Jurnal Multidisiplin Indonesia (JOUMI)
Vol.2, No.4 Desember 2024
e-ISSN: 2986-7541; p-ISSN: 2986-7533, Hal 97-106
DOI: https://doi.org/10.62007/joumi.v2i4.533

Digital Transformation of Islamic Economy: Potential and Challenges of Fintech and Blockchain in Islamic Financial System

Biyati Ahwarumi
Institut Pesantren Sunan Drajat, Lamongan, Indonesia
*Korespondensi penulis: *ahwarumi@insud.ac.id*

***Abstract**. This study aims to analyze the strategic role of fintech and blockchain in Islamic finance, focusing on the effectiveness of Islamic financing, smart contract implementation, and asset tokenization such as digital sukuk and zakat. The method used is descriptive qualitative research with a literature study approach and content analysis of secondary data from academic articles, official reports, and case studies of Islamic fintech platforms. The results of the study indicate that Islamic fintech has succeeded in bringing financial services closer to the unbanked and underbanked, while blockchain technology provides transparency and transaction efficiency in accordance with the values of maqashid sharia. However, there are still structural challenges such as unpreparedness of regulations and minimal collaboration between stakeholders. This study contributes to the development of a technology-based Islamic economy and recommends the establishment of a Shariah Digital Sandbox and the development of an interdisciplinary curriculum as a strategic step forward.*
***Keywords**: Islamic fintech, blockchain, Islamic economy, smart contract, financial inclusion.*

Abstrak. *Penelitian ini bertujuan untuk menganalisis peran strategis fintech dan blockchain dalam keuangan Islam, dengan fokus pada efektivitas pembiayaan syariah, penerapan smart contract, dan tokenisasi aset seperti sukuk dan zakat digital. Metode yang digunakan adalah penelitian kualitatif deskriptif dengan pendekatan studi pustaka dan analisis isi terhadap data sekunder dari artikel akademik, laporan resmi, dan studi kasus platform fintech syariah. Hasil penelitian menunjukkan bahwa fintech syariah berhasil mendekatkan layanan keuangan kepada masyarakat unbanked dan underbanked, sementara teknologi blockchain memberikan transparansi dan efisiensi transaksi sesuai nilai-nilai maqashid syariah. Namun demikian, masih terdapat tantangan struktural seperti ketidaksiapan regulasi dan minimnya kolaborasi antar pemangku kepentingan. Penelitian ini memberikan kontribusi terhadap pengembangan ekonomi Islam berbasis teknologi dan merekomendasikan pembentukan Shariah Digital Sandbox serta pengembangan kurikulum interdisipliner sebagai langkah strategis ke depan.*
***Kata kunci**: fintech syariah, blockchain, ekonomi Islam, smart contract, inklusi keuangan.*

INTRODUCTION

The global financial sector The last decade has undergone a very significant transformation in line with the rapid digitalization and adoption of disruptive technologies. Financial technology (*fintech)* and blockchain are two key elements driving major changes in the way people access and use financial services (Feyen et al. 2021). According to the Global Fintech Adoption Index report by Ernst & Young, the global fintech adoption rate has reached 64% (Index 2019) This figure shows a strong shift in preferences from conventional financial services to digital platforms that offer higher speed, efficiency, and transparency (Wu 2022) This development not only has an impact on the conventional financial system, but also begins

Received November 30, 2024; Accepted Desember 29, 2024; Published Desember 31, 2024
*Biyati Ahwarumi, *ahwarumi@insud.ac.id*

to touch the realm of the financial system based on Islamic values which has its own principles in its governance and transactions.

Indonesia, as a country with the largest Muslim population in the world, holds strategic potential in the development of the sharia fintech ecosystem. The Islamic Fintech Report by DinarStandard (2022) shows that Indonesia occupies the second position after Saudi Arabia in the number of Islamic fintech startups, indicating the domestic market's great attraction to sharia-based digital financial solutions (Sabani et al. 2022). Financial innovations such as peer-to-peer (P2P) sharia lending, digital zakat, and blockchain-based sukuk issuance are tangible evidence that digital technology can be harmonized with Islamic principles (Majid 2021). The emergence of the concept of smart contracts in sharia transactions is no longer limited to discourse, but has begun to be implemented on a limited basis on several fintech platforms, showing that the integration between technology and sharia principles is an inevitable inevitability (Fatkhul Wahab 2025)

Nevertheless, the integration of digital technology into the Islamic financial system cannot be separated from fundamental challenges, especially in the aspects of regulation, fatwas, and the validity of Islamic law against new technologies (Aysan and Unal 2023) The gap between technological development and the readiness of sharia regulations is a crucial problem. For example, there is still no fatwa that comprehensively regulates the validity of digital contracts and the legal status of smart contracts from the perspective of fiqh muamalah. In addition, technical issues such as data security, cyber risk, and system interoperability also raise new concerns in the application of this technology (Fitria 2025) Therefore, a cross-disciplinary approach is needed that is able to bridge the need for technological innovation with compliance with strict sharia principles, including in terms of supervision, auditing, and operational transparency.

Another pressing challenge is related to the inclusion of sharia-based digital finance, particularly in remote areas that are demographically inhabited by large numbers of Muslims (Rodliyah et al. 2020). Although digital technology is believed to be able to expand access to financial services, the reality is that many people still experience serious obstacles (Spilbergs 2023). Recent data shows that the biggest obstacles include the lack of adequate digital infrastructure, low technological literacy, and ignorance of sharia principles in digital financial products (Tiara Adelia Putri, Moh. Bahrudin 2025). This creates a double gap: between the central and regional regions, as well as between digitally literate groups and those who have not been touched by digital transformation (Zhou 2022) Therefore, it is necessary to develop an integrative strategy that not only considers technological readiness, but also socio-religious aspects and public education.

Departing from these various issues and challenges, this article aims to analyze the strategic role of fintech and blockchain technology in strengthening the Islamic financial system. The focus of the study is directed at the dynamics in Indonesia and other Muslim countries that are in the process of accelerating the digitalization of the financial sector. This research will explore the potential benefits that digital technologies can offer, including increased efficiency, transparency, and expanded financial inclusion. On the other hand, the various risks and challenges inherent in the process of integrating this technology into the complex and value-based Islamic financial system will also be examined. Regulatory aspects, sharia compliance, and digital security are the three main components that will be examined in depth to gain a comprehensive and contextual understanding.

Theoretically, this study is expected to contribute to the development of digital Islamic economic literature, especially in tracing the common point between technological innovation and the principles of sharia maqashid. Practically, the results of this analysis are expected to be a strategic reference for stakeholders, both regulators, technology developers, Islamic financial institutions, as well as scholars and academics. By encouraging a collaborative approach between technology industry players and muamalah jurisprudence, a more inclusive, fair, and sustainable digital Islamic finance ecosystem can be realized. This vision requires sustainable synergy that integrates value, innovation, and usefulness holistically for the realization of an adaptive Islamic financial system in the era of global digital transformation.

METHODS

This study uses a descriptive qualitative approach to understand in depth the dynamics, opportunities, and challenges in the integration of financial technology (*fintech*) and blockchain into the Islamic financial system (Rabbani, Khan, and Thalassinos 2020) This approach was chosen because it is able to capture the complexity of the interaction between technological innovation and sharia principles that are ethical, normative, and cultural (Abdelgalil 2023). In line with the views of Creswell and Poth (2016), this approach allows the exploration of the subjective experiences of stakeholders including industry players, regulators, and academics in responding to digital transformation in the Islamic finance sector. The main focus lies on issues such as sharia compliance with smart contracts and the tokenization of zakat or sukuk, which demand a more in-depth philosophical and normative study of Islam.

Data collection is carried out through systematic *library research*, including documentation from primary sources such as DSN-MUI fatwas, OJK and BI regulations, and annual reports of Islamic financial institutions (Sabani et al. 2022). Meanwhile, secondary data are obtained from scientific literature relevant to the topic. Data analysis was carried out with a *content analysis* approach to identify key themes that are in accordance with the principles of sharia maqashid, justice (*'adl*), and the prohibition of gharar. The validity of the data is strengthened through source triangulation and critical evaluation between sharia principles and modern financial technology practices (Miles, Huberman, and Saldaña n.d.). This approach is not only exploratory and interpretive, but also provides a normative basis for formulating recommendations that are applicable in the digital Islamic finance ecosystem.

RESULT AND DISCUSSIONS

RESULT

The Growth of Sharia Fintech in Indonesia

The Islamic financial technology (*fintech*) industry in Indonesia has shown rapid development in recent years. Based on data from the Financial Services Authority (OJK, 2023), the number of sharia fintech operators has increased significantly from only 4 entities in 2019 to 17 by the end of 2023. The majority of these actors are engaged in the peer-to-peer (P2P) lending and digital wallets (e-wallets) sector based on sharia principles. This growth is driven by the high demand of the Muslim community for financial services that are in line with Islamic principles, especially among the younger generation aged 20–35 years, which is recorded as the dominant user of sharia fintech with more than 4 million active users according to the Sharia Economic Community ((MES) 2023 survey).

Two prominent sharia fintech platforms are ALAMI and Ethis. ALAMI carries an invoice financing model based on P2P lending, specifically targeting financing for halal MSMEs (Dewi Fatmala Putri and Zuraidah 2022). Until 2024, ALAMI has disbursed more than IDR 4 trillion in financing funds with a payment success rate (TKB90) above 99%. On the other hand, Ethis offers a crowdfunding platform for sharia property projects focused on the global Muslim diaspora and retail investors, particularly for projects in Indonesia and Malaysia, with a total of Rp 800 billion disbursed (Muchlis and Fathurrahman 2021). These two platforms show how the Islamic fintech business model can adapt to the needs of different market segments while still being grounded in Islamic financial principles.

Implementation of Blockchain in Islamic Finance

The application of blockchain technology in Islamic finance in Indonesia is still in its early stages but shows a promising direction. One significant example is the issuance of digital Green Sukuk by the Indonesian government in collaboration with international fintech platforms (Kurniati and Suryanto 2022). While the process is not yet entirely on-chain-based, the use of blockchain allows for more efficient, transparent, and cost-effective distribution. The Islamic Finance Development Indicator report, notes that Indonesia is among the most proactive Islamic Cooperation Organization (OIC) countries in developing the tokenization of Islamic financial assets, along with the United Arab Emirates, Bahrain, and Malaysia (Refinitiv and (ICD) 2023).

An exploratory study by Wahab and Ihsan (2025), highlights the great potential of using blockchain for the tokenization of productive waqf and digital zakat. They showed that the implementation of smart contracts can automate the real-time distribution of zakat to verified mustahik, with efficiency increasing by up to 40% compared to conventional methods. This potential reflects the integration of high technology with Islamic social distribution systems that emphasize fairness and precision of the target (Jalal et al. 2022).

Real Challenges in the Implementation of Fintech and Sharia Blockchain

Despite its great potential, the adoption of fintech and blockchain in the Islamic finance ecosystem still faces various multidimensional challenges. First, in terms of regulations and fatwas, the incomplete official provisions of the National Sharia Council of the Indonesian Ulema Council (DSN-MUI) regarding smart contract-based contracts and asset tokenization cause legal uncertainty (Witro et al. 2022). Some technological innovations are still held back in the prototype stage because there is no legal certainty to be fully implemented. The CEO of ALAMI, for example, said that the process of developing sharia technology innovations is often constrained by the lack of a specific fatwa that regulates the digitalization aspect of automated contract-based transactions.

The second challenge lies in the low sharia digital literacy, especially in rural areas. A study by Menne (2023) shows that many people do not understand the legality and structure of digital contracts such as wakalah, murabahah, or salam applied in the form of smart contracts. This has an impact on the low adoption rate of Islamic fintech services, even though the infrastructure is already available.

The third challenge is the potential for gharar (uncertainty) elements to emerge in smart contracts, which can lead to contract disputes if they are not clearly designed from the beginning. For example, the code in a smart contract that cannot be changed without a hard fork has the potential to have legal and ethical consequences that have not been fully answered by contemporary fiqh (Dobrauz-Saldapenna and Schrackmann 2021) Therefore, an in-depth study of the aspects of Islamic law and programming is needed so that technology can be applied validly and safely in the context of Islamic finance.

DISCUSSION

Sharia Fintech as a Value-Based Financial Inclusion Solution

The results of the study show that sharia fintech has a strategic role in expanding financial access for the Muslim community, especially the unbanked and underbanked groups. Platforms such as ALAMI and Ethis have succeeded in providing productive financing solutions to halal MSME actors without requiring physical collateral which is generally an obstacle in conventional banking. The business model carried out by sharia fintech not only emphasizes transaction efficiency, but also upholds the values of maqāṣid al-shari'ah, especially the principles of ḥifẓ al-māl (protection of property) and ḥifẓ al-dīn (safeguarding the faith), by providing financial services that are free from riba, maysir, and gharar (Saputra, Ahda Maulana, and Diniyah 2022)

The effectiveness of this financing scheme is reflected in the performance of the ALAMI platform which recorded a payment success ratio (TKB90) above 98%, as well as its impact on increasing the business capacity of MSME partners. This strengthens the argument of Aisyah et al. (2024) that a spiritual value-based approach to financial inclusion can encourage microeconomic stability while shaping the spiritualization of people's economic activities. Thus, sharia fintech not only functions as an economic instrument, but also as a medium for contemporary Islamic economic da'wah oriented towards distributive justice and community empowerment.

Blockchain Relevance and Compatibility to Sharia Principles

Blockchain technology offers a strong conceptual relevance to the basic values of sharia. Its characteristics are transparent, *immutable*, and auditable in line with the principles of hisab and justice in Islam (Chowdhury et al. 2022) Smart contracts that are at the core of blockchain allow for the explicit definition of contracts from the beginning, so that gharar risk can be significantly reduced (TAŞ 2023). Within the framework of fiqh al-mu'āmalah, blockchain can improve transaction integrity and accountability of contract execution, which previously relied on trust between parties (Antova et al. 2020).

Nevertheless, a number of conceptual limitations remain. As revealed by Wahab and Ihsan, smart contracts have not been able to replace the role of ijtihad fiqh in resolving the complexity of conditions and contingencies in various contracts, especially those that are complex and dynamic (Fatkhul Wahab 2025) In the perspective of fiqh al-'uqūd, digital instruments such as smart contracts should be placed as complements that are subject to the basic principles of the contract, such as clarity (*bayān*), willingness (*tarāḍī*), and validity of objects (*ma'qūd 'alayh*). Without the active involvement of scholars in the technical design process, it is feared that there will be value deviations, such as transaction delays or infiltration of usury elements through a hidden fee system (Ahmad et al. 2023)

Structural Challenges: Regulations, Fatwas, and Literacy

One of the important findings is the structural gap between sharia authorities, regulators, and technology players. This fragmentation of communication has caused digital innovations, especially blockchain-based ones, to stagnate because regulations are reactive and fatwas are not yet available (Chowdhury et al. 2022) For example, the implementation of smart contract-based digital zakat platforms is still limited because there are no DSN-MUI guidelines or fatwas regarding the validity of blockchain-based musytarak waqf contracts. The absence of adaptive regulations hinders digital transformation in the Islamic financial ecosystem (Uddin and Sultana 2022)

In comparison, Malaysia has gone a step further by initiating the Shariah Tech Audit Framework (STAF) through the collaboration of Bank Negara Malaysia and the Securities Commission (SC). This framework involves fiqh experts, regulators, and technologists in the experimental audit of sharia digital products, thereby encouraging the adoption of technology in a structured and authentic manner (Taufik 2023) In Indonesia, the absence of similar models makes high-tech-based digital products often held back in the trial phase. Pramono and Fakhrina refer to this as a form of policy-technology disconnection that hinders the growth of the halal digital economy (Pramono and Fakhrina 2024)

The Urgency of Interdisciplinary Integration and Strategic Recommendations

To answer these challenges, cross-field synergy is needed through the establishment of the Shariah Digital Sandbox as an experimental laboratory for cutting-edge technology-based products before they are commercially released (Majid 2021b) This sandbox allows for a systematic and data-driven *ijtihad jama'i* process between scholars, blockchain developers, and regulators (Miglionico 2023) Thus, the products produced are not only technologically innovative, but also sharia tested and in accordance with market needs.

Further, it is important to design an interdisciplinary curriculum that combines the science of fiqh mu'āmalah, information technology, and public policy in higher education or professional certification programs. Wahab and Ihsan (2025), emphasized that the development of interdisciplinary human resources is an absolute prerequisite for building a sustainable and adaptive Islamic financial ecosystem for the era of digital disruption. Without human resources who are able to bridge the gap between sharia values and technological logic, digitalization efforts have the potential to lose their normative footing.

The results of the discussion show that the integration of financial technology, especially Islamic fintech and blockchain, has strategic potential in strengthening the Islamic economic system, especially in the aspects of financial inclusion, contract implementation efficiency, and transaction transparency. This technology allows the Islamic financial system to reach groups of people who were previously untouched by conventional banking services (*unbanked and underbanked),* by offering fast, affordable, and sharia financial solutions free from elements of riba, gharar, and maysir. This is in line with the main goal *of maqāṣid al-syarī'ah* in safeguarding property (*ḥifẓ al-māl*), as well as facilitating economic justice and empowerment of the ummah.

However, the adoption of this technology is inseparable from the serious challenges related to the risk of sharia *non-compliance*, especially when digital innovation is not accompanied by an adequate regulatory and supervisory framework. The absence of fatwas on smart contract-based digital contracts, as well as the lack of collaboration between regulators, scholars, and technology developers, has the potential to cause incompatibility between innovative practices and the principles of fiqh muamalah. Therefore, it is necessary to strengthen *the Shariah Governance system* that is adaptive to technology, including the development of *the Shariah Digital Sandbox* and *Shariah Tech-Audit Framework* as an instrument for testing and validating the Islamic nature of financial innovation. By placing *maqāṣid al-syarī'ah* as a normative foundation, as well as building interdisciplinary synergy between fiqh, technology, and public policy, digital transformation in Islamic finance can be directed towards an inclusive, sustainable, and ethical system in the face of an era of disruption.

CONCLUSION

This study concludes that the integration between Islamic fintech and blockchain technology has strategic potential in driving the transformation of the Islamic financial system towards a more inclusive, efficient, and transparent direction. The implementation of services such as peer-to-peer (P2P) sharia lending, digital zakat, and smart contracts shows the ability to strengthen the values of maqāṣid al-sharīʿah, especially in the aspects of ḥifẓ al-māl (protection of property) and ḥifẓ al-dīn (safeguarding the faith). These findings enrich the understanding of the dynamics of Islamic economics in the digital era, while affirming the importance of technological adaptation within the normative framework of sharia in accordance with contemporary muamalah theory. Socially and culturally, technology has proven to be an instrument for empowering the ummah if it is developed ethically, inclusively, and in accordance with Islamic values.

However, this study has a number of limitations, especially related to the lack of access to empirical data from digital platform operators and the unmeasured long-term impact of these innovations. Therefore, further evaluative and longitudinal research is needed to examine the effectiveness, sharia compliance, and socio-economic impact of fintech and blockchain implementation in the context of Islamic finance more comprehensively.

Based on the results and findings of this study, it is recommended that relevant authorities such as regulators, technology developers, and sharia authoritative institutions build strategic synergies in establishing the Shariah Digital Sandbox framework as an experimental forum for testing, verifying, and evaluating technology-based financial products according to sharia principles. The presence of this sandbox is important as a bridge between technological innovation and the certainty of sharia law in the digital context.

For academics, it is important to encourage the development of interdisciplinary studies that integrate fiqh muʿāmalah, information technology science, and public policy to strengthen the theoretical basis and innovation capabilities in digital Islamic finance. For further research, it is recommended to use a data triangulation approach (documents, interviews, observations), expand the research area across geographies and actors, and examine socio-economic impacts longitudinally in order to produce recommendations that are more applicable, adaptive, and oriented towards the sustainability of the Islamic financial ecosystem in the era of digital transformation.

BIBLIOGRAPHY

(MES), Masyarakat Ekonomi Syariah. 2023. *Survei Pengguna Fintech Syariah Di Indonesia 2023*. Masyarakat Ekonomi Syariah (MES).

Abdelgalil, Reda Ibrahim Ibrahim Elsayed. 2023. “The Philosophy of Creativity, Innovation, and Technology from an Islāmic Perspective.” *Journal of Islamic Thought and Civilization* 13(1):228–44. doi: 10.32350/jitc.131.16.

Ahmad, Azlin Alisa, Mat Noor Mat Zain, Ranitya Ganindha, and Reka Dewantara. 2023. “Manipulation of Smart Contracts From an Islamic Perspective.” *International Journal of Academic Research in Business and Social Sciences* 13(5):1279–90. doi: 10.6007/ijarbss/v13-i5/16898.

Aisyah, Esy Nur, Heri Pratikto, Cipto Wardoyo, and Nurika Restuningdiah. 2024. “The Right Literacy on the Right Performance: Does Islamic Financial Literacy Affect Business Performance through Islamic Financial Inclusion?” *Journal of Social Economics Research* 11(3):275–89.

Antova, Ilinka, Tahar Tayachi, - -, - -, and - -. 2020. “Blockchain and Smart Contracts: A Risk Management Tool for Islamic Finance.” *Journal of Islamic Financial Studies* 05(01):29–42. doi: 10.12785/jifs/050103.

Aysan, Ahmet Faruk, and Ibrahim Musa Unal. 2023. “Challenges in Islamic Fintech and Digitalization: An Extensive Literature Review.” *World Scientific Annual Review of Islamic Finance* 1:41–52.

Chowdhury, Oishi, Md Al Samiul Amin Rishat, Md Hanif Bin Azam, and Md Al Amin. 2022. “The Rise Of Blockchain Technology In Shariah Based Banking System.” *ACM International Conference Proceeding Series* 349–58. doi: 10.1145/3542954.3543005.

Creswell, John W., and Cheryl N. Poth. 2016. *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. Sage publications.

Dewi Fatmala Putri, and Zuraidah. 2022. “Analisis Manajemen Resiko Pembiayaan Peer To Peer Lending (P2Pl) Fintech Syariah (Studi Kasus Pada Pt Alami Syariah).” *Journal of Management and Social Sciences* 1(4):83–97. doi: 10.55606/jimas.v1i4.62.

Dobrauz-Saldapenna, Guenther, and Mark A. Schrackmann. 2021. “Economics of Smart Contracts: Efficiency and Legal Challenges.” *Disintermediation Economics: The Impact of Blockchain on Markets and Policies* 33–46. doi: 10.1007/978-3-030-65781-9_3.

Fatkhul Wahab, Moh. Ihsan. 2025. “Revolusi Digital Perbankan Syariah: Mendorong Inovasi

Keuangan Islam Di Indonesia." *Journal of Islamic Finance and Syariah Banking* 2(2).

Feyen, Erik, Jon Frost, Leonardo Gambacorta, Harish Natarajan, and Matthew Saal. 2021. "Fintech and the Digital Transformation of Financial Services: Implications for Market Structure and Public Policy." *BIS Papers*.

Fitria, Tira Nur. 2025. "Islamic Banking Digitalization : Challenges and Opportunities in the Era of Industrial Revolution 4 . 0." *JIEI: Jurnal Ilmiah Ekonomi Islam* 11(1):1–19.

Index, EY-Global FinTech Adoption. 2019. "Global FinTech Adoption Index."

Jalal, Islahuddin, Khairul Azmi Abu Bakar, Zarina Shukur, and Norleyza Jailani. 2022. "Achieving Liveness in Validators' Performance Efficiency Consensus (VPEC) Based Blockchain System Using the Zakat Principles." Pp. 1–5 in *2022 International Conference on Cyber Resilience (ICCR)*. IEEE.

Kurniati, Poni Sukaesih, and Suryanto Suryanto. 2022. "The Role of the Indonesian Government in the Era of Banking Disruption Innovation." *Journal of Eastern European and Central Asian Research* 9(1):93–100. doi: 10.15549/jeecar.v9i1.881.

Majid, Rifaldi. 2021a. "Designing Salam-Muzara'Ah Linked Waqf To Financing Agricultural Sector." *Journal of Islamic Monetary Economics and Finance* 7(3):503–26. doi: 10.21098/jimf.v7i3.1309.

Majid, Rifaldi. 2021b. "The Role of Religiosity in Explaining the Intention to Use Islamic FinTech Among MSME Actors." *International Journal of Islamic Economics and Finance (IJIEF)* 4(2):207–32. doi: 10.18196/ijief.v4i2.11833.

Menne, Firman. 2023. "Inovasi Dan Literasi Keuangan Syariah Bagi Pelaku UMKM." *Jesya* 6(1):1111–22. doi: 10.36778/jesya.v6i1.1213.

Miglionico, Andrea. 2023. "Regulating Innovation through Digital Platforms: The Sandbox Tool." *European Company and Financial Law Review* 19(5):828–53.

Miles, Matthew B., A. Michael Huberman, and Johnny Saldaña. n.d. "Qualitative Data Analysis."

Muchlis, Zaini, and Ayif Fathurrahman. 2021. "Profit and Risk for Property Business Using Sharia and Conventional System: A Comparative Analysis." *Afkaruna: Indonesian Interdisciplinary Journal of Islamic Studies* 17(1). doi: 10.18196/afkaruna.v17i1.11325.

Pramono, S., and A. Fakhrina. 2024. "Transformasi Pasar Modal Syariah Melalui Inovasi Digital: Peluang Dan Tantangan." *Bisnistek: Jurnal Ilmiah Bisnis ...* 1(1):30–41.

Rabbani, Mustafa Raza, Shahnawaz Khan, and Eleftherios I. Thalassinos. 2020. "FinTech, Blockchain and Islamic Finance: An Extensive Literature Review." *International Journal of Economics and Business Administration* 8(2):65–86. doi: 10.35808/ijeba/444.

Refinitiv, and Islamic Corporation for the Development of the Private Sector (ICD). 2023. *Islamic Finance Development Indicator 2023: Navigating Uncertainty Through Sustainability*. Refinitiv & ICD-PS.

Rodliyah, Nunung, Recca Ayu Hapsari, Aditya Mahatidanar Hidayat, Lukmanul Hakim, and Ade Oktariatas K. 2020. "Sharia Financial Technology in the Development of Bankable Micro Businesses." *International Journal of Financial Research* 11(6):203. doi: 10.5430/ijfr.v11n6p203.

Sabani, Akbar, Iain Palopo, Jl Agatis Balandai, and Kota Palopo. 2022. "Shari'a Compliance

Principles In Financial Technology." *JCH (Jurnal Cendekia Hukum)* 8(September):47–59. doi: 10.3376/jch.v8i1.542.

Saputra, Verdian Agus, Ahmad Ahda Maulana, and Afrohiyatid Diniyah. 2022. "Shafica (Sharia Fintech Campaign): Sharia Fintech Marketing Applications through Campaign to Accelate the Development of Sharia Banking in Indonesia." *Airlangga International Journal of Islamic Economics and Finance* 5(01):18–33.

Spilbergs, Aivars. 2023. "Financial Services Digitainability: Financial Inclusion and Efficiency in EU Countries." *WSEAS Transactions on Business and Economics* 20:1448–62. doi: 10.37394/23207.2023.20.128.

TAŞ, Ruhi. 2023. "Smart Contract Security Vulnerabilities." *Erzincan Üniversitesi Fen Bilimleri Enstitüsü Dergisi* 16(1):196–211. doi: 10.18185/erzifbed.1105551.

Taufik, Muhammad. 2023. "Can Shari'ah Supervisory Board and Islamic Bank Characteristics Reduce Tax Avoidance? Evidence in Indonesia and Malaysia." *Journal of Financial Crime* 30(3):677–701.

Tiara Adelia Putri, Moh. Bahrudin, Anggun Okta Fitri. 2025. "Jurnal Bersama Ilmu Ekonomi Strategi Digitalisasi Terhadap Bank Syariah Untuk Meningkatkan Daya." *Jurnal Bersama Ilmu Ekonomi Vol.* 1(2):146–53. doi: 10.55123/ekonom.v1i2.191.

Uddin, S. M. Sohrab, and Afroza Sultana. 2022. "Breaking the Barriers of Zakat Management System through Islamic Fintech: The Case of Bangladesh." Pp. 251–72 in *Digital Transformation in Islamic Finance*. Routledge.

Witro, D., Z. Zufriani, A. Arzam, and M. Nurjaman. 2022. "Analisis Implementasi Akad Ijarah Di Perbankan Syariah Berdasarkan Regulasi Dan Fatwa." *Asy-Syari'ah* 23(2):279–96.

Wu, Jiaxuan. 2022. "Analysis of Digital Finance Innovation of Platform Enterprises." *OALib* 09(08):1–12. doi: 10.4236/oalib.1109190.

Zhou, Ming. 2022. "Frontiers in Computing and Intelligent Systems The Digital Economy and the Regional Economic Gap: An Inverted U-Shaped Relationship." 1(1).