyber and IT Service Management (CITSM 2017)*, the *2022 International Conference on Sustainable Islamic Business and Finance (SIBF 2022)*, and others, each with one publication, make meaningful contributions to the literature in this field. Despite their smaller output, these sources are vital in addressing critical issues in their respective areas of study.

This data underscores the diversity and richness of publication platforms available to researchers and academics within the scientific community. The analysis also highlights the importance of various publication platforms in fostering knowledge exchange and cross-disciplinary collaboration on a global scale.

Table 2.
Top 10 Institutions with the Highest Number of Publications in AI and Islamic Finance

No.	Affiliation	Number of Publications
1	University of Bahrain	8
2	Kingdom University	6
3	International Islamic University Malaysia	6
4	Ahlia University	5
5	Effat University	4
6	Universiti Brunei Darussalam	4
7	NSB Academy	3
8	University of New Orleans	3
9	INCEIF University	3
10	Techtrade Defence Sdn Bhd	2

Regarding researcher affiliations, Table 2 above presents the top 10 leading institutions with the highest number of publications in the field of AI and Islamic finance, based on Scopus data processed in 2025. According to the table:

- The University of Bahrain ranks first with eight scientific publications.
- Kingdom University and International Islamic University Malaysia follow in second and third places respectively, each with six publications.
- Ahlia University ranks fourth with five publications, while Effat University and Universiti Brunei Darussalam occupy fifth and sixth positions with four publications each.

- Institutions such as NSB Academy, University of New Orleans, and INCEIF University rank seventh through ninth, each contributing three publications.
- Techtrade Defence Sdn Bhd ranks tenth with two publications.

This data highlights the significant contributions of various institutions to the development and dissemination of research related to AI and Islamic finance in Indonesia. This topic is pivotal in advancing financial development and governance at the community level.

Table 3.
Top 10 Countries with the Highest Number of Publications in AI and Islamic Finance

No.	Country	Number of Publication
1	Malaysia	13
2	Bahrain	12
3	Indonesia	8
4	India	7
5	Pakistan	7
6	Saudi Arabia	7
7	United States	4
8	Tunisia	3
9	Turkey	3
10	Brunei Darussalam	2

Source: Scopus.Com (Data Sourced, 2025)

Figure 5. Geographic Distribution of Publications based on the Country Affiliation of Authors

Source: Scopus.com (Processed Data, 2025)

Based on the authors' countries of origin, as presented in Table 3, Malaysia dominates the list with a significant number of publications, totalling 13 scholarly works. This reflects the strong focus and attention of Malaysian researchers on studies related to AI and Islamic finance. Bahrain ranks second with 12 publications, followed by Indonesia and India in third and fourth places with eight and seven publications, respectively. Pakistan and Saudi Arabia share the fifth and sixth positions with seven publications each, while the United States ranks seventh with four publications. Two other countries—Tunisia and Turkey—recorded 3 publications each, placing them in eighth and ninth positions.

The prominence of Malaysia, Bahrain, and Indonesia at the top of this list is unsurprising, given the significant emphasis by governments and academics in these countries on the development of AI and Islamic finance. In Malaysia and Bahrain, strategic policies integrating modern technology with Islamic financial principles have driven increased research output. Meanwhile, in Indonesia, the substantial role of the Islamic financial sector in the national economy provides researchers with direct access to conduct in-depth studies.

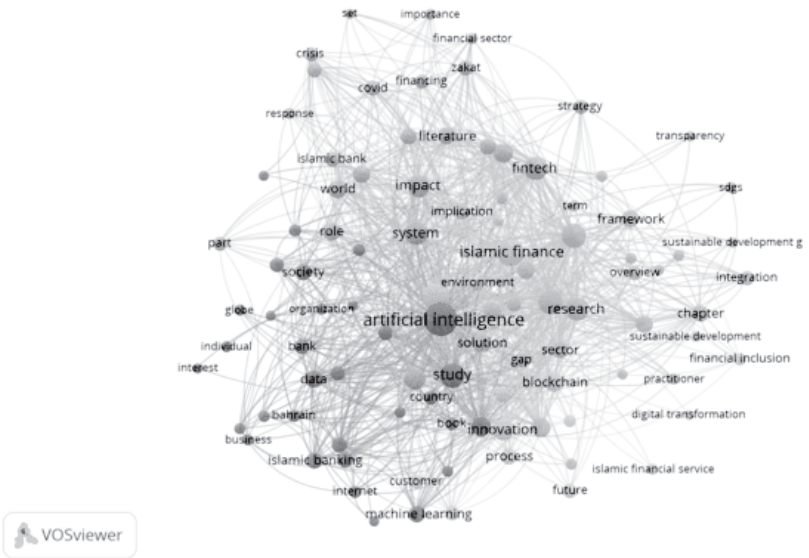
This data not only highlights the prominence of publications in this area of certain countries but also reflects the global distribution of research in artificial intelligence and Islamic finance. The presence of publications from countries such as the United States, Tunisia, Turkey, and Brunei Darussalam underscores the international interest in this topic. This global body of research contributes to the development of inclusive Islamic financial systems and technologies, which are increasingly relevant to the challenges and needs of the modern world.

III.A.4. Research Mapping on Artificial Intelligence and Islamic Finance

Mapping research developments in AI and Islamic finance using VOSviewer produced a visualisation that illustrates the connections among recurring topics in the literature. To generate this visualisation, the researcher selected the "create a map based on text data" feature in VOSviewer. For the data source, the option "read data from reference manager files" was used, with supported file types in RIS format.

The method applied was Binary Counting, with a minimum occurrence of terms set at three, resulting in the selection of 169 terms from 48 documents. The topic mapping for AI and Islamic finance, displayed using the Network Visualization mode, is shown in Figure 6 below.

Figure 6. Topic Mapping of AI and Islamic Finance Research Using Network Visualization Mode



Source: Data Analysis Results (2025)

From Figure 6 above, it is evident that there are 169 items divided into six clusters. Additionally, the mapping results for topics related to AI and Islamic finance reveal connections to 7,925 research links, with 15,382 strong associations. In this visualisation, each node in the map represents a topic or keyword frequently appearing in studies on AI and Islamic finance. The size of each node indicates the frequency of each keyword's occurrence in the analysed publications; the larger the node, the more frequently the topic is discussed. Notably prominent nodes, such as *artificial intelligence*, *Islamic finance*, *study*, and *innovation*, appear larger, signifying their central roles in research and their frequent inclusion as key themes.

The lines connecting the nodes represent the relationships between keywords, where the thickness of the lines reflects the strength of the association between two topics. Nodes that are closely connected and positioned near one another are grouped into clusters, differentiated by distinct colours, illustrating thematic relationships between topics in the literature. These relationships reveal thematic interconnections, providing insights into how various concepts support or interact with each other in research.

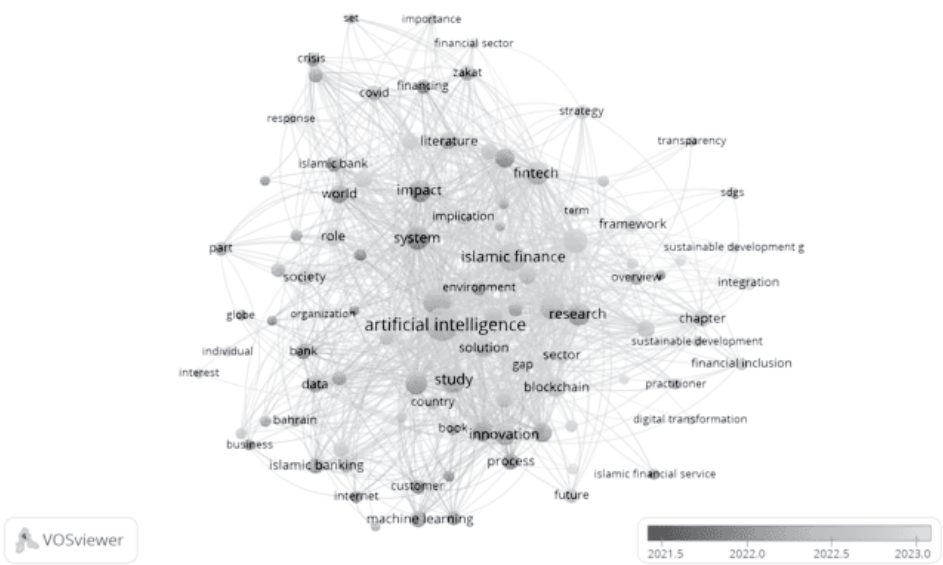
The closely connected nodes are grouped into clusters with specific thematic focuses, as described below:

1. Red Cluster
   This cluster highlights topics such as *artificial intelligence*, *business*, *machine learning*, and *data*. It reflects a research focus on the application of intelligent technologies, such as ML and data analysis, in Islamic financial systems. Studies in this cluster often examine technological innovations to enhance efficiency, risk management, and service optimisation in the Islamic banking sector. These technologies are not only designed to accelerate decision-making processes but also to ensure compliance with Shariah principles in data management and transactions.
2. Green Cluster
   This cluster emphasises themes such as *sustainable development*, *solution*, and *integration*, highlighting the relationship between advanced technologies and sustainable development goals (SDGs). It highlights the interest in how digital transformation can support the inclusivity of Islamic finance in addressing global challenges such as climate change and economic inequality.
3. Blue Cluster
   Keywords in this cluster include *Islamic bank*, *impact*, *COVID*, *fintech*, and *role*. This cluster focuses on the contributions of Islamic financial institutions to society. Research in this cluster frequently examines the role of Islamic banking in providing stable and equitable financial solutions, especially during global challenges such as economic crises or the COVID-19 pandemic. It also highlights the impact of Islamic finance in supporting social and economic development based on Shariah values.
4. Yellow Cluster
   This cluster is associated with keywords such as *financial inclusion*, *innovation*, *fintech*, *framework*, *blockchain*, and *digital transformation*. It reflects a focus on developing financial technology frameworks that align with Shariah principles. Research in this cluster explores ways to integrate fintech into the Islamic finance ecosystem, including the creation of innovative and user-friendly products and services. This is particularly important in addressing the needs of millennials and Gen Z, who increasingly rely on technology for financial activities. Blockchain, in particular, is regarded as a critical innovation within this cluster due to its potential to enhance transparency and efficiency in managing Islamic funds, including *waqf* and *zakat*.

The distribution of nodes in this map underscores the centrality of *artificial intelligence* and *Islamic finance* as core topics, with strong connections to various subtopics such as *blockchain*, *innovation*, *integration*, and *sustainable development*. This reflects the multidisciplinary nature of research in this field, encompassing technological, social, and economic aspects.

Overall, this visualisation provides valuable insights into current research trends and potential gaps in the literature that can serve as opportunities for further studies. It also offers a strategic guide for researchers to identify research directions relevant to societal needs and technological advancements.

Figure 7. Topic Mapping Results of AI and Islamic Finance Studies Using Overlay Visualization Mode



Source: Data Processing Results (2025)

Figure 7 shows the topic mapping results of studies on AI and Islamic finance using the Overlay Visualization mode in VOSviewer. This visualisation highlights the evolution of topics discussed in the relevant literature over time, with different colours indicating the publication years of these topics. The colour changes of the nodes in this visualisation reflect a temporal dimension, with blue denoting earlier studies (around 2021) and yellow denoting more recent research (2023). This temporal dynamic reveals how research focus has evolved, adapting to global challenges and academic needs.

Initially (around 2021), research was primarily centered on pressing issues such as COVID-19, ML, and financial crises. The global pandemic served as a starting point for academic discussions, particularly its impact on economic stability and financial systems, including Islamic finance. Studies during this period addressed the adaptation of Islamic finance to crisis conditions, including:

- The role of Islamic banking in addressing liquidity challenges during the pandemic.
- The utilisation of technology to support remote transactions, reduce physical interactions, and maintain operational continuity.
- Financial solutions rooted in Islamic values to aid economically affected communities, such as digital *zakat* and *waqf*-based platforms.

These topics reflected the urgency of addressing immediate crises and highlighted the capability of Islamic finance to offer solutions grounded in moral values.

In later years, research attention shifted to strategic topics with long-term impacts. The dominance of yellow nodes, such as *sustainable development*, *framework*, *integration*, and *digital transformation,* indicates these areas as the latest research trends. Key research focuses during this period include:

- Sustainable Development, exploring how Islamic finance can support SDGs, such as through green *sukuk* issuance, environmentally friendly financing, and blockchain-based transparency solutions.
- Digital Transformation, emphasising the role of digital technology in accelerating the transformation of Islamic finance, such as AI-based applications for data analysis and risk management.
- Integration, which explores efforts to integrate Islamic finance with modern technologies, for example, using blockchain for smart contracts in Shariah-compliant transactions.

This shift reflects the evolution of Islamic finance from merely adapting to crises to becoming a modern, inclusive, and globally relevant financial system.

Research in this field shows a progressive pattern, starting from the application of foundational technologies to addressing more complex and impactful themes. Initially, studies focused on basic technologies such as data analysis ML, which form the foundation for further innovations. These studies aimed to develop technologies that enhance efficiency and decision-making in Islamic finance.

Recent research, however, has shifted to exploring technology applications that support sustainability, financial inclusion, and operational efficiency. Themes such as sustainable development and financial inclusion have become central, reflecting Islamic finance's commitment to making tangible contributions to global society. Further developments in research now focus on integrating advanced technologies like artificial intelligence with Islamic finance principles. This includes:

- Using AI algorithms to simplify Shariah risk analysis.
- Enhancing the efficiency of zakat management.
- Developing digital platforms grounded in Islamic values.

These trends demonstrate the evolution of Islamic finance into a system that not only upholds religious values but also competes in the global market through technological innovation.

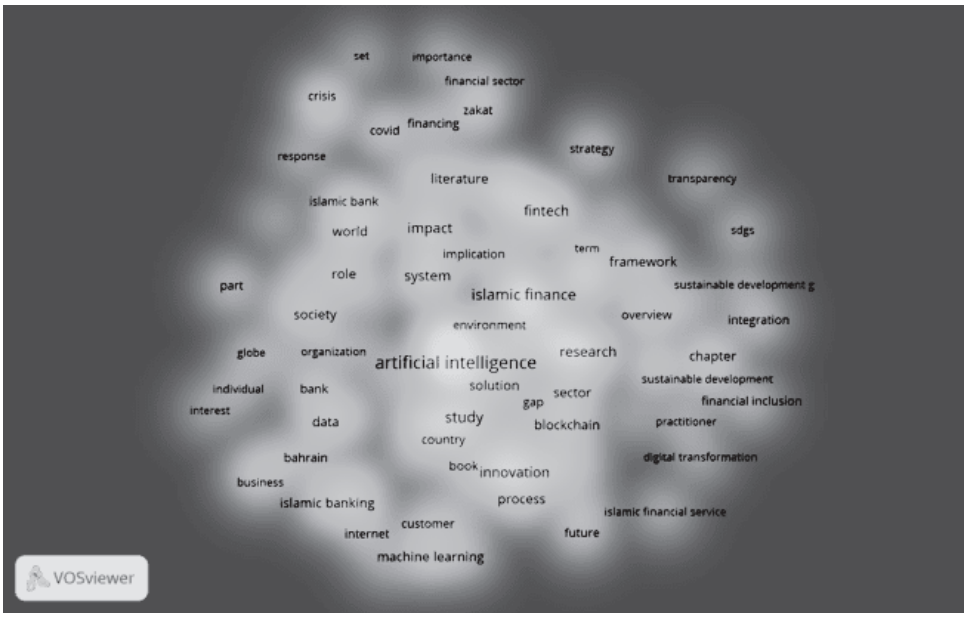
This visualisation reveals significant opportunities for deeper research, particularly in connecting modern technologies with Islamic finance principles. Potential areas for further exploration include:

1. AI and Sustainable Development
    - Investigating how AI can be used to develop sustainability impact assessment systems for Islamic finance projects.
    - Applying AI to monitor and report real-time usage of green *sukuk* funds, enhancing transparency and accountability.
2. Integration of Financial Inclusion and Technology
    - Exploring how AI- and blockchain-based technologies can be integrated to improve financial access for underserved communities.
    - Developing AI-based platforms to provide Shariah-compliant microfinance services.
    - Utilising blockchain to create more inclusive and efficient financial systems in developing countries.
3. Operational Efficiency Frameworks in Islamic Finance
    - Examining how ML can facilitate more accurate Shariah risk analysis within Islamic finance frameworks.
    - Investigating the application of digital transformation to develop predictive models that maximise *zakat* and *waqf* potential on a global scale.

By bridging advanced technologies and Islamic finance values, future research can contribute significantly to innovation, sustainability, and global financial inclusion.

Figure 8 presents the mapping results of research topics related to AI and Islamic Finance using the Density Visualization mode in the VOSviewer application. This visualisation illustrates the density of occurrences of specific topics within the analysed literature. Brighter colours (yellow) indicate areas with high topic density, while darker colours (green to blue) represent areas with lower topic density.

Figure 8. Mapping Results of Artificial Intelligence and Islamic Finance Topics Using Density Visualization Mode



Source: Data Processing Results (2025)

The visualisation confirms that *artificial intelligence* and *Islamic finance* constitute the core themes dominating the literature. Beyond indicating technological prominence, this concentration also signals the growing regulatory and supervisory relevance of AI-driven Islamic finance. The central positioning of these themes reflects increasing attention to how AI applications intersect with Shariah-compliant financial systems, an area that directly implicates the mandates of central banks and financial supervisory authorities in maintaining financial stability, overseeing payment systems, and supervising Islamic financial institutions.

Surrounding these core themes are terms such as *innovation*, *system*, *research*, and *solution*, which suggest that scholarly discourse increasingly addresses institutional and systemic transformation rather than isolated technological adoption. From a regulatory perspective, this trend mirrors how central banks—such as Bank Indonesia, Bank Negara Malaysia, and the Central Bank of Bahrain—are responding to AI-driven Islamic finance through regulatory sandboxes, fintech supervision frameworks, and policy initiatives. The prominence of system-oriented terminology implies an emerging need for regulatory architectures capable of governing AI-enabled Islamic financial infrastructures.

The presence of themes related to *sustainable development*, *financial inclusion*, and *transparency*—although appearing with relatively lower density—carries important implications for public financial authorities. These themes align closely with central banks and financial supervisory authorities' mandates concerning inclusive finance, consumer protection, and ethical financial governance. In the context of Islamic finance, they further reinforce the supervisory responsibility of ensuring that AI-driven innovations comply with Shariah principles such as fairness (*'adl*), transparency (*shafafiyyah*), and public welfare (*maslahah*).

Notably, topics such as *framework*, *literature*, and *gap* appear in intermediate-density zones, suggesting that while technological applications are extensively studied, the legal and institutional frameworks required to regulate AI in Islamic finance remain insufficiently developed. This gap points to unresolved questions regarding regulatory design, supervisory capacity, and institutional coordination between central banks, Shariah advisory bodies, and fintech regulators. The relative absence of explicit regulatory and legal concepts in high-density areas may indicate a regulatory lag in responding to rapid AI adoption.

Meanwhile, darker-coloured areas associated with themes such as *integration*, *digital transformation*, and *financial inclusion* suggest that the institutional implications of AI adoption have received comparatively less scholarly attention. From the perspective of public financial authorities, this raises critical legal risks, including algorithmic bias, lack of explainability in AI-based decision-making, data protection concerns, and accountability challenges in AI-enabled Islamic financial services. These issues directly affect the enforcement and oversight functions of central banks and financial supervisory authorities.

In general, the Density Visualisation Mode provides more than a descriptive overview of research intensity. It reveals a structural imbalance between the rapid advancement of AI technologies and the comparatively limited development of regulatory, legal, and institutional discourse. This finding underscores the urgency for central banks and financial regulators to strengthen adaptive regulatory frameworks, enhance Sup Tech, and improve institutional coordination with Shariah governance bodies to ensure that AI-driven Islamic finance supports financial stability, legal certainty, and Shariah compliance.

III.B. SWOT Analysis

III.B.1. Strengths and Weaknesses

The rapid advancement of AI has increasingly influenced the financial sector, including Islamic finance, with significant implications for regulatory

governance and institutional oversight. From a regulatory and institutional perspective, AI is not merely a technological instrument but a structural factor reshaping supervisory practices, compliance mechanisms, and policy mandates of central banks and financial authorities responsible for Islamic finance. Accordingly, the strengths and weaknesses of AI adoption must be assessed in relation to regulatory capacity, legal certainty, and institutional readiness.

Table 4.
Identification of Internal Factors

Strengths	Weaknesses
Operational Efficiency: AI can automate processes such as risk assessment, Shariah compliance verification, and data management, thereby reducing operational costs and time.	Limited Understanding of Shariah Principles: AI operates based on data and algorithms designed by humans, requiring specific input to comprehend Shariah principles.
More Accurate Data Analysis: AI algorithms can quickly analyse complex financial data, aiding in more precise decision-making aligned with Shariah principles.	Dependence on High-Quality Data: AI relies on accurate and comprehensive data. The limited availability of data in Islamic finance can hinder AI algorithm performance.
Improved Shariah Compliance: AI can be programmed to automatically review transactions against Shariah compliance parameters, ensuring transactions are free from *riba* (usury), *gharar* (excessive uncertainty), and *maysir* (gambling).	Risk of Algorithmic Bias: Poorly designed AI algorithms may introduce bias, potentially leading to decisions that are inconsistent with Shariah principles.
Service Personalisation: AI enables the development of more personalised Shariah-based financial services, such as microfinancing tailored to individual needs.	High Implementation Costs: Applying AI, particularly in Islamic finance systems, requires significant initial investment in technology development and training.
	Inadequate Regulations: The regulatory framework for AI in Islamic finance has not evolved as quickly as the technology itself, creating legal uncertainties.

Source: Data Processing Results (2025)

From an internal regulatory standpoint, one of the principal strengths of AI lies in its potential to enhance supervisory efficiency and compliance monitoring within Islamic financial institutions. As summarised in Table 4, AI enables the automation of processes such as risk assessment, transaction monitoring, and preliminary screening for Shariah compliance. For regulators and supervisory authorities, these capabilities support the development of SupTech, allowing for more timely detection of irregularities, improved data analytics, and enhanced oversight of Shariah-compliant financial activities. AI-driven systems can assist supervisory authorities in monitoring compliance with prohibitions against *riba*, *gharar*, and *maysir* by flagging anomalous transactions and patterns that may warrant further review.

Another institutional strength of AI relates to its capacity to improve transparency and decision-support mechanisms for both regulators and

regulated entities. Advanced data analytics facilitate more informed supervisory judgments, contribute to evidence-based policymaking, and support regulatory objectives such as consumer protection and financial stability. In addition, AI-enabled personalisation of Islamic financial services—such as Shariah-based microfinance or risk profiling—may align with broader public policy goals of financial inclusion, provided that such applications operate within a clear regulatory framework.

Despite these strengths, several structural and legal weaknesses constrain the effective regulatory deployment of AI in Islamic finance. A key limitation is the inherent inability of AI systems to interpret Shariah principles independently, as algorithms function solely on predefined data, models, and assumptions. From a regulatory perspective, this raises concerns regarding accountability and explainability, particularly when AI-generated decisions affect compliance assessments or consumer outcomes. Without transparent and auditable models, supervisory authorities may face difficulties in enforcing Shariah and prudential standards.

Data dependency represents another significant weakness. AI performance relies heavily on the availability, quality, and governance of data, yet Islamic finance ecosystems often face fragmented datasets and limited standardised Shariah-compliant data infrastructures. This limitation poses challenges not only for institutional implementation but also for regulators tasked with overseeing data protection, privacy, and cross-border data flows. Furthermore, algorithmic bias remains a critical legal risk. Biased datasets or opaque models may lead to discriminatory or Shariah-inconsistent outcomes, undermining regulatory credibility and public trust in Islamic financial institutions.

High implementation costs also constitute an institutional weakness, particularly for regulatory bodies and smaller Islamic financial institutions with limited technological and human resource capacity. Effective AI oversight requires specialised expertise, continuous training, and investment in supervisory infrastructure, which may exceed existing institutional capabilities. Finally, regulatory frameworks governing AI in Islamic finance remain underdeveloped and uneven across jurisdictions. The absence of harmonised standards, clear liability rules, and enforcement mechanisms creates legal uncertainty for both regulators and market participants, complicating supervisory coordination between central banks, Shariah advisory bodies, and fintech regulators.

Understanding these strengths and weaknesses from a regulatory and institutional perspective is essential for designing effective governance strategies. Such an assessment enables public financial authorities to leverage AI as a supervisory and policy tool while addressing legal risks, strengthening institutional capacity, and ensuring that AI adoption in Islamic finance remains

consistent with financial stability objectives, Shariah principles, and public accountability.

III.B.2. Opportunities and Threats

In the context of digital transformation, Artificial Intelligence (AI) presents not only technological opportunities but also strategic regulatory and institutional implications for Islamic finance. From the perspective of public financial authorities, AI creates opportunities to modernise regulatory practices, enhance supervisory effectiveness, and support policy objectives such as financial inclusion, financial stability, and Shariah-compliant market development. At the same time, AI introduces new governance challenges that may threaten regulatory credibility, systemic resilience, and public trust if not adequately managed.

Table 5.
Identification of External Factors

Opportunities	Threats
Growth of Islamic Fintech: AI integration can accelerate the growth of Islamic fintech platforms, expanding access to Islamic financial services for more people, especially in remote areas.	Data Security and Privacy: The use of AI increases the risk of data breaches, which could erode public trust in Islamic financial institutions.
Development of New Products: AI can help create innovative Islamic financial products that meet modern market needs, such as green financing or ethical investments.	Inadequate Regulations: Many countries lack clear regulations regarding the use of AI in Islamic finance, which may create legal uncertainties.
Globalisation of Islamic Finance: With AI, the Islamic finance sector can more easily compete in the global market due to increased transparency and efficiency.	Competition with Conventional Finance: Conventional finance, which has already adopted AI, may dominate the market, leaving the Islamic finance sector in a less competitive position.
Improved Customer Satisfaction: AI-powered chatbots and virtual assistants can provide faster and more responsive customer service, enhancing user experience.	Dependence on Technology: Excessive reliance on AI can become a risk if system failures or cyberattacks occur, which could significantly impact consumer trust.

Source: Data Processing Results (2025)

Based on Table 5, one of the key opportunities arising from AI adoption lies in the expansion of Shariah-compliant fintech under regulatory oversight. AI enables the development of digital Islamic financial platforms capable of reaching underserved and geographically remote populations, thereby supporting central bank mandates related to financial inclusion. When functioning within appropriate regulatory frameworks—such as regulatory sandboxes or innovation hubs—AI-driven fintech can be tested and scaled while remaining subject to prudential supervision and Shariah governance standards.

AI also offers opportunities for regulatory innovation and supervisory enhancement. From an institutional standpoint, AI can be leveraged by central banks and financial supervisory authorities to strengthen market transparency, improve risk monitoring, and enhance compliance oversight through SupTech. These tools may assist regulators in monitoring systemic risks, assessing Shariah compliance trends, and responding more effectively to emerging vulnerabilities within AI-enabled Islamic financial institutions. In addition, AI supports the development of innovative Shariah-compliant financial products—such as green financing, ethical investments, and sustainability-linked instruments—that align with broader public policy goals related to sustainable development and responsible finance.

At the same time, AI adoption generates significant regulatory and institutional challenges. Data governance and privacy risks represent one of the most critical threats from a public authority perspective. The increased reliance on large-scale data processing raises concerns regarding data protection, cross-border data flows, and cybersecurity vulnerabilities, all of which fall within the regulatory responsibilities of central banks and financial supervisory authorities. Data breaches or misuse of personal information can severely undermine public confidence in Islamic financial institutions and weaken regulatory legitimacy.

Another major challenge relates to regulatory fragmentation and legal uncertainty. In many jurisdictions, regulatory frameworks governing AI in finance—particularly within Islamic finance—remain underdeveloped or inconsistent. This creates enforcement challenges and complicates regulatory coordination among central banks, Shariah advisory bodies, and fintech regulators. The absence of clear rules on algorithmic accountability, explainability, and liability further exacerbates supervisory risks, especially when AI systems influence credit decisions, risk assessments, or Shariah compliance determinations.

Competition from the conventional financial sector also poses an institutional challenge. Conventional finance has generally adopted AI technologies earlier and on a larger scale, potentially creating competitive imbalances that may pressure Islamic financial institutions to accelerate AI adoption without sufficient regulatory safeguards. Furthermore, excessive reliance on AI systems introduces systemic vulnerabilities, particularly in the event of technological failures, cyberattacks, or model errors. Such disruptions may have broader implications for operational continuity, consumer protection, and financial stability—core mandates of central banks and supervisory authorities.

Understanding these opportunities and threats through a regulatory and institutional lens enables policymakers and regulators to design adaptive governance strategies that harness AI's potential while mitigating its risks. Effective regulatory coordination, strengthened supervisory capacity, and robust legal frameworks are therefore essential to ensuring that AI-driven transformation in Islamic finance advances innovation without compromising Shariah principles, financial stability, or public trust.

III.B.3. Positioning Strategy

Through the identification of internal and external factors in analysing the role of AI within the Islamic finance sector—examining strengths, weaknesses, opportunities, and threats—each strategic factor is assigned weights and ratings. This process is essential for determining the positioning of AI within the sector and formulating appropriate strategic options.

Table 6.
Analysis of Strengths and Weaknesses

No	*Internal Factor Analysis Summary* (IFAS)	Weight	Rating	Score
	***Strengths* (S)**			
1	Operational efficiency	0.12	5	0.61
2	More accurate data analysis	0.12	5	0.61
3	Better Sharia compliance	0.12	5	0.61
4	Personalised services	0.10	5	0.49
	Total of Score (S)	0.46		2.32
	***Weaknesses* (W)**			
1	Limited understanding of Sharia principles	0.12	1	0.12
2	Dependence on high-quality data	0.10	2	0.20
3	Risk of bias in algorithms	0.10	2	0.20
4	High implementation costs	0.10	2	0.20
5	Inadequate regulations	0.12	1	0.12
	Total Score (W)	**0.54**		0.83
	Total	1.00		**3.15**

Source: Data Processing Results (2025)

Table 7.
Analysis of Opportunities and Threats

No.	*External Factor Analysis Summary* (EFAS)	Weight	Rating	Score
	***Opportunities* (O)**			
1	Growth of Islamic fintech	0.11	4	0.46
2	Development of new products	0.14	4	0.57
3	Globalisation of Islamic finance	0.11	4	0.46
4	Improved customer satisfaction	0.11	4	0.46
	Total of Score (O)	0.49		1.94

Table 7.
Analysis of Opportunities and Threats (Continued)

No.	*External Factor Analysis Summary* (EFAS)	Weight	Rating	Score
	Threats (T)			
1	Data security and privacy	0.14	2	0.29
2	Inadequate regulations	0.14	1	0.14
3	Competition with conventional finance	0.11	2	0.23
4	Dependence on technology	0.11	2	0.23
	Total of Score (T)	**0.51**		**0.89**
	Total	**1.00**		**2.83**

Source: Data Processing Results (2025)

Subsequently, based on the analysis of internal factors (strengths and weaknesses) and external factors (opportunities and threats), as presented in Tables 6 and 7 respectively, a coordinate point can be established on the SWOT Model Quadrant, as illustrated in Graph 2. This graphical representation facilitates a clearer understanding of AI's strategic positioning and the potential pathways for its development in the Islamic finance sector.

Graph 2. Positioning Coordinates IE SWOT Matrix

		Internal Factors		
		High (3,0-4,0)	**Medium (2,0-2,99)**	**Low (1,0-1,99)**
External Factors	High (3,0-4,0)	I Growth: Concentration through Vertical Integration	II Growth: Concentration through Horizontal Integration	III Retrenchment: Turn-round Strategy
	Medium (2,0-2,99)	IV Stability	V Growth: Concentration through Horizontal Integration or Stability Profit Strategy	VI Retrenchment: Divestment Strategy
	Low (1,0-1,99)	VII Growth Concentric Diversification	VIII Growth: Conglomerate Diversification	IX Liquidation

Source: Data Processing Results (2025)

The analysis of AI's strategic positioning, based on an assessment of its strengths, weaknesses, opportunities, and threats, places it at the High–Medium coordinates (3.15:2.83), corresponding to cell IV. From a regulatory and institutional perspective, this position indicates that AI adoption in Islamic finance currently operates within a relatively stable but risk-sensitive environment that requires careful regulatory stewardship. Given this strategic

position, a stability strategy is recommended. In this context, stability refers not only to market performance but also to the capacity of central banks and financial supervisory authorities to maintain financial stability, regulatory credibility, and public trust amid AI-driven transformation.

A crucial component of this stability strategy involves optimising operational processes through regulatory-supported and supervisor-enabled AI integration. AI has significant potential to enhance efficiency across various dimensions of Islamic finance, including risk management, financial data analysis, and Shariah compliance monitoring. For central banks and financial authorities, these capabilities align with innovation mandates such as the development of SupTech and RegTech, enabling more effective oversight, early risk detection, and real-time monitoring of AI-enabled Islamic financial institutions. Through ML algorithms, supervisory bodies can complement institutional-level risk assessments by enhancing stress testing, transaction surveillance, and Shariah governance oversight, thereby reinforcing systemic resilience rather than merely improving operational efficiency.

Strengthening customer relationships also emerges as a critical dimension of stability from a public policy and regulatory legitimacy standpoint. AI-enabled customer service tools, such as chatbots or virtual assistants, can improve responsiveness and access to Shariah-compliant financial products. However, from the perspective of financial regulators, these innovations directly relate to consumer protection mandates, transparency obligations, and the preservation of public trust in Islamic financial systems. Ensuring that AI-driven advisory services remain explainable, non-discriminatory, and Shariah-compliant is therefore not only a business concern but also a regulatory responsibility shared by Islamic financial institutions and supervisory authorities.

In addition, diversifying Shariah-compliant financial products through AI-driven innovation must be assessed within the institutional and regulatory frameworks governing Islamic finance. Leveraging AI to develop products related to renewable energy financing or sustainable investments creates opportunities for central banks to advance policy objectives related to sustainable finance, financial inclusion, and ethical investment, consistent with both macroprudential goals and Shariah principles. Nevertheless, this opportunity simultaneously raises regulatory challenges, particularly concerning data governance, model validation, and accountability in AI-based decision-making processes.

The weaknesses and threats identified in the SWOT analysis—such as data security vulnerabilities, opacity of algorithms, and technological dependency—represent not merely operational risks but potential threats to financial stability, regulatory effectiveness, and institutional credibility. In this regard, central

banks and financial supervisory authorities face the challenge of balancing innovation facilitation with risk containment, requiring enhanced supervisory capacity, cross-agency coordination, and updated legal frameworks addressing AI governance. Collaboration between central banks, Shariah advisory bodies, and fintech regulators becomes essential to ensure that AI adoption does not undermine Shariah compliance, consumer confidence, or systemic integrity.

Overall, interpreting the SWOT results from a regulatory and institutional perspective highlights the central role of central banks and financial authorities in steering, supervising, and legitimising the adoption of AI in Islamic finance. This approach allows AI-enabled Islamic finance to maintain its current strategic position while protecting financial stability, reinforcing regulatory credibility, and ensuring that technological innovation remains consistent with Shariah principles and broader public interest objectives.

IV. CONCLUSION

Based on the findings and discussion regarding the development of AI and Islamic finance, several conclusions can be drawn. *First*, the total publications related to AI and Islamic finance reached 47, with a trend of consistent growth over the years. *Second*, in terms of authorship, two prominent contributors emerged: Khan, Shahnawaz (Scopus ID 57203386251) and Irfan, Mohammad (Scopus ID 57221767823), each with six publications in this field. Their significant contributions highlight their role in advancing scientific publications on AI and Islamic finance. Additionally, the most-cited work in this field is by Syed M.H., Khan S., Rabbani M.R., and Thalassinos Y.E., titled *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*. Published in the *International Journal of Economics and Business Administration* in 2020, this work has been cited 80 times, securing the top position.

Third, regarding publication outlets, *Lecture Notes in Networks and Systems* and *The Future of Islamic Finance: From Shari'ah Law to Fintech* stand out as the leading sources, each with four publications. The *University of Bahrain* emerged as the institution with the highest number of publications, contributing eight academic works. Among the countries of origin, Malaysia dominates with 13 publications, reflecting significant focus and interest from Malaysian researchers in AI and Islamic finance. *Fourth*, topic mapping reveals that "artificial intelligence," "Islamic finance," "study," and "innovation" are central themes, with strong links to subtopics like blockchain, innovation, integration, and sustainable development. This indicates the multidisciplinary nature of research in this area, encompassing technological, social, and economic aspects.

Topics related to sustainable development, frameworks, integration, and digital transformation represent emerging research trends and are likely to continue evolving. In terms of density, areas such as financial inclusion, sustainable development, integration, and digital transformation remain underexplored, offering opportunities for future research.

From the SWOT analysis, it can be concluded that the use of AI in the Islamic finance sector offers several strengths to enhance operational efficiency and service quality. These include automating processes, analysing complex financial data quickly and accurately, improving Sharia compliance through automated transaction checks, and providing personalised services such as Sharia-based microfinance tailored to individual needs. However, these strengths are accompanied by certain weaknesses. A primary limitation is AI's inability to deeply understand Sharia principles, as it operates based on data and algorithms designed by humans. Additionally, AI's success heavily relies on the availability of high-quality data. In Islamic finance, AI is also vulnerable to algorithmic bias, which could lead to decisions misaligned with Sharia principles if not carefully designed. Implementing AI involves high costs, including technological development and human resource training.

The application of AI in Islamic finance presents significant opportunities for development and growth. A key opportunity is the advancement of Islamic fintech through AI integration, which can expand access to Islamic financial services, particularly in remote areas. AI also enables the development of innovative products, such as green financing and ethical investments, while enhancing efficiency and transparency to promote globalisation in this sector. AI-powered technologies like chatbots and virtual assistants improve customer experience with fast, personalised, and responsive services. However, challenges remain, such as data security and privacy risks, which can erode public trust, and regulatory uncertainty in many countries. Competition with the conventional finance sector, which has earlier adopted AI, also poses a barrier.

To address the challenges of AI adoption in Islamic finance, a comprehensive institutional approach is required that balances technological innovation with regulatory oversight, financial stability, and adherence to Sharia principles. Central banks and financial supervisory authorities play a pivotal role in governing AI-enabled Islamic finance through the development of clear regulatory and policy frameworks that ensure legal certainty, ethical safeguards, and supervisory consistency. These frameworks should address key risks such as algorithmic bias, data governance, and model opacity through standardised data practices, validation requirements, and AI auditing mechanisms tailored to Islamic finance. Effective AI governance also depends

on strengthened institutional oversight, including the active role of Sharia advisory bodies in ensuring compliance with Islamic legal and ethical norms. Coordinated engagement between central banks, Sharia boards, and fintech regulators is essential to mitigate legal and ethical risks while maintaining supervisory coherence. In parallel, capacity-building initiatives to enhance AI literacy among regulators, Sharia scholars, and financial professionals are critical to improving supervisory effectiveness and institutional readiness. Finally, sustained collaboration between academia, industry, and regulators can support evidence-based policymaking, responsible innovation, and the development of AI applications that enhance the resilience, integrity, and inclusiveness of Islamic finance in line with financial stability objectives and Sharia principles.

IV.A. Implications, Limitations, and Suggestions for Future Research

The implications of this study extend beyond technological adoption and research trend mapping, contributing more directly to ongoing debates on central banking, financial regulation, and institutional governance in the context of AI-enabled Islamic finance. From an academic perspective, the bibliometric findings illuminate how scholarly discourse on AI in Islamic finance has evolved in ways that increasingly intersect with regulatory mandates, supervisory responsibilities, and governance concerns. Underexplored themes such as financial inclusion, sustainability, integration, and digital transformation are not only research gaps but also signal emerging regulatory challenges that central banks and financial authorities must address in pursuing financial stability, ethical finance, and Sharia-compliant oversight. From a regulatory and institutional standpoint, the SWOT analysis highlights how AI adoption in Islamic finance generates both opportunities and systemic risks that fall squarely within the mandates of central banks and supervisory authorities. While AI can enhance supervisory efficiency, risk monitoring, and consumer outreach, persistent challenges—such as the absence of Sharia-aware AI systems, algorithmic bias, data governance risks, and high implementation costs—pose potential threats to financial stability, regulatory credibility, and public trust. These findings underscore that central banks and financial regulators should act not merely as facilitators of innovation but as active institutional architects. Their roles include designing adaptive regulatory frameworks, operationalising regulatory sandboxes, strengthening supervisory technologies Sup Tech, coordinating with Sharia advisory bodies, and ensuring that AI-driven Islamic finance remains aligned with prudential objectives and Sharia principles. Accordingly, this study contributes by reframing AI adoption as an institutional governance issue rather than a purely technological or market-driven process.

This study also acknowledges several limitations that inform future research agendas. The bibliometric analysis relies on selected databases and, therefore, may not capture the full breadth of regulatory, legal, or policy-oriented scholarship on AI in Islamic finance. Moreover, the SWOT analysis remains conceptual and does not empirically assess regulatory capacity, supervisory effectiveness, or institutional readiness within specific central bank or national contexts. The interaction between AI governance and Sharia legal reasoning is also not examined in sufficient depth, limiting the study's ability to fully capture the normative dimensions of Islamic financial regulation.

These limitations open important avenues for future research that directly engage with institutional and regulatory questions. Subsequent studies should incorporate the examination of regulatory documents, central bank policy reports, and legal texts to examine how different jurisdictions govern AI in Islamic finance. Empirical research—such as case studies of central banks, supervisory authorities, or regulatory sandbox initiatives—would provide deeper insight into institutional design, inter-agency coordination, and enforcement challenges. Further research should also integrate Islamic legal theory more systematically, examining how principles such as justice (*'adl)*, transparency, and the prohibition of *riba*, *gharar*, and *maysir* can be operationalised within AI governance frameworks. Interdisciplinary collaboration among scholars of Islamic law, economics, and regulatory studies will be essential to advancing a coherent and policy-relevant framework for AI-enabled Islamic finance.

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