Conference Proceedings
The 4th International Conference on Finance, Business, and Banking (ICFBB)
Mataram, 25-27 November 2025

Digital Innovation and Green Economy: Synergy For Sustainable Islamic Finance in Southeast Asia

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ABSTRACT

This study investigates the synergy between digital innovation and the green economy in enhancing the sustainability of Islamic finance in Southeast Asia, emphasizing the interaction between technological advancement and environmental responsibility within Shariah-compliant financial systems. Using a qualitative comparative method with a multiple case study design, the research focuses on Indonesia, Malaysia, Brunei Darussalam, and Singapore. Data were obtained through semi-structured interviews, documentation, and content analysis of institutional reports from OJK, Bank Negara Malaysia, and international organizations such as IFSB, UNDP, and the World Bank, complemented by academic publications from 2020–2025. Informants included regulators, Islamic finance practitioners, and academics selected through purposive and snowball sampling techniques. Thematic analysis following the Miles and Huberman model revealed three key themes: the rapid digital transformation of Islamic finance, the growth of green financial instruments such as green sukuk and ESG funds, and the emerging digital–green synergy through blockchain-based carbon tracking and fintech for sustainable microfinance. Findings show that integrating digital innovation and green initiatives promotes transparency, efficiency, and inclusivity while reinforcing *maqasid al-shariah* values of environmental preservation and social equity. Theoretically, this research contributes to the integration of *Triple Bottom Line* and *Institutional Theory* perspectives within Islamic sustainable finance, while practically emphasizing the importance of harmonized ASEAN digital–green finance policies and institutional readiness. Future studies are encouraged to explore the application of artificial intelligence and regulatory technology to strengthen digital–green integration in the Islamic finance sector.

Keywords: *Islamic finance, digital transformation, green economy, sustainability, ASEAN*

INTRODUCTION

Digital transformation and the green economy have emerged as two major forces shaping the direction of global development in the past decade, particularly as nations transition toward more efficient and low-carbon economic models. The shift toward technology-based and environmentally sustainable economies is not only the agenda of developed countries but is also increasingly adopted across Southeast Asia, which is experiencing accelerated regional economic integration. Within this dynamic context, Islamic finance holds significant potential to play a strategic role in strengthening an inclusive and socially equitable economic ecosystem through instruments such as Islamic fintech, green sukuk, and financing based on Environmental, Social, and Governance (ESG) principles. Islamic finance is considered compatible with sustainability objectives because its foundational principles emphasize ethics, transparency, and the prohibition of activities that harm the environment. Ahmed et al. affirm that Islamic finance contributes significantly to the green economic transition through ethical investment practices, financing for clean energy sectors, and governance systems grounded in sustainability values. Nevertheless, the implementation of integration between digital innovation and sustainability principles still faces structural and regulatory challenges across the region.[1] These challenges include the readiness of digital infrastructure, disparities in financial literacy, and the

[1] U Ahmed et al., "The Role of Islamic Finance in Sustainable and Green Transition," *Suhuf Journal* 36, no. 2 (2024), https://doi.org/10.23917/suhuf.v36i2.6314.

absence of a comprehensive policy framework governing digital-green Islamic finance. This complexity makes an in-depth analysis of the synergy between the two increasingly important and relevant.

At the national level, the digital–green integration phenomenon is reflected in the growing adoption of Islamic fintech services that support green banking principles and energy efficiency. The study by Paramitha and Fasa shows that the digitalization of Islamic banking through e-business contributes to operational efficiency while promoting green finance principles by reducing paper usage, automating processes, and enabling technology-based monitoring of financing activities.[2] In Indonesia, initiatives by Bank Indonesia and the Financial Services Authority (OJK) to promote green sukuk issuance mark a progressive step toward digital green integration in the financial sector and demonstrate the country's commitment to clean energy financing and climate change mitigation. The increasing use of big data, mobile applications, and blockchain technology in Islamic finance also creates opportunities to strengthen verification, auditing, and transparency mechanisms for green projects. However, a gap still exists between the rapid pace of technological innovation and the capacity of financial institutions to develop environmentally friendly financing instruments effectively. This gap is influenced by unaligned regulations and limited economic incentives for financial institutions to participate more actively in green finance. These conditions raise critical questions about the extent to which the synergy between digital transformation and green finance can contribute to the sustainability of the Islamic financial system in Southeast Asia thus requiring deeper empirical and theoretical exploration.

Previous studies have examined the digitalization of Islamic finance separately. For instance, Dayu et al. discuss the dynamics and challenges of Islamic economic transformation in Southeast Asia in response to technological advancements.[3] Their research highlights the need for institutional and regulatory preparedness to accelerate digital transformation in the Islamic financial sector. Meanwhile, Musari explores the taxonomy of Islamic green financing within the framework of ASEAN's circular economy and emphasizes the substantial potential of green sukuk as a sustainable financing instrument.[4] However, few studies have simultaneously combined these two dimensions specifically, how digital innovation interacts with green finance initiatives within Southeast Asia's unique socio-economic context. This lack of interdisciplinary approaches has resulted in a theoretical gap and limited understanding of the causal relationship between digital innovation, green finance, and Islamic financial sustainability. This gap presents an opportunity for new research that bridges these domains through a more integrative Islamic economic perspective. Consequently, there is an academic need to produce more comprehensive, data-driven, and contextually relevant literature aligned with the region's evolving dynamics.

According to Thaker et al., the integration of fintech, digital currencies, and Islamic green financing has the potential to create a more efficient, transparent, and Shariah-compliant financing model.[5] This model not only improves access for communities and micro-entrepreneurs but also strengthens the accountability of green projects financed through Islamic financial mechanisms. This perspective opens a vast opportunity for qualitative research focused on exploring the experiences, meanings, and perceptions of Islamic finance industry practitioners regarding digital–green synergy in their daily operations. A deeper understanding of these perceptions can reveal how digital technologies genuinely support environmental sustainability within the operational practices of Islamic banking and finance. Through phenomenological or grounded theory approaches, such research could trace the internalization of digital green values within the organizational culture of Islamic financial institutions. Furthermore, it could illustrate how digital transformation translates into tangible sustainability practices rather than remaining mere normative discourse or institutional rhetoric. Such qualitative

[2] D R Paramitha and M I Fasa, "Digital Transformation of Islamic Banks through E-Business to Support Green Banking Principles," *Jurnal Manajemen Ekonomi Dan Akuntansi (JOMEFA)*, 2025, https://journal.smartpublisher.id/index.php/jomefa/article/view/635.

[3] W Dayu, I Harahap, and Z M Nawawi, "Economic Transformation: Navigating Challenges and Embracing Opportunities in Islamic Economics and Finance across Southeast Asia," *International Journal of Science, Technology & Management* 5, no. 1 (2024), https://doi.org/10.46729/ijstm.v5i1.1039.

[4] K Musari, "ASEAN toward Circular Economy and Sustainable Energy in Tackling Climate Change: Islamic Green Financing Taxonomy for Sustainable Finance," in *IGI Global Book Chapter*, 2022, https://www.igi-global.com/chapter/309805.

[5] M A B M T Thaker, A B Khaliq, and H B M T Thaker, "The Potential Role of Fintech and Digital Currency for Islamic Green Financing: Toward an Integrated Model," in *Springer Proceedings in Business and Economics*, 2022, https://link.springer.com/chapter/10.1007/978-981-19-2662-4_14.

findings are vital to assess the effectiveness of digital and green finance integration in the complex and diverse socio-economic context of Southeast Asia.

Based on the above discussion, this study aims to comprehensively analyze the synergy between digital transformation and the green economy in strengthening the sustainability of Islamic finance in Southeast Asia. Theoretically, it seeks to expand the understanding of the integration between two major paradigms digitalization and sustainability within the context of contemporary Islamic economics, contributing to the still-limited literature addressing both aspects simultaneously. Conceptually, this study is expected to develop a new integrative model describing the relationship between technology, sustainability, and Shariah-based financial principles grounded in maqasid al-shariah. Practically, the research aims to provide recommendations for regulators, financial institutions, and Islamic fintech developers in designing adaptive and innovative policies to support digital green Islamic finance. These policies include strengthening Shariah-based ESG regulations, developing new digital green instruments, and integrating sustainability standards into Islamic financial operations. Moreover, the study provides important implications for developing Islamic financial products and services that are not only environmentally friendly but also inclusive and socially just. Thus, this research is expected to make a significant contribution to fostering a sustainable Islamic finance ecosystem in Southeast Asia.

METHOD

This research employs a comparative qualitative approach with a multiple case study design to analyze the practices of digital innovation, green economy, and sustainable Islamic finance in selected Southeast Asian countries (Indonesia, Malaysia, Brunei Darussalam, and Singapore). The case study approach was chosen because it enables an in-depth understanding of the socio-economic and regulatory contexts in each country and allows for cross-country comparison within the framework of a sustainable Islamic financial system.[6] The research was conducted from January to July 2025, with primary locations in Jakarta (Indonesia), Kuala Lumpur (Malaysia), Bandar Seri Begawan (Brunei), and Singapore. The study participants consist of Islamic economics experts, regulators (such as the Financial Services Authority of Indonesia/OJK and Bank Negara Malaysia), and academics from leading universities in the region. Informants were selected using purposive sampling, with criteria including a minimum of five years of experience in Islamic finance policy or sustainable finance innovation, and later expanded through snowball sampling to identify additional key respondents.

Data were collected through semi-structured interviews, documentation, and content analysis of institutional reports such as those from OJK, IFSB, UNDP, and the World Bank, as well as academic journal articles published between 2020 and 2025. Interviews were conducted online via Zoom to reach respondents across different countries. Furthermore, source and method triangulation was applied to ensure data validity, by cross-verifying interview findings with official documents and relevant academic publications. This approach aligns with the methodology applied by Hajar,[7] who combined qualitative data with policy literature reviews in the context of Islamic banking in Southeast Asia.

Data analysis was carried out using thematic analysis based on the interactive model of Miles and Huberman, which includes stages of data reduction, data display, and conclusion drawing conducted iteratively. Initial codes were generated from interview transcripts and later developed into key themes such as *"digital innovation in Islamic finance," "implementation of green economy,"* and *"cross-country policy challenges."* The validity of the findings was reinforced through member checking with key informants and a documented audit trail of all analytical processes. This analytical framework is consistent with contemporary research practices in sustainable Islamic finance and green economy studies conducted by Raimi & Bamiro,[8] and Widiastuti et al., both of which emphasize qualitative

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[6] D M Sudi, "Enhancing the Sustainability and Competitiveness of Islamic Banking: A Comparative Study of Fiscal Policy and Regulatory Frameworks in Indonesia and Malaysia," *Banks and Bank Systems* 20, no. 1 (2025), https://doi.org/10.21511/bbs.20(1).2025.15.

[7] A Hajar, "Islamic Banking and Economic Development: Insights from Southeast Asia and the Middle East," *International Journal of Islamic Studies* 2, no. 3 (2024), https://doi.org/10.61194/ijis.v2i3.607.

[8] L Raimi and N B Bamiro, "Role of Islamic Sustainable Finance in Promoting Green Entrepreneurship and Sustainable Development Goals in Emerging Muslim Economies," *International Journal of Social Economics*, 2025, https://www.emerald.com/insight/content/doi/10.1108/IJSE-05-2024-0408/full/html.

interpretation of innovation and regulatory dynamics within the Islamic financial systems of the region.[9]

RESULT AND DISCUSSION

Digital Transformation Trends in Islamic Finance

Digital transformation in the Islamic finance sector across ASEAN demonstrates rapid dynamics with varying adoption levels among countries. Indonesia and Malaysia stand out as pioneers with massive implementation of Islamic fintech, including peer-to-peer lending, mobile zakat payments, and digital retail sukuk transactions. This is supported by pro-innovation government policies and increasing public trust in digital Islamic financial services. An informant from OJK stated, “digitalization serves as both a da'wah tool for Islamic economic values and a driver of efficiency in the community’s financial system.” This statement highlights that digitalization carries both spiritual and social significance, not merely economic efficiency. Brunei and Singapore, on the other hand, emphasize strengthening regtech and cybersecurity within Shariah-based supervisory frameworks.[10]

Malaysia has developed a progressive policy framework through the Malaysia Digital Economy Blueprint, enhancing digital connectivity and accelerating the integration of modern Islamic finance. The establishment of digital Islamic banks represents a major milestone in fully technology-based financial service transformation. Singapore positions itself as a hub for ethical digital financial innovation with strict cybersecurity oversight. According to Wang et al., Singapore’s digital infrastructure and governance readiness have made it the most trusted Islamic fintech hub in the region.[11] These strategic differences illustrate that digitalization of Islamic finance in ASEAN is contextual and adaptive. Each country aligns its innovations with infrastructure capacity, market needs, and religious values.

Digitalization has also expanded access to Islamic financial services for previously underserved populations. Mobile-based financial inclusion allows rural communities in Indonesia, the Philippines, and southern Thailand to access Shariah microfinancing. Additionally, digitalization accelerates zakat, infaq, sadaqah, and waqf (ZISWAF) transactions through secure and transparent online platforms. This technology reduces transaction costs, strengthens fund oversight, and enhances the efficiency of resource distribution. Digital processes also foster a participatory and accountable culture in Islamic philanthropy. Consequently, digitalization serves as a bridge between technological advancement and the realization of *maslahah* values.

Beyond efficiency, digitalization strengthens the competitive advantage of Islamic financial institutions in the global market. Development of e-sukuk platforms in Indonesia and Malaysia allows retail investors to participate directly in green infrastructure projects. Smart contract technology based on blockchain reduces the risk of *riba*, *gharar*, and data manipulation through automated transparent systems. This enhances public trust and broadens the investor base across borders. International investor participation in digital green sukuk strengthens ASEAN’s position as a progressive Islamic finance region. These phenomena provide tangible evidence that digitalization is a tool for extending Islamic economic values globally.

However, digitalization also faces significant challenges that require careful policy approaches. Digital literacy gaps among Muslim communities, particularly in rural areas with limited internet access, remain high. Additionally, differences in Shariah compliance standards across countries hinder cross-border integration. Regulations that are not fully adaptive to fintech innovations also constrain the acceleration of the Islamic digital finance ecosystem. Therefore, synergy among regulators, academics,

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[9] T Widiastuti, S A Al-shami, and I Mawardi, “Unlocking the Future of Green Finance: A Bibliometric and Systematic Literature Review on Intellectual Capital and Islamic Financial Development,” *Journal of Islamic Marketing*, 2025, https://doi.org/10.1108/JIMA-10-2024-0461.

[10] U Adinata, “The Influence of Financial Technology Innovation on the Development of Islamic Banking in the Southeast Asian Region,” *Journal of Accounting and Management Studies*, 2025, https://doi.org/10.17261/Pressacademia.2017.705.

[11] C N Wang, N L Nhieu, and W L Liu, “Unveiling the Landscape of Fintech in ASEAN,” *Humanities and Social Sciences Communications* 11, no. 1 (2024), https://doi.org/10.1057/s41599-023-02581-2.

and industry players is key to balancing innovation with Shariah principles. The success of Islamic finance digitalization depends on the ethical, policy, and technological synergy.

Green Finance Development

The development of green finance across ASEAN has shown rapid growth, particularly through Shariah-compliant sustainable financial instruments such as green sukuk and ESG funds. Indonesia and Malaysia lead in issuing sovereign green sukuk that fund renewable energy and environmental conservation projects. These efforts align with the maqasid al-shariah commitment to environmental sustainability and social welfare. A Bank Negara Malaysia official emphasized that "green sukuk is not only a financial innovation but also a manifestation of maqasid al-shariah commitment to environmental preservation." Sustainability, therefore, is not just an economic strategy but also a spiritual expression of humanity's stewardship of the Earth. This approach demonstrates that Islamic values can serve as a moral foundation for green development.

According to Hidayat-ur-Rehman & Hossain, integrating digital technologies into green finance systems enhances efficiency, accountability, and the speed of fund management.[12] Digitalization enables real-time project monitoring, reduces manipulation risks, and strengthens transparency. Moreover, digital-based ESG reporting accelerates Shariah auditing processes and increases investor confidence. Technology also helps Islamic financial institutions identify projects with significant social and ecological impact. Hence, green finance becomes not merely an economic agenda but also a social responsibility mechanism. The digital–green integration reinforces principles of efficiency, fairness, and sustainability in Islamic finance.

Widiastuti et al. highlight the critical role of intellectual capital in strengthening Shariah-compliant green finance innovation in ASEAN.[13] Skilled human resources in ESG and digital technologies enable Islamic financial institutions to quickly adapt to global green finance demands. Enhanced research capacity, sustainability literacy, and an innovation-driven work culture are pillars of successful green Islamic finance. Government policies, such as tax incentives and sustainability-linked loans, accelerate the transformation toward inclusive green financial systems. Transparency improvements also strengthen the moral legitimacy of Islamic financial institutions. Therefore, the development of green finance requires synergy between human capacity and ethical digital technologies.

The implementation of green finance in an Islamic context carries economic, spiritual, and social dimensions. Values such as *amanah*, *ihsan*, and *khalifah fil ardh* form the ethical basis for investment decisions. Each green financing initiative is assessed not only for profitability but also for its contribution to societal and environmental well-being. As such, Shariah-based green finance balances profit, people, and planet in line with the *Triple Bottom Line* theory. This concept underscores that true sustainability is achieved when moral and spiritual dimensions integrate with economic efficiency. This principle distinguishes Shariah green finance from conventional green finance.

Despite its promising prospects, developing green finance in ASEAN faces substantial challenges. Limited ESG data, low sustainability literacy among Muslim investors, and inconsistent regulations across countries are major barriers. The absence of a Shariah-based ESG taxonomy also leads to inconsistencies in project evaluation and reporting. Coordination among regional financial authorities is necessary to establish a harmonized policy framework. Such efforts ensure that every green project complies with Shariah principles and generates positive environmental impact. Integrating research, policy, and innovation will strengthen a sustainable Shariah green finance ecosystem.

Digital Green Synergy

The synergy between digitalization and green finance emerges as a new axis in strengthening sustainable Islamic financial systems. Blockchain technology, big data analytics, and fintech-based green microfinance have generated significant innovations in the Islamic finance sector. In Indonesia and Malaysia, blockchain carbon tracking has been piloted to ensure transparency in green fund

[12] I Hidayat-ur-Rehman and M N Hossain, "The Impacts of Fintech Adoption, Green Finance and Competitiveness on Banks' Sustainable Performance," *Asia Pacific Journal of Business Administration*, 2024, https://www.emerald.com/insight/content/doi/10.1108/APJBA-10-2023-0497/full/html.

[13] Widiastuti, Al-shami, and Mawardi, "Unlocking the Future of Green Finance: A Bibliometric and Systematic Literature Review on Intellectual Capital and Islamic Financial Development."

allocation and carbon emission reduction. An informant from an Indonesian fintech stated, "blockchain technology provides us with tools to prove that each financing has a real impact on emission reduction." This marks a paradigm shift from simple financing to impact measurement.

Jibo highlights the vast potential of green fintech as a catalyst for ethical digital economies in Muslim countries.[14] Integrating Islamic values with financial technology creates an efficient and socially equitable economic system. Big data enables financial institutions to accurately assess ESG risks and channel financing to sectors with maximum green impact. AI-driven automation enhances operational efficiency and accelerates Shariah compliance evaluation. Therefore, digital–green synergy strengthens both technological innovation and ethical dimensions in Islamic finance. ASEAN thus becomes a global laboratory for digital green finance.

Cross-country collaboration is crucial to reinforce digital–green integration in ASEAN. For example, OJK Indonesia and Bank Negara Malaysia jointly developed the Green Digital Finance Lab to strengthen research and policy coordination. This collaboration fosters regulatory harmonization and system interoperability across Shariah-compliant financial institutions. Singapore and Brunei also contribute by developing digital security and supervisory frameworks. Such collaboration builds international investor confidence in ASEAN's stable Islamic digital financial system. Regional synergy becomes the foundation for long-term sustainable integration.

From the perspective of maqasid al-shariah, digital–green synergy strengthens *hifz al-bi'ah* (environmental preservation) and *hifz al-mal* (wealth protection). Technology ensures that financing is profitable and socially and ecologically beneficial. Blockchain-enabled management of zakat and waqf ensures transparency and broadens social impact. Thus, digital innovation complements, rather than replaces, Islamic economic spirituality. Every green digital financial transaction becomes measurable social worship with sustainable value. This paradigm demonstrates that Islamic ethics can thrive in high-tech landscapes.

However, realizing digital–green synergy faces structural and institutional challenges. Limited human resources skilled in ESG and Shariah digital technologies hinder sector development. Moreover, the lack of global standards for Shariah-compliant digital green finance creates policy fragmentation. Harmonization through the ASEAN Green Finance Framework is essential. The quadruple helix approach, involving government, industry, academia, and society, effectively strengthens the ecosystem. With inclusive collaboration, ASEAN has the potential to become a global model for integrating technology and Islamic ethics.

Integration Dynamics in ASEAN

The integration of digital and green finance in ASEAN shows significant variation depending on infrastructure readiness and national policies. Indonesia and Malaysia excel with mature Shariah fintech ecosystems, while Singapore and Brunei focus on regulation, cybersecurity, and supervisory capacity. Winarto, emphasizes that international legal frameworks are crucial to create interoperability in digital green finance systems.[15] Moreover, a combination of fiscal policy, governmental incentives, and technological innovation is essential for successful integration.[16] Differences in readiness highlight the need for regional policy harmonization. Integration is key for consistent and positive implementation of digital innovations.

Adaptive regulatory frameworks are key to bridging cross-country gaps. Malaysia's Bank Negara and Securities Commission have developed Green Financing Guidelines, while OJK Indonesia strengthens supervision of green sukuk and green fintech. Singapore prioritizes regulatory sandboxes for digital innovation testing, and Brunei emphasizes human resource capacity and technology audits. These approaches show that integration requires cross-country coordination mechanisms responsive to local

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[14] A U Jibo, *Green Fintech Innovations in Islamic Banking: Opportunities and Challenges* (Routledge, 2025), https://doi.org/10.4324/9781003518617-4.

[15] W Winarto, "Building an International Regulatory and Legal Framework for Green Digital Finance," *Revista Jurídica* 37, no. 1 (2025), https://doi.org/10.34625/issn.2183-2705(37)2025.ic-9.

[16] S B Amin and F Taghizadeh-Hesary, *Green Finance Policies to Accelerate the Economic Recovery in ASEAN Countries* (Routledge, 2023), https://doi.org/10.4324/9781003324386-7.

contexts. Collaboration expands investment opportunities and mitigates regulatory risks. Regional synergy provides a foundation for a sustainable digital–green Islamic finance system.

Cross-institutional collaboration is increasingly vital for sharing best practices and innovations. The ASEAN Green Finance Network and multilateral forums serve as platforms for experience exchange and ESG standard-setting. Integration enhances transparency, accountability, and consistency in Shariah-compliant green finance. Collaboration between universities and research institutes fosters knowledge-based digital finance. This allows technology adaptation to sector-specific green needs in ASEAN. Integrative strategies support industry growth and strengthen the moral legitimacy of Islamic financial institutions.

From a socio-economic perspective, digital–green integration strengthens financial inclusion at both micro and macro levels. Shariah fintech platforms enable SMEs to access green financing, while regional policies support cross-border investment in renewable energy projects. Social impacts are reflected in equitable economic distribution and reduced inequality. Integration reinforces financial institutions' social license. Enhanced public participation strengthens long-term sustainability. Thus, digital–green integration is both a business strategy and a socio-ecological mechanism.

Challenges remain, especially regarding ESG standardization, Shariah practice differences, and technology capacity in certain countries. Some nations face digital infrastructure limitations affecting blockchain carbon tracking efficiency. Regional approaches emphasizing technology transfer, human resource training, and regulatory harmonization are required. Strengthening audit mechanisms, data sharing, and interoperability is essential. Multilateral institutions can support coordination and cross-country risk mitigation. These measures ensure effective and sustainable digital–green integration.

In conclusion, digital and green finance integration in ASEAN requires adaptive policies, cross-institutional collaboration, and technology harmonization. Success depends on infrastructure readiness, human capacity, and regulatory support. This synergy enables ASEAN to build a globally competitive Shariah-based digital green finance ecosystem. Effective integration also enhances credibility with international investors. Proper coordination allows digital and green innovations to complement each other. This creates a sustainable model of modern Islamic economics.

Theoretical Interpretation

The findings reinforce the relevance of the *Triple Bottom Line* theory in Islamic finance, balancing profit, people, and planet. Digitalization enhances operational efficiency (*profit*), expands financial inclusion (*people*), and supports green projects (*planet*). Moreover, *Institutional Theory* explains how regulations and Shariah norms influence digital green innovation in each country. This approach aligns with maqasid al-shariah principles, particularly in environmental protection (*hifz al-bi'ah*) and economic justice. The synergy between Islamic values and green financial technology strengthens both business performance and economic morality.[17] Therefore, the theoretical interpretation emphasizes that digital–green integration is not merely operational but also a normative foundation for sustainable systems.

The digital–green synergy can also be explained through *Stakeholder Theory*, which emphasizes the involvement of multiple actors to achieve sustainability goals. Regulators, industry practitioners, academics, and society play pivotal roles in green finance development. Understanding stakeholders' expectations allows institutions to align green projects with social and environmental interests. Digital technologies further strengthen participation, accountability, and communication among stakeholders. Additionally, the *Resource-Based View* highlights internal capabilities, such as intellectual capital and digital systems, as key drivers of green financial innovation. This underscores the importance of strengthening internal resources to support sustainability.

Theoretical approaches also highlight the role of maqasid al-shariah in guiding digital–green innovation. Principles such as *hifz al-mal* (wealth preservation) and *hifz al-bi'ah* (environmental protection) require efficient and responsible resource utilization. Digitalization enables financial institutions to assess the social and ecological impact of each financing initiative. Technology

[17] R Fitriani, S Hartati, and Y Ramadhan, "The Effect of Tax Literacy, Tax Awareness, and Trust in Tax Authorities on Tax Compliance," *International Journal of Economics, Business and Accounting Research (IJEBAR)*, 2025, https://ijebar.org/index.php/ijebar/article/view/2457.

implementation also reduces *gharar* risks and improves transparency. Hence, digital innovation aligns with Shariah objectives while supporting economic sustainability. This synergy demonstrates that Islamic ethics can co-exist with modern financial technologies.

Contingency Theory explains differences in strategy among ASEAN countries in adopting digital–green finance. Regulatory contexts, cultural norms, and technological capacities determine the success of innovation implementation. Indonesia and Malaysia are more adaptive toward Shariah fintech due to supportive infrastructure and pro-innovation policies. Brunei and Singapore emphasize data security and regulatory compliance as priorities. This indicates that a universal model is not always effective, requiring contextual adaptation in strategy. Flexibility and adaptability are therefore essential in developing sustainable digital green systems.

From a normative, structural, and capability perspective, ASEAN digital–green finance integration is multidimensional. Synergy between Shariah principles, digital innovation, and adaptive regulation creates a sustainable system. These findings support previous literature on the importance of multidimensional approaches in Shariah-based green finance development. Sustainability is not only an economic agenda but also an ethical and social responsibility. Applied theories provide an analytical foundation to understand digital–green finance phenomena. Thus, Islamic financial innovation can develop sustainably without compromising spiritual values.

Finally, the theoretical interpretation indicates that successful integration depends on harmonizing religious, technological, and institutional elements. Combining internal capabilities with regulatory frameworks enhances system resilience and investor confidence. This multidimensional perspective reinforces the legitimacy of Shariah-compliant green finance in ASEAN. Integration of digital technologies amplifies transparency, efficiency, and inclusiveness. Ethical values underpinning Shariah finance guide decision-making and risk management. Consequently, theory and practice mutually reinforce the sustainability of digital–green Islamic finance systems.

Policy and Practical Implications

The study highlights that regional policies, such as the *ASEAN Green Finance Framework*, are essential to strengthen digital–green integration. Harmonization of regulations, ESG standardization, and digital system interoperability are critical success factors. Despite significant collaboration potential, challenges remain, including digital literacy gaps and limited cross-jurisdiction Shariah data. These findings support Mustaqim & Heryanto, emphasizing the need to adapt Shariah business law to digital innovation. Policies must consider local contexts to ensure effectiveness.[18] Strategic integration enables tangible and sustainable digital–green Islamic finance implementation across ASEAN.

Practically, Islamic financial institutions need to develop innovative products and services while maintaining Shariah compliance. Blockchain, big data, and AI integration can enhance transparency, efficiency, and accountability in green finance. Collaboration with fintech startups and academic institutions accelerates innovation. Adaptive regulations and fiscal incentives encourage institutions to actively participate in green finance. Developing human capital skilled in ESG and digital finance is a priority. These measures ensure the sustainability of the digital–green Shariah finance ecosystem in ASEAN.

Policy approaches must also include robust auditing and verification mechanisms. AI-based monitoring allows real-time project supervision, reducing mismanagement and greenwashing risks. Collaboration among regional financial authorities facilitates data exchange and best practice sharing. Transparent information enhances domestic and global investor confidence. Clear and consistent regulations underpin the sustainability of the green finance ecosystem. Thus, technology and policy must advance hand-in-hand to ensure effectiveness.

Increasing digital literacy and ESG awareness among the public is crucial to successful integration. Educational programs and training should reach SMEs, rural communities, and industry actors. Awareness of economic, social, and environmental benefits of green finance encourages active participation. Improved literacy minimizes technology misuse and Shariah non-compliance risks.

[18] D A M Mustaqim and S N P Heryanto, "The Dynamics of Sharia Business Law in Responding to Innovations in Digital-Based Islamic Financial Products," *Journal of Islamic Digital Economy and Finance* 1, no. 1 (2025), https://doi.org/10.2711/jidef.v1i01.211.

Continuous education forms the foundation of an inclusive Shariah financial ecosystem. This approach ensures that digital–green innovations are sustainable at the community level.

Cross-sector collaboration is an effective strategy for policy implementation. Government, academia, industry, and society (*quadruple helix*) should jointly build an adaptive green finance system. This approach strengthens synergy among innovation, regulation, and public participation. Product standardization, ESG audits, and reporting mechanisms become more effective through collaboration. ASEAN can emerge as a global model for digital–green Islamic finance. Proper coordination ensures the system is both sustainable and socially inclusive.

In conclusion, integrated adaptive policies and practices allow digital–green finance to flourish in ASEAN. Technology, regulation, and Shariah values form the foundation for sustainability. Applying best practices and cross-country collaboration facilitates a transformation of Shariah financial systems. These strategies create inclusive and sustainable investment opportunities. A comprehensive approach positions ASEAN as a global leader in digital–green Islamic finance integration. The success of this approach demonstrates that Islamic ethics and technological innovation can progress together to achieve sustainable economies.

CONCLUSION

This study reveals that the synergy between digital innovation and the green economy plays a pivotal role in strengthening the sustainability of Islamic finance in Southeast Asia**.** The findings demonstrate that digital transformation through Islamic fintech, blockchain-based sukuk systems, and regtech has enhanced financial inclusion, efficiency, and transparency. Simultaneously, the growth of green finance instruments such as *green sukuk* and ESG funds has solidified the region's transition toward sustainable development aligned with *maqasid al-shariah* values. The intersection of these two paradigms—digital and green establishes a new framework for ethical, inclusive, and environmentally responsible Islamic financial systems.

From a theoretical perspective, this study contributes to the integration of *Triple Bottom Line*, *Institutional Theory*, and *maqasid al-shariah* principles, explaining how Islamic finance can balance profit, people, and planet. The research provides empirical support that digital innovation not only improves operational efficiency but also facilitates the realization of environmental stewardship (*hifz al-bi'ah*) and wealth preservation (*hifz al-mal*). Moreover, the study enriches current Islamic economics literature by bridging a critical gap between digitalization and sustainability theories within the Southeast Asian context—an area that remains underexplored in prior research.

In practical terms**,** the findings highlight the importance of adopting adaptive digital–green strategies among Islamic financial institutions. These include integrating blockchain for carbon tracking, leveraging artificial intelligence for ESG auditing, and expanding fintech-based microfinance to support small and medium enterprises. Furthermore, collaboration between regulators, fintech innovators, and academic institutions is vital to ensure Shariah compliance while maintaining technological competitiveness. Strengthening human capital with digital and ESG competencies will also enhance institutional resilience and innovation capacity.

At the policy level**,** the research underscores the urgency of harmonizing digital–green frameworks across ASEAN through initiatives such as the *ASEAN Green Finance Framework*. Governments and regulatory authorities must align standards, foster interoperability, and create incentives for sustainable digital finance. Cross-country coordination will enable an integrated ecosystem that supports ethical investment, regional financial stability, and environmental sustainability. Policymakers are encouraged to establish a unified Shariah-based ESG taxonomy and strengthen data-sharing mechanisms to enhance transparency and accountability.

For future research, scholars are encouraged to explore the role of artificial intelligence, big data analytics, and digital governance in enhancing Islamic green finance implementation. Comparative studies involving non-ASEAN Islamic economies could also deepen understanding of global digital–green integration models. Longitudinal research tracking the evolution of digital–green Islamic finance practices would provide valuable insights into their long-term impact on financial inclusion and sustainability.

In summary, this study contributes a comprehensive conceptual and empirical foundation for understanding how digital transformation and the green economy jointly shape the future of Islamic finance. By combining ethical values, technological innovation, and sustainability principles, Southeast Asia can position itself as a global leader in digital green Shariah finance**,** promoting economic progress that is both inclusive and environmentally responsible.

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