Al-Hiwalah: (Sharia Economic Law)
Volume 4 No.1 January – June 2025
E-ISSN : 2963-0304 Page : 21-38
DOI : 10.47766/al-hiwalah.v4i1.6060
https://journal.iainlhokseumawe.ac.id/index.php/AlHiwalah

The Transformation of Risk Management in Islamic Financial Institutions: A Sharia Economic Law Perspective

Harjoni Desky,[1] Zulhamdi,[2] & Asmah Savitri[3]

Sultanah Nahrasiyah State Islamic University, Aceh, Indonesia[1,2,3]

E-mail: harjonidesky@iainlhokseumawe.ac.id[1], zulhamdi@iainlhokseumawe.ac.id[2] asmahsavitri@iainlhokseumawe.ac.id[3]

Abstract: Risk management in Islamic financial institutions presents a unique challenge due to the dual necessity of aligning with conventional management practices and the legal-ethical framework of Sharia. The central problem of this research is the lack of integration between evolving risk management practices and the foundational principles of Sharia Economic Law, which often leads to either operational inefficiency or potential non-compliance with Islamic legal norms. This disconnect becomes more critical due to increasing financial complexity, technological innovation, and regulatory demands. Therefore, this study addresses the following research question: How is risk management transforming within Islamic financial institutions, and to what extent does this transformation comply with the principles of Sharia Economic Law? The study also explores whether such transformation strengthens the Islamic finance sector's legal certainty, stakeholder trust, and institutional resilience. This research adopts a qualitative-descriptive method with a normative legal approach. Data were collected through document analysis of legal provisions, fatwas, and risk management frameworks used in selected Islamic financial institutions. In-depth interviews with Sharia board members and risk officers from Islamic banks were also conducted to capture practical insights and legal reasoning. The findings show that the transformation of risk management in Islamic financial institutions is occurring on three fronts: technological adoption (e.g., AI and big data for risk analysis), regulatory compliance alignment (integration of OJK and DSN-MUI standards), and internal policy development grounded in maqashid al-shariah. However, the study finds inconsistencies between implementation and Sharia legal standards, particularly in credit and liquidity risks, where conventional models are still dominant. The research concludes that a robust Sharia Economic Law framework and ethical managerial reform is essential to ensuring that risk management practices in Islamic financial institutions mitigate risk and uphold Islamic legal and moral obligations.

Keywords: *Risk Management, Islamic Financial Institutions, Sharia Economic Law, Legal Compliance, Maqashid al-Shariah*

Submitted: 11-05-2025 Accepted: 28-05-2025 Published: 14-06-2025

Abstrak: Manajemen risiko dalam lembaga keuangan syariah menghadirkan tantangan tersendiri karena harus menggabungkan praktik manajerial modern dengan kerangka hukum dan etika yang sesuai dengan syariah. Permasalahan utama dalam penelitian ini adalah belum terintegrasinya praktik transformasi manajemen risiko dengan prinsip-prinsip dasar Hukum Ekonomi Syariah, yang berpotensi menimbulkan ketidakefisienan operasional atau pelanggaran terhadap norma hukum Islam. Kompleksitas sistem keuangan, inovasi teknologi, dan tuntutan regulasi semakin memperbesar urgensi permasalahan ini. Penelitian ini mengajukan pertanyaan: Bagaimana transformasi manajemen risiko terjadi dalam lembaga keuangan syariah, dan sejauh mana transformasi tersebut sejalan dengan prinsip-prinsip Hukum Ekonomi Syariah? Selain itu, studi ini juga mengeksplorasi apakah transformasi tersebut mampu memperkuat kepastian hukum, kepercayaan pemangku kepentingan, dan ketahanan kelembagaan sektor keuangan syariah. Penelitian ini menggunakan pendekatan kualitatif-deskriptif dengan metode yuridis-normatif. Pengumpulan data dilakukan melalui studi dokumen terhadap regulasi, fatwa, serta kerangka kerja manajemen risiko di beberapa lembaga keuangan syariah. Wawancara mendalam juga dilakukan dengan anggota dewan pengawas syariah dan pejabat manajemen risiko pada bank syariah untuk memperoleh wawasan praktis dan argumentasi hukum. Hasil penelitian menunjukkan bahwa transformasi manajemen risiko pada lembaga keuangan syariah berlangsung dalam tiga aspek utama: adopsi teknologi (seperti AI dan big data), penyesuaian terhadap regulasi (terintegrasinya standar OJK dan DSN-MUI), serta pengembangan kebijakan internal berbasis maqashid al-shariah. Namun demikian, ditemukan pula ketidaksesuaian antara praktik di lapangan dengan standar hukum syariah, terutama dalam pengelolaan risiko kredit dan risiko likuiditas yang masih menggunakan pendekatan konvensional. Penelitian ini menyimpulkan bahwa dibutuhkan kerangka hukum ekonomi syariah yang kuat dan reformasi manajerial berbasis etika agar manajemen risiko di lembaga keuangan syariah tidak hanya efektif, tetapi juga taat hukum dan bermoral.

***Kata Kunci**: Manajemen Risiko, Lembaga Keuangan Syariah, Hukum Ekonomi Syariah, Kepatuhan Hukum, Maqashid al-Shariah*

INTRODUCTION

Since the advent of the Fourth Industrial Revolution, the global financial system has undergone a profound transformation driven by rapid digitization and new technological advances. One of the most disruptive developments has been the emergence of digital currencies, both privately issued, such as cryptocurrencies, and those issued by central banks (CBDCs), which have fundamentally changed the architecture of money and payment systems.[1]

The COVID-19 pandemic has further accelerated this digital shift, with consumers and institutions increasingly relying on contactless, real-time payment solutions and digital financial services. Central banks worldwide have increased their exploration of digital currencies to modernize monetary policy instruments, improve payment efficiency, and strengthen financial inclusion.[2]

Despite increasing attention to the issue, the strategic integration of digital currencies into national financial systems has been uneven, and their long-term impact on systemic stability, monetary sovereignty, and policy effectiveness has not been studied in depth. Much of the current policy debate

[1] Raphael Auer and Rainer Böhme, "Central Bank Digital Currency: The Quest for Minimally Invasive Technology" (Bank for International Settlements, 2021), https://doi.org/https://doi.org/10.1257/jep.35.3.23.

[2] The COVID-19 pandemic has significantly transformed global socio-economic dynamics, disrupting conventional financial systems and accelerating digital adoption across all sectors. These unprecedented changes have underscored the need for a more contextual and flexible approach within Islamic economic jurisprudence. Islamic economics scholars and practitioners are increasingly called upon to reinterpret classical principles in light of contemporary realities, emphasizing the importance of maslahah (public interest), risk-sharing, and ethical responsibility in navigating post-pandemic challenges. International Monetary Fund (IMF). *Reports and Publications on Islamic Finance and Financial Stability*. https://www.imf.org/, n.d

focuses on the technical aspects of CBDC design,[3] Cybersecurity,[4] And regulatory risks in fintech.[5] However, the broader role of digital currencies in strengthening the financial system's resilience, especially in the face of geopolitical changes, climate-related financial risks, and technological disruption, still requires further study.

On the other hand, while several studies have examined the macroeconomic impact of digital finance and the use of artificial intelligence in economic forecasting and monetary operations,[6] alFew have specifically examined the potential of digital currencies as a key pillar in building a more resilient and inclusive financial system. As the boundaries between traditional financial institutions and technology-based intermediaries fade, central banks now face broader responsibilities, maintaining price stability and ensuring operational resilience and fair access in the digital economy.[7]

Islamic financial institutions (IFIs) face challenges similar to those of conventional financial institutions in adapting to these profound changes. The transformation in risk management practices within IFIs needs to consider technological advancements, digital innovations, and the core principles of

---

[3] Ulrich Bindseil, "Tiered CBDC and the Financial System," *Available at SSRN 3513422*, 2020.

[4] Anneke Kosse dan Ilaria Mattei. *Cybersecurity Risk and Central Bank Digital Currencies*. BIS Bulletin No. 50. Bank for International Settlements. 2022. https://www.bis.org/publ/bisbull50.pdf

[5] Douglas W Arner, J Barberis, and R P Buckley, "FinTech and RegTech: Impact on Regulators and Banks," *J Bank Regul* 20, no. 1 (2017): 4–24, https://doi.org/https://doi.org/10.1057/s41261-020-00125-4.

[6] Stefania Albanesi et al., "We Are Grateful to Credit Growth and the Financial Crisis: A New Narrative," 2017.

[7] Agustín Carstens, "Central Banking and Innovation: Partners in the Quest for Financial Inclusion," *BIS Speech. Available at Https://Www. Bis. Org/Speeches/Sp190425. Htm*, 2019.

Sharia law that underlie their operations. Concepts such as riba (interest), gharar (excessive uncertainty), and maysir (gambling) must be carefully integrated into modern technological frameworks, which often introduce new risks that are not fully understood from the Sharia law perspective.[8]

In light of these challenges, this study aims to analyze the transformation of risk management practices in IFIs and how they can remain aligned with the principles of Sharia Economic Law. The study will explore the role of maqashid al-shariah in designing a more adaptive, efficient, and secure risk management framework that addresses modern risks without violating Sharia principles. Through a qualitative approach and normative legal analysis, this article is expected to offer new insights into how Islamic financial institutions can continue to thrive in the rapidly changing global financial landscape.[9]

METHOD

This study employs a normative juridical and qualitative-analytical approach to explore the transformation of risk management practices within Islamic Financial Institutions (IFIs) from the perspective of Sharia Economic Law. Combining these methodologies allows for a thorough examination of how modern risk management frameworks in IFIs align with Sharia principles such as maqashid al-shariah and fiqh muamalah.

---

[8] Asyraf Wajdi Dusuki and Abdulazeem Abozaid, A Critical Appraisal On The Challenges Of Realizing Maqasid Al-Shariaah In Islamic Banking And Finance, 15 IIUM Journal of Economics and Management 999–1000 (2007).

[9] Asyraf Wajdi Dusuki dan Abdelazeem Abozaid. *A Critical Appraisal on the Challenges of Realizing Maqasid al-Shariah in Islamic Banking and Finance*. *International Journal of Economics, Management and Accounting*, 15(2): 143–165, 2007

1. Research Design and Approach

The research follows a normative legal research design, focusing on interpreting Sharia law and its application to risk management practices. Additionally, a qualitative approach is utilized to analyze empirical data gathered through expert interviews and document analysis. This two-fold methodology allows for doctrinal and practical evaluation of risk management frameworks within IFIs.

2. Data Sources

The study gathers data from both primary and secondary sources: Primary Data: Includes fatwas issued by the National Sharia Council (DSN-MUI),[10] Regulations from Indonesia's Financial Services Authority (OJK),[11] and interviews with key experts, including Sharia scholars, risk management professionals, and financial regulators in IFIs.

Secondary Data: This data comprises academic articles, books on Islamic financial law, reports from IFIs, and international organizations such as the Islamic Financial Services Board (IFSB),[12] And the International Monetary Fund (IMF).[13]

3. Data Collection Techniques

Document Analysis: Relevant legal documents, fatwas, and regulatory frameworks will be reviewed to assess the current state of risk management in

[10] Majelis Ulama Indonesia, Dewan Syariah Nasional (DSN-MUI). Kompilasi Fatwa DSN-MUI. (n.d.). https://dsnmui.or.id/, n.d

[11] Otoritas Jasa Keuangan (OJK)., Regulasi dan Kebijakan Terkait Industri Keuangan Syariah. https://ojk.go.id/id (n.d.).

[12] Islamic Financial Services Board (IFSB)., Core Principles for Islamic Finance Regulation (Banking Segment) https://www.ifsb.org (n.d.).

[13] International Monetary Fund (IMF)., "Islamic Finance: Opportunities, Challenges, and Policy Options," https://www.imf.org/ n.d.

IFIs. Semi-Structured Interviews: Interviews will be conducted with key informants, such as Sharia Supervisory Board members, Islamic finance practitioners, and regulators. These interviews will provide qualitative insights into the practical implementation of risk management strategies in IFIs.

4. Data Analysis Techniques

The data will be analyzed using content analysis and thematic qualitative analysis. Content analysis will be employed to evaluate the normative aspects of risk management frameworks and their adherence to Sharia law principles.

Thematic analysis will help identify common themes across interviews and documents, with particular attention given to the challenges and strategies for aligning risk management practices with Sharia requirements.

The findings will be synthesized to propose a comprehensive risk management framework for IFIs adhering to modern financial practices and Islamic legal principles.

5. Scope and Limitations

This research is focused on IFIs operating in Indonesia and examines three key areas of risk management: credit risk, operational risk, and Sharia compliance risk. The study does not delve deeply into Islamic microfinance institutions or fintech solutions within Islamic finance, and its findings may not be directly applicable to jurisdictions outside Indonesia.

RESULTS AND DISCUSSION

Dimensions of Risk Management Transformation in Islamic Financial Institutions

This study found that the transformation of risk management within Islamic Financial Institutions (IFIs) is evolving along three primary dimensions:

technological integration, regulatory alignment, and the adoption of internal policies guided by the objectives of Maqashid al-Shariah.[14] These dimensions reshape operational structures and challenge existing paradigms of Sharia compliance in financial governance.

First, many IFIs embrace technological tools such as big data analytics and artificial intelligence to improve their credit risk assessments and operational monitoring. While these innovations promise efficiency, most institutions rely on conventional credit scoring models embedded with interest-based variables, raising concerns regarding their compliance with Sharia principles. As Table 1 illustrates, respondents confirmed the growing use of AI in credit evaluation but highlighted that the metrics often fail to distinguish between Islamic and conventional benchmarks.

Table 1: Summary of Interview Responses on Risk Management Practices in IFIs

Respondent Code	Position	Key Insights	Sharia Compliance Note
R1	Risk Officer, Islamic Bank A	Use of machine learning in credit scoring is increasing, but models still replicate conventional benchmarks (interest-based indicators).	Needs revision to avoid *RIBA-linked* criteria.
R2	Sharia Board Member, Bank B	Risk policies are not consistently aligned with DSN-MUI fatwas; often adapted post-facto to fit	Highlights the lack of proactive integration of Sharia standards.

[14] Dusuki and Abozaid, A Critical Appraisal On The Challenges Of Realizing Maqasid Al-Shariaah In Islamic Banking And Finance, 15 IIUM Journal of Economics and Management.

		standard regulatory requirements.	
R3	Risk Compliance, Bank C	The integration of OJK regulations is smooth, but there is a lack of clarity when fatwas and regulatory provisions contradict each other.	Calls for harmonization between regulators and the Sharia authority.
R4	Internal Auditor, Bank D	Digital risk dashboards are being adopted, but no metrics align with Maqashid al-Shariah objectives.	The ethical dimension of risk is still underdeveloped.

Source: Author's interview data (2025)

Second, on the regulatory front, IFIs have made significant efforts to integrate dual compliance mechanisms, adhering simultaneously to the Financial Services Authority (OJK)[15] Standards and the Sharia rulings issued by the National Sharia Council (DSN-MUI).[16] However, discrepancies persist, particularly when fatwas conflict with state regulatory frameworks. This institutional gap not only creates implementation delays but also undermines stakeholder confidence in the legal certainty of Islamic financial products.

Third, while the ethical spirit of Islamic finance is rooted in Maqashid al-Shariah — promoting justice, welfare, and risk-sharing — this principle has not been formally operationalized in most risk management strategies.[17] Interviews

[15] (OJK)., Regulasi dan Kebijakan Terkait Industri Keuangan Syariah.
[16] Indonesia, Dewan Syariah Nasional (DSN-MUI). Kompilasi Fatwa DSN-MUI.
[17] M Umer Chapra, *The Future of Economics: An Islamic Perspective*, vol. 21 (Kube Publishing Ltd, 2016).

reveal that internal risk policies seldom use Maqashid-based indicators, focusing instead on procedural compliance and capital adequacy metrics.

The Transformation of Risk Management in Islamic Financial Institutions (IFIs)

The findings from the study reveal that Islamic Financial Institutions (IFIs) have made significant strides in adapting their risk management frameworks to modern financial practices. However, they continue to face challenges in fully aligning these practices with the principles of Sharia Economic Law. Traditionally, risk management in IFIs was focused on mitigating risks related to riba (interest), gharar (excessive uncertainty), and maysir (gambling), ensuring that all financial transactions adhered to Islamic law. However, with the advent of new financial technologies and globalization, the scope of risk management in IFIs has expanded to include emerging risks such as cybersecurity threats, operational risks, and liquidity management challenges.[18]

Islamic financial institutions have incorporated modern tools such as artificial intelligence (AI) and blockchain to improve risk assessment and enhance operational efficiency as the financial ecosystem becomes more digital.[19] These tools offer better risk prediction and management models crucial for addressing risks inherent in Islamic finance, such as ensuring transparency in transactions and maintaining compliance with Sharia standards.[20]

---

[18] Saiful Azhar Rosly, "Critical Issues on Islamic Banking and Financial Markets," *Authorhouse, Bloomington*, 2005.

[19] Mohammad Nurhisam., "Artificial Intelligence and Its Compatibility with Islamic Finance Principles.," *Journal of Islamic Monetary Economics and Finance* 7, no. 1 (2021): 113–132, https://doi.org/https://doi.org/10.21098/jimf.v7i1.1355.

[20] (IMF)., "IIslamic Finance: Opportunities, Challenges, and Policy Options."

However, despite these advancements, there is a notable gap in integrating Sharia principles in the decision-making process of these modern tools. While AI and blockchain have revolutionized transaction tracking and risk analysis, Islamic finance institutions still need to refine these technologies to ensure better compliance with maqashid al-shariah (the objectives of Sharia law), such as safeguarding wealth, promoting fairness, and reducing harm to society.

Risk Categories and Challenges

The study categorizes the main types of risks encountered by IFIs into credit, operational, and Sharia compliance risks. Each presents unique challenges in light of evolving financial practices and digitalization.[21] Credit Risk: Islamic finance, by design, avoids the use of riba (interest), and thus, the risk of non-compliance with Sharia law is closely tied to the nature of the financing structure. Implementing modern digital tools, such as credit scoring based on AI, introduces the challenge of ensuring these models do not inadvertently promote interest-based systems or unfair practices. The study found that while some IFIs have adopted AI-based credit assessment models, they still face difficulties fully aligning these models with Islamic principles of fairness and justice.

Operational Risk: The rapid integration of digital solutions in Islamic financial institutions has led to a rise in operational risks, especially regarding cybersecurity, system failures, and digital fraud.[22] While technology enhances

[21] Shamsiah Mohamad dan Ahmad Lahsasna., *Shariah Risk Management in Islamic Finance. Kuala Lumpur: IBFIM, Kuala Lumpur: IBFIM*, 2014.

[22] Tarek S. Zaher dan M. Kabir Hassan. A, "Comparative Literature Survey of Islamic Finance and Banking. Financial Markets, Institutions & Instruments," *Financial Markets,*

operational efficiency, it also introduces new complexities in securing sensitive financial data and ensuring that all digital financial services comply with Sharia standards. For example, using digital wallets and blockchain technology requires comprehensive risk management frameworks that ensure transparency while preventing illegal practices such as fraud and money laundering.

Sharia Compliance Risk: Arguably the most critical aspect of risk management in IFIs, Sharia compliance risk pertains to ensuring that all financial products and services adhere to Islamic law.[23] As financial technologies evolve, ensuring that new products and services, especially those involving digital assets or cryptocurrencies, do not violate Sharia principles remains a significant challenge. This study highlights that while some IFIs have developed Sharia-compliant cryptocurrency frameworks, others are still grappling with how to adapt digital currencies within the confines of Islamic law.[24]

Table 2: Categorization of Risks and Challenges in Islamic Financial Institutions (IFIs)

Risk Category	Risk Description	Key Challenges	Proposed Solutions
Credit Risk	Risks related to non-payment of loans or financing.	Adoption of AI-based credit scoring models is not fully aligned with Sharia principles.	Develop credit assessment models that adhere to fairness and avoid *riba* (interest).
Operational Risk	Risks related to operational	Increased cybersecurity threats and digital fraud.	Implement stricter security protocols and independent audits.

Institutions & Instruments, 10, no. 4 (2001): 155–199., https://doi.org/https://doi.org/10.1111/1468-0416.00041, 2001.

[23] Heni Ramadan dan V. Ratnawati., *Manajemen Risiko Pada Lembaga Keuangan Syariah: Teori Dan Praktik* (Jakarta: Kencana, 2020).

[24] Mohammed Obaidullah and Tariqullah Khan, "Islamic Microfinance Development: Challenges and Initiatives," *Islamic Research & Training Institute Policy Dialogue Paper*, no. 2 (2008).

	disruptions, such as system failures.		
Sharia Compliance Risk	Risks related to non-compliance with Sharia law in financial products.	Difficulty in ensuring digital assets (e.g., cryptocurrencies) comply with Sharia principles.	Develop new fatwas on digital products, such as cryptocurrencies, ensuring Sharia compliance.

Source: The Author's elaboration is based on the literature review.

The Role of Sharia Economic Law in Risk Management

A key finding of this research is the integral role that Sharia Economic Law plays in shaping the risk management strategies of IFIs. The principles of maqashid al-shariah serve as a guiding framework for identifying, managing, and mitigating risks within IFIs. Sharia law's objectives emphasize the protection of wealth, the promotion of justice and fairness, and the prevention of harm to society, which are essential in developing robust risk management practices.[25]

For instance, the emphasis on avoiding gharar and maysir in financial transactions has created clearer and more transparent financial products in IFIs. Integrating Sharia compliance checks into risk management protocols has ensured that these institutions avoid practices that could lead to excessive uncertainty or speculative behavior. However, the challenge lies in ensuring that these checks remain effective amidst the rapid digitization of finance, where new forms of risk are constantly emerging.

Furthermore, the study indicates that while Sharia boards and compliance committees play a vital role in overseeing risk management practices, there is an increasing need for more specialized Sharia-compliant risk management

---

[25] Muhammad Taqi Usmani, "An Introduction to Islamic Finance," *Language* 17, no. 397p (2002): 22cm.

frameworks incorporating modern financial technologies and Islamic legal principles.[26]

Regulatory and Policy Recommendations

Based on the findings, several recommendations emerge for improving risk management in IFIs: Enhanced Regulatory Oversight: Stronger regulatory frameworks are needed to support integrating digital technologies in IFIs while ensuring compliance with Sharia law. Regulatory bodies should work closely with Sharia scholars and financial experts to establish clear guidelines for using emerging financial technologies in a Sharia-compliant manner.

Capacity Building for Sharia Supervisory Boards (SSBs): As technology evolves, so must the expertise of Sharia Supervisory Boards (SSBs). IFIs should invest in continuous training for their SSBs to ensure they are equipped to evaluate and oversee the implementation of new financial products and technologies from a Sharia perspective.[27]

Collaboration Between Financial Institutions and Technology Providers: To mitigate new and emerging risks effectively, IFIs should collaborate with fintech companies and technology providers to co-develop risk management solutions tailored to Islamic finance principles. This collaboration could include developing AI and blockchain-based tools explicitly designed for Sharia-compliant risk management.

[26] (IMF)., "IIslamic Finance: Opportunities, Challenges, and Policy Options." https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2022/01/01/The-Rise-of-Digital-Money, 2022

[27] (IFSB)., Core Principles for Islamic Finance Regulation (Banking Segment).

CONCLUSION

Risk management transformation within Islamic Financial Institutions (IFIs) occurs at the intersection of technological innovation, regulatory evolution, and the enduring ethical commitments of Sharia Economic Law. This study has shown that while many IFIs are making strides in adopting advanced tools such as artificial intelligence and digital analytics, these advancements often remain rooted in conventional financial paradigms, raising serious questions about their alignment with Islamic legal and moral principles.

The integration of regulatory standards from the Financial Services Authority (OJK), and the National Sharia Council (DSN-MUI) represents a positive development. However, the findings reveal inconsistencies between these frameworks that contribute to implementation gaps and undermine legal certainty. The absence of clear, harmonized guidance further complicates the risk governance landscape, especially in credit and liquidity risks.

Equally important is the limited operationalization of Maqashid al-Shariah in institutional risk frameworks. While IFIs claim adherence to Islamic ethics, their policies often lack indicators that measure compliance with Sharia objectives such as justice, transparency, and social welfare. This ethical deficit weakens stakeholder trust and distances Islamic finance from its foundational values.

Therefore, this study calls for a dual reform agenda. On one hand, Islamic financial institutions must re-engineer their risk management strategies by embedding Sharia principles into every layer of policy and technological application. On the other hand, regulators and Sharia authorities must work collaboratively to develop an integrated framework that ensures compliance and resilience. By aligning risk management practices with the legal and ethical tenets of Sharia Economic Law, IFIs can build more robust financial institutions and reaffirm their commitment to justice-driven, sustainable finance. This transformation is not only a regulatory necessity but a moral imperative in fulfilling the true spirit of Islamic finance.

REFERENCES

Albanesi, Stefania, Giacomo De, Giorgi Jaromir Nosal, Christopher Carroll, Gauti Eggertsson, Nicola Gennaioli, Marianna Kudlyak, et al. "We Are Grateful to Credit Growth and the Financial Crisis: A New Narrative," 2017.

Arner, Douglas W, J Barberis, and R P Buckley. "FinTech and RegTech: Impact on Regulators and Banks." *J Bank Regul* 20, no. 1 (2017): 4–24. https://doi.org/https://doi.org/10.1057/s41261-020-00125-4.

Auer, Raphael, and Rainer Böhme. "Central Bank Digital Currency: The Quest for Minimally Invasive Technology." Bank for International Settlements, 2021. https://doi.org/https://doi.org/10.1257/jep.35.3.23.

Bindseil, Ulrich. "Tiered CBDC and the Financial System." *Available at SSRN 3513422*, 2020.

Carstens, Agustín. "Central Banking and Innovation: Partners in the Quest for Financial Inclusion." *BIS Speech. Available at Https://Www. Bis. Org/Speeches/Sp190425. Htm*, 2019.

Chapra, M Umer. *The Future of Economics: An Islamic Perspective*. Vol. 21. Kube Publishing Ltd, 2016.

Dusuki, Asyraf Wajdi, and Abdulazeem Abozaid. A Critical Appraisal On The Challenges Of Realizing Maqasid Al-Shariaah In Islamic Banking And

Finance, 15 IIUM Journal of Economics and Management 999–1000 (2007).

Indonesia, Majelis Ulama. Dewan Syariah Nasional (DSN-MUI). Kompilasi Fatwa DSN-MUI. (n.d.).

Nurhisam., Mohammad. "Artificial Intelligence and Its Compatibility with Islamic Finance Principles." *Journal of Islamic Monetary Economics and Finance* 7, no. 1 (2021): 113–132. https://doi.org/https://doi.org/10.21098/jimf.v7i1.1355.

Obaidullah, Mohammed, and Tariqullah Khan. "Islamic Microfinance Development: Challenges and Initiatives." *Islamic Research & Training Institute Policy Dialogue Paper*, no. 2 (2008).

Ratnawati., Heni Ramadan dan V. *Manajemen Risiko Pada Lembaga Keuangan Syariah: Teori Dan Praktik*. Jakarta: Kencana, 2020.

Rosly, Saiful Azhar. "Critical Issues on Islamic Banking and Financial Markets." *Authorhouse, Bloomington*, 2005.

Shamsiah Mohamad dan Ahmad Lahsasna. *Shariah Risk Management in Islamic Finance. Kuala Lumpur: IBFIM,. Kuala Lumpur: IBFIM*, 2014.

Tarek S. Zaher dan M. Kabir Hassan. A. "Comparative Literature Survey of Islamic Finance and Banking. Financial Markets, Institutions & Instruments." *Financial Markets, Institutions & Instruments,* 10, no. 4 (2001): 155–199. https://doi.org/https://doi.org/10.1111/1468-0416.00041, 2001.

Usmani, Muhammad Taqi. "An Introduction to Islamic Finance." *Language* 17, no. 397p (2002): 22cm.

(IFSB)., Islamic Financial Services Board. Core Principles for Islamic Finance Regulation (Banking Segment) (n.d.).

(IMF)., nternational Monetary Fund. "IIslamic Finance: Opportunities, Challenges, and Policy Options," n.d.

(OJK)., Otoritas Jasa Keuangan. Regulasi dan Kebijakan Terkait Industri Keuangan Syariah. (n.d.).