



Journal of Econ-Islamic Law and Society Research

E-ISSN: XXXX-XXXX

Vol.1, No. 3, 2025, pp. 195-210

DOI: <https://doi.org/10.61455/jeisr.v1i03.519>

Balancing Digital Innovation and Sharia Compliance in Islamic Banking: A Legal and Governance Perspective

Abdelrahman Said¹, Muthoifin², Mofida Ahmed³, Aboubacar Barry⁴

¹Faculty of Law, Aswan University, Aswan, Egypt

²Department of Islamic Economic Law, Universitas Muhammadiyah Surakarta, Indonesia

³Department of Sharia and Law, Faculty of Islamic and Arabic Studies, Al-Azhar University, Egypt

⁴Faculty of Sharia and Law, International University of Africa, Guinea

¹abdo.saiced123@gmail.com, ²mut122@ums.ac.id, ³mofidaelbana94@gmail.com,

⁴barry.aboubacar7@gmail.com

Received June 20, 2025; Revised August 22, 2025; Accepted November 10, 2025

Abstract

Objective: This study aims to examine how Islamic banks balance digital innovation with strict adherence to Sharia principles, focusing on the legal and governance mechanisms that support sustainable technological adoption in Islamic finance. **Theoretical framework:** The research is grounded in Islamic economic jurisprudence, Sharia governance theory, and regulatory compliance frameworks, integrating principles of ethical finance with contemporary financial technology governance. **Literature review:** The literature review analyses prior academic studies on digital transformation in Islamic banking, FinTech regulation, and Sharia compliance, highlighting gaps related to legal governance and institutional coordination in a rapidly evolving digital environment. **Methods:** The study adopts a qualitative analytical approach based on doctrinal legal analysis and comparative review of selected case studies from Islamic banks implementing digital tools such as blockchain, artificial intelligence, and mobile banking platforms. **Results:** The findings indicate that effective Sharia governance structures, regulatory clarity, and collaboration between technologists, Sharia scholars, and regulators are essential for enabling innovation without compromising Sharia compliance. Digital transformation enhances operational efficiency, customer engagement, and financial inclusion when supported by robust legal frameworks. **Implications:** The study underscores the need for adaptive regulatory policies and strengthened Sharia supervisory mechanisms to manage legal and compliance risks associated with digital technologies in Islamic banking. **Novelty:** This research contributes a legal and governance-based perspective to the discourse on digital innovation in Islamic banking, emphasising the integration of Sharia compliance within modern financial technology frameworks.

Keywords: islamic banking, regulatory framework, financial technology (fintech), sharia governance, regulatory challenges.

INTRODUCTION

The rapid advancement of digital technologies has profoundly transformed the global banking industry, reshaping how financial services are designed, delivered, and regulated [1]. Digital platforms, mobile banking applications, artificial intelligence, and financial technology solutions have become central to modern banking operations, enabling greater efficiency, accessibility, and customer engagement [2]. Within this evolving landscape, Islamic banking faces a unique and complex challenge: embracing technological innovation while maintaining strict adherence to Sharia principles that govern financial transactions, ethical conduct, and social responsibility. This dual obligation places Islamic banks at the intersection of innovation, law, and religious ethics, requiring carefully balanced strategies to remain competitive without compromising their foundational values [3].

Indonesia represents a particularly significant context for examining this challenge. As the country with the largest Muslim population in the world, Indonesia holds substantial potential for the growth and expansion of Islamic banking [4]. Despite this demographic advantage, the penetration and utilisation of Islamic banking services remain relatively limited when compared to conventional banking [5]. This disparity highlights a structural gap between market potential and actual participation, raising important questions about accessibility, public awareness, and institutional responsiveness. In an increasingly digital society, this gap cannot be effectively addressed without a comprehensive digital transformation strategy tailored to the principles and objectives of Islamic finance [6].

Digital innovation offers Islamic banks an opportunity to overcome traditional barriers to financial inclusion by extending services beyond physical branches and reaching underserved populations [7]. Mobile banking, online platforms, and digital payment systems can significantly reduce transaction costs, improve convenience, and enhance customer experience. For a population that is increasingly technology-oriented, particularly younger consumers, digital banking is no longer a luxury but an expectation [8]. However, for Islamic banks, the adoption of digital technologies must go beyond technical efficiency and align with Sharia requirements, such as the prohibition of interest, avoidance of excessive uncertainty, and promotion of fairness and transparency in financial dealings [9].

From a legal and governance perspective, digital transformation introduces new layers of complexity for Islamic banking institutions. The integration of advanced technologies requires compliance not only with national banking regulations but also with Sharia governance frameworks that oversee the permissibility of financial products and operational practices [10]. This necessitates robust institutional arrangements, including effective Sharia supervisory boards, internal compliance mechanisms, and clear regulatory guidance. Without a coherent governance structure, digital innovation risks creating inconsistencies between technological practices and Sharia principles, potentially undermining public trust in Islamic financial institutions [11].

One of the central challenges facing Islamic banks in the digital age is ensuring that technological innovation does not dilute the ethical foundations of Islamic finance [12]. While digital tools can enhance operational efficiency and product customisation, they may also introduce risks related to automation, data usage, contractual opacity, and speculative behaviour [13]. Technologies such as artificial intelligence and blockchain, for example, offer significant benefits in areas such as risk management and transaction transparency, but their application must be carefully assessed to ensure compatibility with Sharia norms. This requires ongoing dialogue

between technologists, legal experts, and Sharia scholars to evaluate emerging innovations and establish acceptable frameworks for their use [14].

In addition to internal governance challenges, Islamic banks must navigate an evolving regulatory environment shaped by rapid technological change [15]. Regulators are increasingly tasked with balancing the promotion of innovation with the need to protect consumers, ensure financial stability, and uphold ethical standards. For Islamic banking, this balance is particularly sensitive, as regulatory frameworks must accommodate both conventional financial regulations and Sharia-specific requirements [16]. A lack of regulatory clarity can hinder innovation, while insufficient oversight may expose institutions to legal and reputational risks. Consequently, adaptive and inclusive regulatory approaches are essential to support sustainable digital transformation in Islamic banking [17].

Another critical dimension of digital innovation in Islamic banking relates to financial literacy and public engagement. Limited awareness and understanding of Sharia-compliant financial products have contributed to the low utilisation of Islamic banking services in many markets [18]. Digital platforms can play a transformative role in addressing this issue by providing accessible information, educational tools, and user-friendly interfaces that demystify Islamic financial concepts. However, the effectiveness of such initiatives depends on the ability of Islamic banks to design digital experiences that resonate with customer values while maintaining clarity, transparency, and ethical integrity [19].

Strategic collaboration has emerged as a key enabler of successful digital transformation in Islamic banking. Partnerships with financial technology firms can accelerate innovation, enhance service delivery, and introduce new capabilities that traditional banking structures may lack [20]. Nevertheless, such collaborations also raise important governance concerns, particularly regarding data security, contractual responsibility, and Sharia compliance. Islamic banks must ensure that partnerships with technology providers are governed by clear legal agreements and oversight mechanisms that preserve Sharia integrity throughout the innovation process [21].

Furthermore, digital transformation requires significant investment in human capital and institutional capacity. Employees must be equipped with the skills and knowledge necessary to operate advanced technologies while understanding the legal and ethical implications of their use. Similarly, customers must be empowered to engage confidently with digital banking services through targeted education and support. By fostering a culture of learning and ethical awareness, Islamic banks can strengthen trust and loyalty while enhancing their ability to adapt to technological change [22].

Ultimately, balancing digital innovation with Sharia compliance is not merely a technical or operational challenge but a strategic imperative for the future of Islamic banking [23]. Successful integration of digital technologies can enable Islamic banks to expand financial inclusion, enhance social equity, and reinforce their role as ethical financial intermediaries. At the same time, failure to address governance, legal, and ethical considerations may compromise the credibility and sustainability of Islamic finance. Therefore, a holistic approach that integrates technological advancement with robust legal frameworks and effective Sharia governance is essential [24].

In this context, examining digital innovation in Islamic banking through a legal and governance lens provides valuable insights into how institutions can navigate the digital age responsibly. By aligning innovation strategies with Sharia principles and regulatory requirements, Islamic banks can position themselves as competitive, trustworthy, and socially responsible actors within the global financial system. This

balance is crucial not only for institutional success but also for preserving the moral and ethical foundations that distinguish Islamic banking in an increasingly digitised world.

LITERATURE REVIEW

The integration of financial technology within the Islamic banking sector has attracted increasing scholarly and practical attention due to its potential to reshape financial services while simultaneously posing complex Sharia and governance challenges [25]. FinTech innovation offers Islamic banks an opportunity to enhance competitiveness, broaden financial inclusion, and improve service efficiency. However, the adoption of digital technologies must be approached with caution, as Islamic banks are bound not only by conventional regulatory requirements but also by the ethical and legal constraints imposed by Sharia principles [26]. As a result, recent academic discourse emphasises the necessity of a balanced approach that carefully aligns technological innovation with Sharia compliance, underscoring the critical role of Sharia supervisory boards in maintaining public confidence and institutional legitimacy [27].

Digital transformation has become a defining feature of contemporary Islamic finance. The expansion of digital banking platforms, mobile applications, and online financial services has fundamentally altered customer expectations and banking practices [28]. For Islamic banks, digitalisation represents a strategic tool to overcome structural limitations and reach wider segments of society, particularly underserved and unbanked populations [29]. Nevertheless, digital transformation must be guided by frameworks that integrate innovation with the ethical objectives of Islamic finance, including social justice, risk-sharing, and transparency. Without such frameworks, technological advancement may inadvertently undermine the moral foundations that distinguish Islamic banking from conventional financial systems [30].

Emerging technologies such as blockchain, artificial intelligence, and cloud computing are increasingly being deployed by Islamic banks to streamline operations, enhance transparency, and improve decision-making processes [31]. Blockchain technology, in particular, presents promising opportunities due to its decentralised and immutable nature, which aligns with Islamic finance principles of accountability and trust. However, its application requires careful Sharia assessment to ensure that digital transactions do not involve prohibited elements such as interest, excessive uncertainty, or speculative behaviour. The successful implementation of blockchain in Islamic banking, therefore, depends on close collaboration between legal experts, technologists, and Sharia scholars to develop governance frameworks that support innovation while safeguarding compliance.

Artificial intelligence represents another transformative force in Islamic banking, offering advanced capabilities in customer analytics, risk assessment, and operational efficiency. Despite its benefits, the use of AI raises ethical and legal concerns related to fairness, transparency, and accountability. Algorithmic decision-making processes must be designed to avoid bias, discrimination, and unjust outcomes, as such practices would conflict with the core values of Islamic ethics [32]. From a governance perspective, Islamic banks must ensure that AI systems are subject to rigorous oversight and continuous evaluation to confirm their alignment with Sharia principles and ethical standards [33].

Regulatory and governance challenges remain central to the digital transformation of Islamic banking. The rapid pace of technological innovation often exceeds the development of legal and regulatory frameworks, creating uncertainty for financial

institutions [34]. Effective Sharia governance structures are essential in this context, as they provide mechanisms for reviewing and approving digital products and services. Regulators and Sharia boards play a pivotal role in establishing standards that balance innovation with compliance, ensuring that digital advancements contribute positively to financial stability and ethical integrity [35]. Ongoing dialogue between regulatory authorities, Islamic banks, and fintech providers is therefore necessary to address emerging risks and adapt governance models to evolving technological realities [36].

Strategic adaptation and collaboration are increasingly recognised as key drivers of successful digital transformation in Islamic banking. Partnerships with fintech firms enable Islamic banks to access technical expertise, accelerate innovation, and develop customer-centric digital solutions. However, such collaborations must be governed by clear legal arrangements and Sharia oversight to prevent compliance risks. By fostering a culture of innovation supported by strong governance, Islamic banks can enhance their value proposition while remaining faithful to their ethical commitments [37].

Digital transformation presents Islamic banking with significant opportunities to advance financial inclusion, operational efficiency, and customer engagement. At the same time, it introduces legal, ethical, and governance challenges that require careful management. By adopting a holistic approach that integrates technological innovation with robust Sharia governance and regulatory frameworks, Islamic banks can successfully balance innovation with compliance. This balance is essential for ensuring sustainable growth, preserving public trust, and reinforcing the role of Islamic finance as an ethical and socially responsible financial system in the digital age [38].

METHODOLOGY

Research Design

This study adopts a systematic literature review as its primary methodological approach to examine the digital transformation of Islamic banking through a legal and Sharia governance lens. This research design is particularly suitable given the conceptual and interdisciplinary nature of the topic, which encompasses Islamic finance, financial technology, regulatory frameworks, and ethical governance [39]. Rather than relying on empirical data collection, the study focuses on synthesising existing scholarly and institutional knowledge to develop a comprehensive understanding of how Islamic banks balance technological innovation with Sharia compliance [40].

A systematic review allows for a structured, transparent, and replicable process of identifying, evaluating, and interpreting relevant literature. This approach facilitates a critical comparison of existing theoretical models, governance frameworks, and regulatory practices, while also enabling the identification of conceptual gaps and inconsistencies in the current body of research. By adopting this design, the study aims to move beyond descriptive analysis and provide a nuanced evaluation of best practices and challenges facing Islamic banks in the digital era [41].

Data Collection Strategy

The data collection process involves an extensive and systematic search of recognised academic databases, including Scopus, Web of Science, and Google Scholar. These databases were selected due to their comprehensive coverage of high-

quality, peer-reviewed literature in the fields of finance, law, economics, and Islamic studies. To ensure thematic relevance, a combination of targeted keywords was employed, such as Islamic banking, digital transformation, fintech, Sharia governance, financial innovation, and regulatory compliance [42].

The selection of literature was guided by clearly defined inclusion and exclusion criteria. Only studies that directly address digitalisation within Islamic banking or Islamic finance were considered. Priority was given to publications that discuss legal, regulatory, ethical, or governance dimensions of digital innovation. To capture both foundational theories and contemporary developments, the review includes literature published over the past twenty years, reflecting the evolution of Islamic banking alongside rapid technological change [43].

Screening and Selection Process

Following the initial search, retrieved publications underwent a multi-stage screening process. First, titles and abstracts were reviewed to assess relevance to the research objectives. Studies that lacked a clear connection to Islamic banking, Sharia compliance, or digital innovation were excluded. In the second stage, full-text reviews were conducted to evaluate methodological rigour, analytical depth, and contribution to the research topic. This process ensured that only high-quality and contextually relevant studies were included in the final analysis [44].

Data Analysis and Synthesis

The selected literature was analysed using qualitative thematic analysis. Key themes were identified and categorised, including fintech adoption, Sharia governance mechanisms, regulatory challenges, ethical implications of emerging technologies, and institutional strategies for digital innovation. This thematic approach enabled the study to compare diverse perspectives and identify patterns in how Islamic banks respond to digital transformation [45].

The synthesis stage integrates findings across studies to construct a coherent analytical narrative. Particular emphasis is placed on examining how governance structures such as Sharia supervisory boards, regulatory authorities, and internal compliance systems mediate the relationship between innovation and Sharia adherence. This process allows for a holistic understanding of the conditions under which digital transformation can enhance, rather than undermine, the objectives of Islamic finance [46].

Contribution of the Methodological Approach

By adopting a systematic literature review approach, this study makes a meaningful contribution to the scholarly discourse on digital transformation in Islamic banking by presenting an integrated and critical synthesis of existing research. This methodological approach allows for a comprehensive examination of how technological innovation intersects with Sharia principles, governance structures, and regulatory frameworks. Through the systematic analysis of prior studies, the research identifies key strategic patterns, legal considerations, and institutional practices that shape the digital evolution of Islamic banks across different jurisdictions [47].

Furthermore, the review facilitates a deeper understanding of the challenges and opportunities associated with adopting digital technologies while maintaining Sharia compliance. By mapping bibliometric patterns and thematic trends within the literature, the study highlights dominant research streams as well as underexplored areas that require further scholarly attention [48]. These insights are particularly

valuable for policymakers and regulators seeking to design adaptive frameworks that support innovation without compromising ethical and legal standards. Likewise, Islamic banking practitioners can benefit from the strategic implications identified, which offer guidance for aligning digital initiatives with governance and compliance requirements [49].

Importantly, this study lays a conceptual foundation for future empirical research by identifying gaps related to governance effectiveness, fintech collaboration, and Sharia oversight in digital contexts. As such, it supports the advancement of sustainable, inclusive, and ethically grounded digital innovation within the Islamic banking sector.

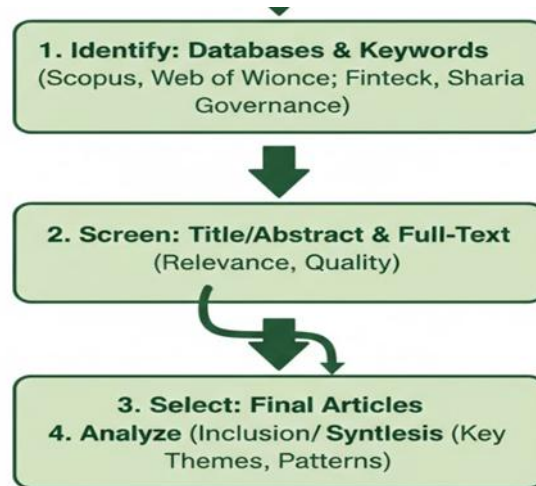


Figure 1. Systematic Review Framework for Digital Transformation in Islamic Banking

RESULTS AND DISCUSSION

Adoption of Digital Technologies in Islamic Banks

The results demonstrate that digital transformation has become an essential strategic priority for Islamic banks seeking to enhance competitiveness and respond to changing market dynamics. Islamic banks have increasingly integrated digital technologies such as mobile banking platforms, blockchain-based applications, and artificial intelligence systems into their operational and service delivery models. These technologies have enabled banks to modernise traditional banking processes, reduce operational inefficiencies, and improve customer interaction across digital channels [50].

Mobile banking emerges as the most widely adopted technology due to its relatively low implementation cost and immediate impact on accessibility. Islamic banks utilising mobile platforms are better positioned to reach geographically dispersed and underbanked populations, thereby reinforcing the Islamic finance objective of financial inclusion. The ability to conduct transactions remotely, access account information, and utilise Sharia-compliant financial products through digital channels has significantly enhanced customer convenience and engagement [51].

Blockchain technology, although less widely implemented, plays a critical role in strengthening transparency and trust within Islamic financial transactions. Its immutable and decentralised nature supports clear documentation of contracts and transactions, which is consistent with the Sharia emphasis on clarity and

accountability. In areas such as trade finance, cross-border payments, and remittances, blockchain applications have reduced transaction costs and processing times, contributing to greater operational efficiency [52].

Artificial intelligence has further expanded the functional capacity of Islamic banks by enabling data-driven decision-making, personalised product offerings, and automated customer support services. However, the effectiveness of AI implementation depends heavily on the ethical design and governance of algorithms to ensure alignment with Islamic principles [53].

Table 1. Impact and Integration of Digital Technologies in Islamic Banking

Technology	Adoption Level	Key Applications	Sharia & Strategic Benefits
Mobile Banking	High (Widely Adopted)	Mobile apps, Remote transactions, Account management.	Promotes Financial Inclusion; enhances accessibility for underbanked populations.
Blockchain	Moderate (Emerging)	Trade finance, Cross-border payments, Smart contracts.	Enhances Transparency (Clarity) and accountability; provides immutable documentation.
Artificial Intelligence (AI)	Moderate	Data-driven decisions, Personalized products, and chatbots.	Improves Operational Efficiency; requires ethical governance to align with Sharia.
Digital Platforms	High	Online service delivery, Customer engagement.	Reduces inefficiencies and modernises traditional banking processes.

Challenges in Balancing Innovation with Sharia Compliance

Despite these advancements, the findings reveal substantial challenges in aligning digital innovation with Sharia compliance. One of the most pressing issues is the complexity of evaluating new technologies from a Sharia perspective. Digital financial products often involve sophisticated technical mechanisms that may not be immediately transparent to Sharia boards, increasing the risk of delayed approval or misinterpretation [54].

Artificial intelligence systems present particular ethical challenges. While AI enhances efficiency in areas such as credit evaluation and risk management, algorithmic bias and lack of transparency may lead to unjust outcomes that conflict with Islamic values of fairness and equity. This highlights the need for explainable and auditable AI systems that allow Sharia scholars to assess compliance effectively [55].

Another significant challenge relates to digital exclusion. As Islamic banks increasingly rely on digital platforms, certain customer segments, such as elderly individuals or those with limited technological literacy, may face barriers to access. This outcome would contradict the inclusive objectives of Islamic finance. Therefore, the findings emphasise the importance of hybrid service models that combine digital innovation with accessible non-digital alternatives [56].

Blockchain implementation also introduces Sharia-related concerns regarding contractual validation, risk allocation, and mutual consent. While blockchain enhances efficiency, its automated execution mechanisms must be carefully

structured to ensure compliance with Sharia requirements governing consent and fairness in financial contracts [57].

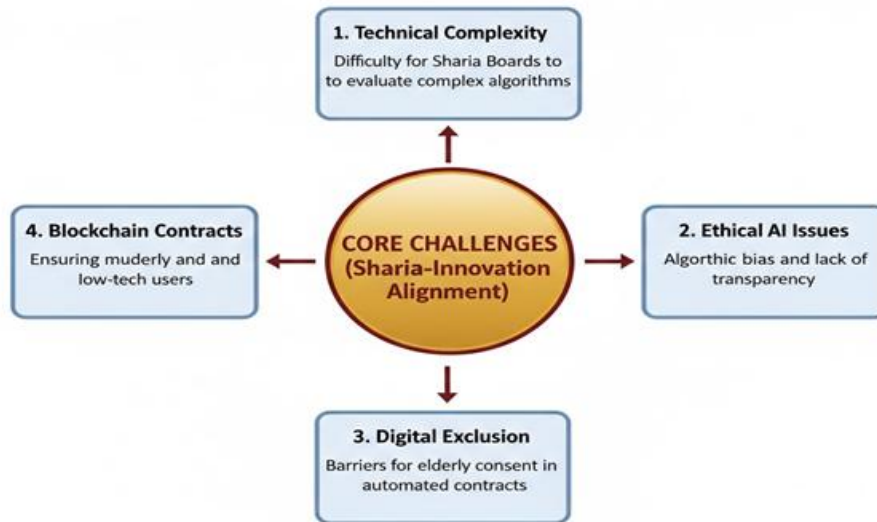


Figure 2. Conceptual Framework of Sharia-Innovation Alignment Challenges

Regulatory and Governance Issues

The findings of this study underscore the pivotal role of regulatory and governance frameworks in shaping the speed, scope, and effectiveness of digital transformation within Islamic banking. A supportive and well-defined regulatory environment significantly enhances the willingness of Islamic banks to adopt digital innovations, particularly in areas such as fintech integration, digital payments, and automated financial services [58]. In jurisdictions where regulators provide clear, adaptive, and forward-looking guidelines for digital banking, Islamic banks demonstrate greater confidence in deploying new technologies while ensuring compliance with both legal requirements and Sharia principles. Conversely, regulatory uncertainty or fragmented oversight often leads to conservative strategies, delayed implementation, and missed opportunities for innovation, as banks seek to minimise the risk of non-compliance [59].

Sharia governance structures emerge as a central pillar in balancing technological advancement with ethical and religious obligations [60]. The results indicate that Islamic banks with well-established and actively engaged Sharia boards are more successful in navigating the complexities of digital transformation. When Sharia scholars are involved early in the design, assessment, and approval of digital products, banks are better able to align innovation with Sharia objectives, thereby reducing compliance risks and enhancing public trust. Effective governance, therefore, requires continuous and structured interaction between Sharia boards, legal advisors, compliance officers, and technology teams to ensure that digital solutions are both operationally efficient and ethically sound [61].

Furthermore, the study suggests that regulatory engagement should be proactive rather than reactive. Islamic banks that actively participate in regulatory consultations, industry forums, and policy development processes are better positioned to influence the creation of regulatory frameworks that accommodate the unique characteristics of Sharia-compliant digital finance. Such engagement not only facilitates innovation but also contributes to the development of a more resilient, transparent, and inclusive Islamic financial system in the digital era [62].

Table 2. Impact of Regulatory and Governance Frameworks on Digital Adoption

Focus Area	Supportive Environment (Positive)	Restrictive Environment (Negative)
Regulatory Framework	Clear, forward-looking guidelines that boost bank confidence.	Regulatory uncertainty and fragmented oversight are leading to delays.
Sharia Board Role	Early involvement in product design and assessment phases.	Late or reactive assessment increases the risk of non-compliance.
Institutional Strategy	Proactive engagement in regulatory consultations and forums.	Conservative/defensive strategies due to fear of legal risks.
Internal Synergy	Structured interaction between Tech, Legal, and Sharia teams.	Isolated operations (Silos) resulting in inefficient digital solutions.

Strategic Approaches for Balancing Innovation and Compliance

Strategic adaptation emerges as a decisive factor in enabling Islamic banks to successfully balance digital innovation with Sharia compliance in an increasingly technology-driven financial environment. The findings indicate that Islamic banks which adopt collaborative and forward-looking innovation strategies are better positioned to integrate advanced digital solutions without undermining their ethical and religious foundations. In particular, strategic partnerships with fintech firms play a vital role in accelerating technological adoption and enhancing product development capabilities. Through such collaborations, Islamic banks can access specialised technological expertise and innovative platforms while retaining control over governance mechanisms and Sharia compliance oversight [63].

Equally important is sustained investment in digital infrastructure and human capital. The study reveals that Islamic banks that prioritise technological upgrades alongside comprehensive capacity-building initiatives are more capable of managing the risks associated with digital transformation. Continuous training programs for employees, senior management, and Sharia board members strengthen institutional awareness of emerging technologies and their potential Sharia implications. This integrated approach enhances the ability of decision-makers to assess digital risks, evaluate compliance concerns, and respond effectively to operational challenges arising from automation, artificial intelligence, and data-driven financial services [64].

Moreover, the implementation of robust risk management frameworks specifically tailored to the principles of Islamic finance is identified as a critical success factor. Such frameworks enable Islamic banks to address not only conventional operational and cybersecurity risks but also Sharia-related uncertainties, including contract validity, transparency, and ethical accountability in digital transactions. Embedding Sharia considerations within enterprise risk management systems ensures that innovation remains aligned with the objectives of Islamic finance, particularly fairness, accountability, and social responsibility [65].

In addition, the cultivation of an adaptive organisational culture significantly reinforces strategic resilience. An environment that encourages learning, flexibility, and ethical accountability allows Islamic banks to respond proactively to rapid technological change while maintaining public trust. By fostering collaboration

across technological, legal, and Sharia governance functions, Islamic banks can institutionalise innovation as a controlled and value-driven process. Ultimately, such strategic adaptation not only enhances competitiveness but also strengthens the credibility and sustainability of Islamic banking in the digital age [66].



Figure 3. Strategic Adaptation and Resilience Framework for Islamic Banks

Future Implications and Recommendations

The findings suggest that the future of Islamic banking in the digital age depends on the ability of institutions to integrate innovation within strong legal and Sharia governance frameworks. There is a clear need for the continued development of Sharia-compliant digital products that address evolving customer expectations without compromising ethical principles.

Regulatory authorities are encouraged to modernise existing frameworks to accommodate digital innovation while safeguarding Sharia compliance. Similarly, Islamic banks should intensify collaboration with Sharia scholars and technology providers to co-develop solutions that reflect both technological efficiency and Islamic ethical values.

The results demonstrate that digital transformation presents both significant opportunities and complex challenges for Islamic banking. A balanced approach—rooted in ethical governance, regulatory clarity, and strategic collaboration—is essential for Islamic banks to sustain growth, enhance financial inclusion, and preserve their distinctive identity as providers of ethical and socially responsible financial services in an increasingly digital world.

CONCLUSION

This study concludes that the digital transformation of Islamic banking represents both a significant opportunity and a complex challenge that must be managed with careful consideration of Sharia principles and legal-regulatory requirements. While digital technologies such as fintech platforms, artificial intelligence, and blockchain offer Islamic banks the potential to enhance operational efficiency, customer experience, and financial inclusion, their adoption cannot be approached in a purely technical manner. Instead, innovation in Islamic banking must remain firmly grounded in ethical values, transparency,

and compliance with Sharia law. The findings emphasise that achieving a sustainable balance between digital innovation and Sharia compliance depends on strong governance structures, proactive regulatory engagement, and continuous collaboration between technologists, legal experts, and Sharia scholars. Banks that integrate Sharia governance into the early stages of product development are better positioned to mitigate compliance risks and maintain public trust. Moreover, strategic adaptation—through investment in digital infrastructure, human capital development, and tailored risk management frameworks—emerges as a critical factor in navigating the evolving digital landscape. Ultimately, the success of Islamic banks in the digital age is not measured solely by technological advancement, but by their ability to preserve the integrity and objectives of Islamic finance while remaining competitive. A holistic and ethically grounded approach to digital transformation enables Islamic banks to contribute to inclusive and sustainable financial systems, ensuring long-term resilience and legitimacy in an increasingly technology-driven global economy.

Acknowledgments

The authors gratefully acknowledge the academic support and intellectual contributions of several institutions that played a meaningful role in the completion of this research. Sincere appreciation is extended to the Faculty of Law, Aswan University, for its strong legal scholarship, and to the Department of Islamic Economic Law, Universitas Muhammadiyah Surakarta, Indonesia, for its valuable academic environment in Islamic finance studies. The authors also express deep gratitude to the Department of Sharia and Law, Faculty of Islamic and Arabic Studies, Al-Azhar University, as well as the Faculty of Sharia and Law, International University of Africa, for their enduring scholarly traditions and support in advancing research at the intersection of Sharia, law, and contemporary economic issues.

Author Contribution

Abdelrahman Said contributed to the conceptualisation of the study, research design, literature review, data analysis, and manuscript drafting. Muthoifin provided theoretical guidance, supervised the research framework, and critically reviewed the manuscript to ensure academic rigour and Sharia compliance. Mofida Ahmed contributed to the legal analysis, interpretation of findings, and refinement of the discussion from an Islamic economic law perspective. Aboubacar Barry supported the comparative analysis, assisted in synthesising results, and contributed to the final review and editing of the manuscript. All authors read and approved the final version of the manuscript.

Conflicts of Interest

The author declares no conflict of interest.

REFERENCES

- [1] D. Ha, M. Nguyen, K. Nguyen, and A. Sensoy, “Unveiling financial inclusion dynamics: Fintech’s resonance in Association of Southeast Asian Nations (ASEAN),” *Int. J. Financ. Econ.*, vol. 30, no. 2, pp. 1348–1371, 2025, <https://doi.org/10.1002/ijfe.2963>.
- [2] M. C. Panait, S. A. Apostu, I. Gigauri, M. G. Confetto, and M. Palazzo, “Defeating the Dark Sides of FinTech: A Regression-Based Analysis of Digitalisation’s Role in Fostering Consumers’ Financial Inclusion in Central and Eastern Europe,” *Risks*, vol. 12, no. 11, 2024, <https://doi.org/10.3390/risks12110178>.
- [3] A. G. Girma and F. Huseynov, “The Causal Relationship between FinTech, Financial Inclusion, and Income Inequality in African Economies,” *J. Risk Financ. Manag.*, vol. 17, no. 1, 2024, <https://doi.org/10.3390/jrfm17010002>.
- [4] H. Banna, M. A. Mia, M. Nourani, and L. Yarovaya, “Fintech-based Financial Inclusion and Risk-taking

- of Microfinance Institutions (MFIs): Evidence from Sub-Saharan Africa,” *Financ. Res. Lett.*, vol. 45, 2022, <https://doi.org/10.1016/j.frl.2021.102149>.
- [5] M. Noreen, M. S. Mia, Z. Ghazali, and F. Ahmed, “Role of Government Policies to Fintech Adoption and Financial Inclusion: A Study in Pakistan,” *Univers. J. Account. Financ.*, vol. 10, no. 1, pp. 37–46, 2022, <https://doi.org/10.13189/ujaf.2022.100105>.
- [6] K. M. Altaytas, “From financial inclusion to indebtedness: How FinTech transforms credit access and household financial practices in Buenos Aires, Argentina,” *Financ. Soc.*, vol. 11, no. 1, pp. 103–122, 2025, <https://doi.org/10.1017/fas.2024.22>.
- [7] N. Keya Otinga, P. Obi, and F. Mugo-Waweru, “The conditional effect of fintech on the linkage between financial inclusion and capital market development,” *Cogent Econ. Financ.*, vol. 13, no. 1, 2025, <https://doi.org/10.1080/23322039.2025.2541264>.
- [8] O. Kodongo, “Financial inclusion effects of engaging with the fintech ecosystem,” *Int. Rev. Econ. Financ.*, vol. 96, 2024, <https://doi.org/10.1016/j.iref.2024.103671>.
- [9] A. A. Hbib and S. Makhrouf, “Fintech and financial inclusion of Moroccan women working in the informal sector: An empirical analysis based on the Technology Acceptance Theory,” *Invest. Manag. Financ. Innov.*, vol. 22, no. 3, pp. 439–454, 2025, [https://doi.org/10.21511/imfi.22\(3\).2025.33](https://doi.org/10.21511/imfi.22(3).2025.33).
- [10] H. Liu, K. Y. Chau, N. T. Duong, and N.-K. Hoang, “Fintech, financial inclusion, mineral resources and environmental quality. An economic advancement perspective from China and Vietnam,” *Resour. Policy*, vol. 89, 2024, <https://doi.org/10.1016/j.resourpol.2024.104636>.
- [11] B. B. Ashenafi and Y. Dong, “Financial Inclusion, Fintech, and Income Inequality in Africa,” *FinTech*, vol. 1, no. 4, pp. 376–387, 2022, <https://doi.org/10.3390/fintech1040028>.
- [12] R. K. Jena, “Factors Influencing the Adoption of FinTech for the Enhancement of Financial Inclusion in Rural India Using a Mixed Methods Approach,” *J. Risk Financ. Manag.*, vol. 18, no. 3, 2025, <https://doi.org/10.3390/jrfm18030150>.
- [13] S. Khan and F. A. F. Alhadi, “Fintech and Financial Inclusion in Saudi Arabia,” *Rev. Econ. Financ.*, vol. 20, no. 1, pp. 857–866, 2022, <https://doi.org/10.55365/1923.x2022.20.97>.
- [14] I. Alnafrah and S. Mouselli, “From cash to code: FinTech’s dual role in reshaping Malaysian financial inclusion landscape,” *J. Financ. Report. Account*, 2025, <https://doi.org/10.1108/JFRA-06-2025-0501>.
- [15] P. K. Ozili, D. Mhlanga, R. Ammar, and M. Fersi, “Information Effect of Fintech and Digital Finance on Financial Inclusion during the COVID-19 Pandemic: Global Evidence,” *FinTech*, vol. 3, no. 1, pp. 66–82, 2024, <https://doi.org/10.3390/fintech3010005>.
- [16] Y. Li, C. Stasinakis, W. M. Yeo, and F. D. S. Fernandes, “Fintech, financial development and banking efficiency: evidence from Chinese commercial banks,” *Eur. J. Financ.*, vol. 31, no. 10, pp. 1245–1295, 2025, <https://doi.org/10.1080/1351847X.2025.2468481>.
- [17] N. Khababa and M. Mansurov, “Strategies For Fintech Adoption And Financial Inclusion: Examining The Moderating Role Of Technological Infrastructure,” *Int. J. Econ. Financ. Stud.*, vol. 16, no. 1, pp. 506–530, 2024, <https://doi.org/10.34109/ijefs.202416123>.
- [18] H. A. Mohamed and T. Otake, “The role of Islamic FinTech in digital financial inclusion and sustainable development post COVID-19: cross-country analysis,” *Int. J. Islam. Middle East. Financ. Manag.*, vol. 18, no. 3, pp. 649–671, 2025, <https://doi.org/10.1108/IMEFM-02-2024-0100>.
- [19] R. Mittal, T. Kathuria, M. Saini, B. Dhingra, and M. Yadav, “Effect of financial inclusion and fintech on the effectiveness of Indian monetary policy: an empirical investigation,” *Int. J. Soc. Econ.*, vol. 50, no. 12, pp. 1702–1718, 2023, <https://doi.org/10.1108/IJSE-01-2023-0034>.
- [20] M. Mutamimah and M. Indriastuti, “Fintech, financial literacy, and financial inclusion in Indonesian SMEs,” *Int. J. Entrep. Innov. Manag.*, vol. 27, no. 1–2, pp. 137–150, 2023, <https://doi.org/10.1504/IJEIM.2023.129331>.
- [21] G. Ghouse, M. I. Bhatti, and M. J. Nasrullah, “The impact of financial inclusion, Fintech, HDI, and green finance on environmental sustainability in E-7 countries,” *Financ. Res. Lett.*, vol. 72, 2025, <https://doi.org/10.1016/j.frl.2024.106617>.
- [22] H. Elmasmari and J. AMAGHOUS, “Analysis of the impact of financial inclusion and FinTech on youth labour force participation in the MENA region,” *Econ. Bus. Rev.*, vol. 10, no. 4, pp. 56–79, 2024, <https://doi.org/10.18559/ebrev.2024.4.1668>.
- [23] R. Ravi and N. N. Pandey, “Development and validation of a multi-dimensional scale to measure the factors influencing fintech firms’ capacity to impact digital financial inclusion,” *Econ. Financ. Lett.*, vol.

- 11, no. 1, pp. 18–33, 2024, <https://doi.org/10.18488/29.V1111.3646>.
- [24] A. K. Kamara and B. Yu, “The Impact of FinTech Adoption on Traditional Financial Inclusion in Sub-Saharan Africa,” *Risks*, vol. 12, no. 7, 2024, <https://doi.org/10.3390/risks12070115>.
- [25] M. Elbanna and S. Syukur, “The Philosophy of Sharia Muamalah: Between Slavery to God and Economic Development,” *Demak Univers. J. Islam Sharia*, vol. 3, no. 1, pp. 81–94, 2025, <https://doi.org/10.61455/deujis.v3i01.230>
- [26] A. Al-Sharshani, F. Al-Sharshani, and A. Malik, “On Fintech and Financial Inclusion: Evidence from Qatar,” *J. Risk Financ. Manag.*, vol. 18, no. 10, 2025, <https://doi.org/10.3390/jrfm18100586>.
- [27] J. Wang, G. Zhu, and T.-C. Chang, “Unveiling the relationship between institutional quality, fintech, financial inclusion, human capital development and mineral resource abundance. An Asian perspective,” *Resour. Policy*, vol. 89, 2024, <https://doi.org/10.1016/j.resourpol.2023.104521>.
- [28] T. A. Siddiqui and K. I. Siddiqui, “FinTech in India: An analysis on the impact of telecommunication on financial inclusion,” *Strateg. Chang*, vol. 29, no. 3, pp. 321–330, 2020, <https://doi.org/10.1002/jsc.2331>.
- [29] S. Ungratwar, D. Sharma, and S. Kumar, “Mapping the digital banking landscape: a multi-dimensional exploration of fintech, digital payments, and e-wallets, with insights into current scenarios and future research,” *Humanit. Soc. Sci. Commun.*, vol. 12, no. 1, 2025, <https://doi.org/10.1057/s41599-025-05186-z>.
- [30] O. Mothobi and K. Kebotsamang, “The impact of network coverage on adoption of Fintech and financial inclusion in sub-Saharan Africa,” *J. Econ. Struct.*, vol. 13, no. 1, 2024, <https://doi.org/10.1186/s40008-023-00326-7>.
- [31] T. Chinoda and T. Mashamba, “Fintech, financial inclusion and income inequality nexus in Africa,” *Cogent Econ. Financ.*, vol. 9, no. 1, 2021, <https://doi.org/10.1080/23322039.2021.1986926>.
- [32] M. Asif, M. N. Khan, S. Tiwari, S. K. Wani, and F. Alam, “The Impact of Fintech and Digital Financial Services on Financial Inclusion in India,” *J. Risk Financ. Manag.*, vol. 16, no. 2, 2023, <https://doi.org/10.3390/jrfm16020122>.
- [33] P. V. Velazquez, V. Bobek, R. K. Korez-Vide, and T. Horvat, “Lessons from Remarkable FinTech Companies for the Financial Inclusion in Peru,” *J. Risk Financ. Manag.*, vol. 15, no. 2, 2022, <https://doi.org/10.3390/jrfm15020062>.
- [34] M. Elbanna, Muthoifin, A. Nirwana, and Isman, “Basel Accords and Islamic Banking Regulation: A Bibliometric Analysis of Sharia, Governance, and Capital Adequacy,” *Int. J. Law Soc.*, vol. 4, no. 2, pp. 180–201, 2025, <https://doi.org/10.59683/ijls.v4i2.191>.
- [35] M. Elbanna, “The Development of Zakat, Infaq, Sadaqah in Egypt: A Literature Review Approach,” *Demak Univers. J. Islam Sharia*, vol. 2, no. 03, pp. 375–388, 2024, <https://doi.org/10.61455/deujis.v2i03.218>.
- [36] M. Kuriakose and J. Johnson, “An empirical study on the awareness of payment banks among people in Kottayam district, Kerala,” *Indian J. Econ. Bus.*, vol. 20, no. 1, pp. 133–146, 2021, <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85108981243&partnerID=40&md5=7c9911f4b5e3322930597c808f1bc4d1>
- [37] H. A. Al-khawaja and F. A. Aburub, “Blockchain for Securing Data Storage in Digital Banking Services,” *SN Comput. Sci.*, vol. 6, no. 1, 2025, <https://doi.org/10.1007/s42979-024-03596-5>.
- [38] I. M. Shaikh, H. Amin, K. Noordin, and J. M. Shaikh, “Islamic Bank Customers’ Adoption Of Digital Banking Services: Extending Diffusion Theory Of Innovation,” *J. Islam. Monet. Econ. Financ.*, vol. 9, no. 1, pp. 57–70, 2023, <https://doi.org/10.21098/jimf.v9i1.1545>.
- [39] A. R. Al-Chahadah, G. A. El Refae, and A. Qasim, “The impact of financial inclusion on bank performance: The case of Jordan,” *Int. J. Econ. Bus. Res.*, vol. 20, no. 4, pp. 483–496, 2020, <https://doi.org/10.1504/IJEBR.2020.111096>.
- [40] O. T. Nguyen, “Factors affecting the intention to use digital banking in Vietnam,” *J. Asian Financ. Econ. Bus.*, vol. 7, no. 3, pp. 303–310, 2020, <https://doi.org/10.13106/jafeb.2020.vol7.no3.303>.
- [41] M. Sharma and A. Choubey, “Impact of information technology on Indian banking sector,” *J. Financ. Serv. Mark.*, vol. 29, no. 4, pp. 1609–1622, 2024, <https://doi.org/10.1057/s41264-024-00287-3>.
- [42] B. Krishna, S. Krishnan, and M. P. Sebastian, “Examining the Relationship between National Cybersecurity Commitment, Culture, and Digital Payment Usage: An Institutional Trust Theory Perspective,” *Inf. Syst. Front.*, vol. 25, no. 5, pp. 1713–1741, 2023, <https://doi.org/10.1007/s10796-022-10280-7>.
-

- [43] E. N. N. D. Ocansey, P. Dadzie, and N. B. Nambie, "Mobile Money Use, Digital Banking Services and Velocity of Money in Ghana," *Int. J. Econ. Financ. Issues*, vol. 14, no. 2, pp. 218–233, 2024, <https://doi.org/10.32479/ijefi.15767>.
- [44] L.-C. Cheng, S. Choi, R. S. Y. Legaspi, and J.-W. Lian, "Using Mixed Method to Understand Customer Experience With Digital Banking Services: Comparisons Between South Korea and Philippines," *J. Glob. Inf. Manag.*, vol. 31, no. 1, pp. 1–20, 2023, <https://doi.org/10.4018/JGIM.333855>.
- [45] N. Wadesango, "The impact of digital banking services on performance of commercial banks," *J. Manag. Inf. Decis. Sci.*, vol. 23, no. 23, pp. 343–353, 2020, <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85099148480&partnerID=40&md5=1c1e84c5c06c90e4e5309a00c8b811df>
- [46] G. Grigor, "Biometric Identification: Comparative Analysis of Current Methods," *Rev. Econ. Financ.*, vol. 21, pp. 2279–2286, 2023, <https://doi.org/10.55365/1923.x2023.21.244>.
- [47] Y. Popova, "Economic Basis of Digital Banking Services Produced by FinTech Company in Smart City," *J. Tour. Serv.*, vol. 12, no. 23, pp. 86–104, 2021, <https://doi.org/10.29036/JOTS.V12I23.275>.
- [48] J. Ali and A. K. Ghildiyal, "Socio-economic characteristics, mobile phone ownership and banking behaviour of individuals as determinants of digital financial inclusion in India," *Int. J. Soc. Econ.*, vol. 50, no. 10, pp. 1375–1392, 2023, <https://doi.org/10.1108/IJSE-10-2022-0673>.
- [49] J. Duasa, N. J. Z. Nazri, and N. H. Zainal, "Likelihood of using online banking services among consumers: Application of the logit model," *Malaysian J. Consum. Fam. Econ.*, vol. 22, no. Special Edition 2, pp. 220–232, 2019, [Online]. Available: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85074881273&partnerID=40&md5=d1c2a7dec81afddae9341e88199cf8e>
- [50] N. Bansal, N. Pareek, and A. Nigam, "The impact of customers' training of digital banking services on its acceptability by customers in India," *Int. J. Bus. Glob.*, vol. 30, no. 2, pp. 207–231, 2022, <https://doi.org/10.1504/ijbg.2022.122665>.
- [51] R. A. Mir, R. Rameez, and N. Tahir, "Measuring Internet banking service quality: an empirical evidence," *TQM J.*, vol. 35, no. 2, pp. 492–518, 2023, <https://doi.org/10.1108/TQM-11-2021-0335>.
- [52] N. Quynh and L. Truong, "The role of perceived security and social influence on the usage behaviour of digital banking services: An extension of the technology acceptance model," *Edelweiss Appl. Sci. Technol.*, vol. 7, no. 2, pp. 136–153, 2023, <https://doi.org/10.55214/25768484.v7i2.396>.
- [53] P. Arora and R. Banerji, "The impact of digital banking service quality on customer loyalty: An interplay between customer experience and customer satisfaction," *Asian Econ. Financ. Rev.*, vol. 14, no. 9, pp. 712–733, 2024, <https://doi.org/10.55493/5002.v14i9.5199>.
- [54] W. Yuspin, A. O. Putri, A. Fauzie, and J. Pitaksantayothin, "Digital Banking Security: Internet Phishing Attacks, Analysis and Prevention of Fraudulent Activities," *Int. J. Saf. Secur. Eng.*, vol. 14, no. 6, pp. 1699–1706, 2024, <https://doi.org/10.18280/ijss.140605>.
- [55] I. van Zeeland and J. Pierson, "Changing the whole game: effects of the COVID-19 pandemic's accelerated digitalisation on European bank staff's data protection capabilities," *Financ. Innov.*, vol. 10, no. 1, 2024, <https://doi.org/10.1186/s40854-023-00533-y>.
- [56] A. F. Riza and D. M. Wijayanti, "Strengthening a sustainable Islamic financial industry through digital banking," *J. Islam. Mark.*, vol. 15, no. 11, pp. 2732–2758, 2024, <https://doi.org/10.1108/JIMA-01-2023-0025>.
- [57] P. Bhatnagr, A. Rajesh, and R. Misra, "Continuous intention usage of artificial intelligence enabled digital banks: a review of expectation confirmation model," *J. Enterp. Inf. Manag.*, vol. 37, no. 6, pp. 1763–1787, 2024, <https://doi.org/10.1108/JEIM-11-2023-0617>.
- [58] A. A. Santos and M. C. Ponchio, "Functional, psychological and emotional barriers and the resistance to the use of digital banking services," *Innov. Manag. Rev.*, vol. 18, no. 3, pp. 331–348, 2021, <https://doi.org/10.1108/TNMR-07-2020-0093>.
- [59] S. Levy, "Brand bank attachment to loyalty in digital banking services: mediated by psychological engagement with service platforms and moderated by platform types," *Int. J. Bank Mark.*, vol. 40, no. 4, pp. 679–700, 2022, <https://doi.org/10.1108/IJBM-08-2021-0383>.
- [60] L. Abubakar and T. Handayani, "The Urgency of Open Application Programming Interface Standardisation in the Implementation of Open Banking to Customer Data Protection for the Advancement of Indonesian Banking," *Padjadjaran J. Ilmu Huk.*, vol. 9, no. 1, pp. 67–88, 2022, <https://doi.org/10.22304/pjih.v9n1.a4>.
- [61] N. Bansal, "Awareness of password management and adoption of digital banking services in rural India",

- Financ. India*, vol. 34, no. 2, pp. 861–874, 2020, <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85096707128&partnerID=40&md5=47887625cd3f142313f32440df695375>
- [62] D. Bapat and M. Kannadhasan, “Satisfaction As A Mediator Between Brand Experience Dimensions And Word-Of-Mouth For Digital Banking Services: Do Gender And Age Matter?” *J. Consum. Satisf. Dissatisfaction Complain. Behav.*, vol. 35, pp. 3–25, 2022, <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85144785950&partnerID=40&md5=d9bf4f4d11ecf0d0f3fe236271ad897a>
- [63] E. R. Indriyarti, M. Christian, H. Yulita, T. Aryati, and R. J. Arsjah, “Digital Bank Channel Distribution: Predictors of Usage Attitudes in Jakarta’s Gen Z,” *J. Distrib. Sci.*, vol. 21, no. 2, pp. 21–34, 2023, <https://doi.org/10.15722/jds.21.02.202302.21>.
- [64] T. T. Nguyen, H. T. Nguyen, H. T. Mai, and T. T. M. Tran, “Determinants of digital banking services in Vietnam: Applying utaut2 model,” *Asian Econ. Financ. Rev.*, vol. 10, no. 6, pp. 680–697, 2020, <https://doi.org/10.18488/journal.aefr.2020.106.680.697>.
- [65] B. K. Meher, A. Anand, R. Birau, I. C. Bărbăcioru, R. D. Filip, and G. A. M. Lupu, “Exploring the factors influencing hesitation among textile industry weavers in adopting digital banking services in India,” *Ind. Textila*, vol. 75, no. 2, pp. 237–247, 2024, <https://doi.org/10.35530/IT.075.02.202361>.
- [66] P. T. Prasetyaningrum, P. Purwanto, and A. F. Rochim, “Enhancing User Engagement in Mobile Banking Through Personalised Gamification: A Cognitive Evaluation Theory Approach,” *Int. J. Intell. Eng. Syst.*, vol. 17, no. 4, pp. 788–807, 2024, <https://doi.org/10.22266/IJIES2024.0831.60>.