



Islamic Law and Digital Financial Inclusion in Muslim Minority Regions: Legal Adaptation to Socio-Cultural Change and Economic Marginalization

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Abstract

Research Objective: This study examines the role of Islamic law in promoting digital financial inclusion within Muslim minority regions, focusing on legal adaptation to socio-cultural change and economic marginalization. **Research Method:** The study employs a quantitative research design using Partial Least Squares Structural Equation Modeling (PLS-SEM) on survey data from 210 respondents; the empirical findings are subsequently interpreted through the normative lens of *maqāṣid al-sharī'ah*. **Results:** Digital financial inclusion significantly enhances economic participation ($\beta = 0.462$, $p < 0.001$) and reduces economic marginalization ($\beta = -0.389$, $p < 0.001$). Islamic legal adaptation positively influences digital financial inclusion ($\beta = 0.341$, $p < 0.001$), while Islamic ethical alignment significantly strengthens financial trust ($\beta = 0.298$, $p < 0.001$). **Findings and Implications:** The findings demonstrate the importance of *ijtihad* in integrating fintech within Islamic legal frameworks and highlight the role of moral legitimacy in building financial trust. **Conclusion:** Digital financial inclusion, legal adaptation, and ethical alignment operate synergistically to promote inclusive financial systems in Muslim minority contexts. **Contribution:** The study develops a *maqāṣid al-sharī'ah*-based framework integrating digital financial inclusion with Islamic jurisprudence, extending capability theory, institutional theory, and the Technology Acceptance Model. **Limitations and Suggestions:** The cross-sectional, single-context design limits causal inference and generalizability; future research should adopt longitudinal and multi-country designs.

Introduction

Digital financial inclusion has become a central pillar of economic development, enabling broader access to financial services through digital platforms and financial technology (fintech) innovations.¹ The rapid evolution of fintech ecosystems has improved

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¹ Lee-Ying Tay, Hen-Toong Tai, and Gek-Siang Tan, "Digital Financial Inclusion: A Gateway to Sustainable Development," *Heliyon* 8, no. 6 (June 2022): e09766, <https://doi.org/10.1016/j.heliyon.2022.e09766>; Mahmood Ahmad et al., "Digital Financial Inclusion and

financial accessibility while reducing transaction costs and the barriers associated with traditional banking systems.² Despite these advancements, financial inclusion remains uneven across regions, particularly within Muslim minority communities, where socio-cultural and religious considerations influence financial behavior.³

Muslim minority populations often face structural barriers such as limited access to Shariah-compliant financial products and institutional constraints within conventional financial systems.⁴ The prohibition of *ribā* (interest) in Islamic law discourages participation in interest-based financial services, leading to voluntary financial exclusion even where services are available.⁵ Islamic law (*Sharī'ah*) provides a comprehensive ethical and legal framework that promotes justice (*'adl*), trust (*amānah*), and public welfare (*maṣlahah*), which align closely with the objectives of financial inclusion.⁶ Through mechanisms such as *ijtihād*, Islamic jurisprudence demonstrates flexibility in adapting to emerging socio-economic and technological developments.⁷

Economic Growth: Provincial Data Analysis of China," *China Economic Journal* 14, no. 3 (September 2, 2021): 291–310, <https://doi.org/10.1080/17538963.2021.1882064>.

² Ashfaq Habib et al., "Does Sustainable Banking Facilitate Reducing the SDG-10 in Weak Rule of Law Setting?," *Heliyon* 10, no. 2 (January 2024): e24128, <https://doi.org/10.1016/j.heliyon.2024.e24128>; Nahida Sultana, Rubaiyat Shaimom Chowdhury, and Afruza Haque, "Gravitating towards Fintech: A Study on Undergraduates Using Extended UTAUT Model," *Heliyon* 9, no. 10 (October 2023): e20731, <https://doi.org/10.1016/j.heliyon.2023.e20731>; Martha Gertruida Van Niekerk and Nkgolodishe Hermit Phaladi, "Digital Financial Services: Prospects and Challenges," *Potchefstroom Electronic Law Journal* 24 (July 20, 2021): 1–25, <https://doi.org/10.17159/1727-3781/2021/v24i0a10744>.

³ Azila Abdul Razak and Mehmet Asutay, "Financial Inclusion and Economic Well-Being: Evidence from Islamic Pawnbroking (Ar-Rahn) in Malaysia," *Research in International Business and Finance* 59 (January 2022): 101557, <https://doi.org/10.1016/j.ribaf.2021.101557>; Siming Liu et al., "The Behavioral Role of Digital Economy Adaptation in Sustainable Financial Literacy and Financial Inclusion," *Frontiers in Psychology* 12 (November 11, 2021), <https://doi.org/10.3389/fpsyg.2021.742118>; Abdul Aziz and Umma Naima, "Rethinking Digital Financial Inclusion: Evidence from Bangladesh," *Technology in Society* 64 (February 2021): 101509, <https://doi.org/10.1016/j.techsoc.2020.101509>.

⁴ Kholid Kholid and Saed M Adam, "ISLAMIC BANKING," *Al-Thiqah : Jurnal Ilmu Keislaman* 8, no. 1 (April 30, 2025): 435, <https://doi.org/10.56594/althiqah.v8i1.352>; Alija Avdukic and Fawad Khaleel, "Financial Exclusion, Soft Segregation and Moral Constraints as Drivers of Entrepreneurial Activities in Scottish Muslim Immigrants," *Global Policy* 16, no. S1 (January 11, 2025): 57–65, <https://doi.org/10.1111/1758-5899.13481>.

⁵ Takeshi Kato, "Islamic and Capitalist Economies: Comparison Using Econophysics Models of Wealth Exchange and Redistribution," ed. Dao-Zhi Zeng, *PLOS ONE* 17, no. 9 (September 22, 2022): e0275113, <https://doi.org/10.1371/journal.pone.0275113>; Harun Ercan, İlhami Karahanoglu, and György Walter, "Is Islamic Banking in Turkey Really Interest-Free?," *Society and Economy* 43, no. 4 (November 11, 2021): 391–405, <https://doi.org/10.1556/204.2021.00016>.

⁶ Zulfahmi Alwi, Rika Dwi Ayu Parmitasari, and Alim Syariati, "An Assessment on Islamic Banking Ethics through Some Salient Points in the Prophetic Tradition," *Heliyon* 7, no. 5 (May 2021): e07103, <https://doi.org/10.1016/j.heliyon.2021.e07103>; Amin Jan et al., "Alignment of Islamic Banking Sustainability Indicators with Sustainable Development Goals: Policy Recommendations for Addressing the COVID-19 Pandemic," *Sustainability* 13, no. 5 (March 1, 2021): 2607, <https://doi.org/10.3390/su13052607>.

⁷ Naseem Razi, "A Comparative Study of Maṣlahah and Mischief Rule: Pakistani Perspective," *Journal of Islamic Thought and Civilization* 11, no. 1 (May 5, 2021): 335–54, <https://doi.org/10.32350/jitc.111.18>; Asman Asman and Tamrin Muchsin, "Maqasid Al-Shari'ah in Islamic Law Renewal: The Impact of New Normal Rules

The integration of fintech into Islamic finance has created new opportunities to expand financial inclusion through digital platforms such as mobile banking, crowdfunding, and peer-to-peer financing. Nevertheless, ensuring Shariah compliance and regulatory alignment remains a critical challenge.⁸ Despite growing academic attention, research remains limited on how Islamic legal adaptation facilitates digital financial inclusion, specifically within Muslim minority communities at the subnational level, particularly in the Eastern Indonesian archipelago, where Muslim populations exist as local minorities within Christian-majority regencies. This context offers a theoretically important case: it disaggregates the national majority status of Indonesian Muslims from their local minority experience, isolating the effects of religious identity and Shariah-compliance concerns as drivers of financial behavior. Accordingly, this study addresses two questions: (1) how does digital financial inclusion affect economic participation and economic marginalization in Muslim minority regions, and (2) how do Islamic legal adaptation and Islamic ethical alignment shape digital financial inclusion and financial trust? The study tests four hypotheses within a *maqāṣid al-sharī'ah* informed framework, contributing both empirical evidence and a normative interpretation relevant to theory, policy, and practice.

The intersection of digital financial inclusion, Islamic law, and socio-economic marginalization represents a rapidly emerging field of inquiry. While digital finance has been widely studied as a tool for economic development, its integration with Islamic legal frameworks, particularly in Muslim minority contexts, remains underexplored. This section critically reviews the literature, attending not only to supportive findings but also to conflicting evidence and methodological limitations to identify the theoretical gap this study addresses.

Digital Financial Inclusion and Economic Development

Digital financial inclusion is widely associated with greater economic participation and reduced inequality through expanded access to financial services.⁹ However, the evidence is not uniformly positive. Several studies caution that the benefits of digital finance are conditional on enabling factors such as infrastructure, digital literacy, and consumer protection, and that poorly governed expansion can deepen rather than reduce

on Islamic Law Practices during the Covid-19 Pandemic," *Mazahib*, July 12, 2021, 77-102, <https://doi.org/10.21093/mj.v20i1.2957>.

⁸ Hatim Dawood et al., "Business Trends & Challenges in Islamic FinTech: A Systematic Literature Review," *F1000Research* 11 (March 18, 2022): 329, <https://doi.org/10.12688/f1000research.109400.1>; Mustafa Raza Rabbani et al., "Exploring the Role of Islamic Fintech in Combating the Aftershocks of COVID-19: The Open Social Innovation of the Islamic Financial System," *Journal of Open Innovation: Technology, Market, and Complexity* 7, no. 2 (June 2021): 136, <https://doi.org/10.3390/joitmc7020136>; Muneer M. Alshater et al., "Fintech in Islamic Finance Literature: A Review," *Heliyon* 8, no. 9 (September 2022): e10385, <https://doi.org/10.1016/j.heliyon.2022.e10385>.

⁹ Xuanming Ji et al., "Has Digital Financial Inclusion Narrowed the Urban-Rural Income Gap: The Role of Entrepreneurship in China," *Sustainability* 13, no. 15 (July 24, 2021): 8292, <https://doi.org/10.3390/su13158292>; Eduardo Polloni-Silva et al., "Does Financial Inclusion Diminish Poverty and Inequality? A Panel Data Analysis for Latin American Countries," *Social Indicators Research* 158, no. 3 (December 9, 2021): 889-925, <https://doi.org/10.1007/s11205-021-02730-7>.

inequality.¹⁰ Methodologically, much of this literature relies on aggregate, cross-country indicators that obscure within-country heterogeneity, limiting its applicability to specific minority communities and motivating context-sensitive, individual-level analysis.¹¹

Economic Marginalization and Financial Exclusion

Economic marginalization refers to the systematic exclusion of individuals or communities from economic participation due to structural, institutional, or socio-cultural barriers, with financial exclusion as a central dimension.¹² Muslim minority communities may experience compounded marginalization arising from both economic and religious constraints; the prohibition of *ribā* discourages engagement with predominantly interest-based conventional banking, producing a degree of voluntary exclusion. This pattern is often explained through institutional theory, which highlights how formal and informal institutions shape economic behavior.¹³ Critics, however, note that institutional accounts can understate individual agency and treat religiously motivated avoidance as static; some “voluntary” exclusion may instead reflect product-design failures or distrust rather than fixed preferences. The distinction between voluntary and involuntary exclusion, therefore, remains contested and difficult to measure, a tension this study acknowledges in interpreting its marginalization measure.

Islamic Law and Economic Justice

Islamic finance is theorized to advance inclusion by offering ethical, Shariah-compliant alternatives grounded in risk-sharing, the prohibition of interest, and social

¹⁰ Aziz and Naima, “Rethinking Digital Financial Inclusion: Evidence from Bangladesh”; Tay, Tai, and Tan, “Digital Financial Inclusion: A Gateway to Sustainable Development”; Pengpeng Yue et al., “The Rise of Digital Finance: Financial Inclusion or Debt Trap?,” *Finance Research Letters* 47 (June 2022): 102604, <https://doi.org/10.1016/j.frl.2021.102604>.

¹¹ Jennifer Cohen and Yana van der Meulen Rodgers, “An Intersectional Analysis of Long COVID Prevalence,” *International Journal for Equity in Health* 22, no. 1 (December 13, 2023): 261, <https://doi.org/10.1186/s12939-023-02072-5>; Fabiana Cristina Dos Santos et al., “Global Measures of HIV Care Accessibility Across Urban, Suburban, and Rural Areas,” *Journal of Urban Health* 102, no. 6 (December 8, 2025): 1208–22, <https://doi.org/10.1007/s11524-025-01021-7>.

¹² Louise Puli et al., “Financial Inclusion for People with Disability: A Scoping Review,” *Global Health Action* 17, no. 1 (December 31, 2024), <https://doi.org/10.1080/16549716.2024.2342634>; Márton Gosztönyi and Dániel Havran, “Highways to Hell? Paths Towards the Formal Financial Exclusion: Empirical Lessons of the Households from Northern Hungary,” *The European Journal of Development Research* 34, no. 3 (June 29, 2022): 1573–1606, <https://doi.org/10.1057/s41287-021-00434-9>; Areej Al-Hamad, Yasin M. Yasin, and Kateryna Metersky, “Predictors, Barriers, and Facilitators to Refugee Women’s Employment and Economic Inclusion: A Mixed Methods Systematic Review,” ed. Sharada P. Wasti, *PLOS ONE* 19, no. 7 (July 17, 2024): e0305463, <https://doi.org/10.1371/journal.pone.0305463>.

¹³ Aad Correljé, Udo Pesch, and Eefje Cuppen, “Understanding Value Change in the Energy Transition: Exploring the Perspective of Original Institutional Economics,” *Science and Engineering Ethics* 28, no. 6 (December 10, 2022): 55, <https://doi.org/10.1007/s11948-022-00403-3>; Judyta Lubacha and Tobias Wendler, “Do European Firms Obey the Rules? Environmental Innovativeness in Light of Institutional Frameworks,” *Industry and Innovation* 28, no. 9 (October 21, 2021): 1196–1223, <https://doi.org/10.1080/13662716.2021.1929869>; Sebastian Aparicio, David Urbano, and Pekka Stenholm, “Attracting the Entrepreneurial Potential: A Multilevel Institutional Approach,” *Technological Forecasting and Social Change* 168 (July 2021): 120748, <https://doi.org/10.1016/j.techfore.2021.120748>.

justice.¹⁴ Yet a recurring critique concerns the gap between normative ideals and market practice: instruments such as commodity murabaha are sometimes argued to replicate the economic substance of interest, raising questions about substantive rather than formal compliance. Empirical findings on whether Islamic finance materially improves inclusion are correspondingly mixed, underscoring the need to test rather than assume its inclusionary effects.¹⁵

Fintech Innovation and Shariah Compliance

Fintech has transformed financial services through digital payments, mobile banking, and decentralized systems,¹⁶ and Islamic fintech extends these innovations by embedding Shariah principles into digital platforms.¹⁷ The literature nonetheless diverges on outcomes: some studies present fintech as broadening access, while others warn it can reproduce existing exclusions where digital divides persist. Persistent weaknesses in cross-jurisdictional standardization and Shariah-governance fragmentation further complicate claims of compliance,¹⁸ indicating that technological capability alone is insufficient without coherent legal and governance foundations.

¹⁴ Abdul Razak and Asutay, "Financial Inclusion and Economic Well-Being: Evidence from Islamic Pawnbroking (Ar-Rahn) in Malaysia"; Kabiru Kamalu and Wan Hakimah Binti Wan Ibrahim, "Islamic Banking Development and Financial Inclusion in OIC Member Countries: The Moderating Role of Institutions," *Journal of Islamic Monetary Economics and Finance* 7, no. 3 (August 31, 2021): 527–44, <https://doi.org/10.21098/jimf.v7i3.1364>.

¹⁵ Tika Widiastuti et al., "Toward Developing a Sustainability Index for the Islamic Social Finance Program: An Empirical Investigation," ed. Abdul Aziz Khan Niazi, *PLOS ONE* 17, no. 11 (November 22, 2022): e0276876, <https://doi.org/10.1371/journal.pone.0276876>; Ahmed Ebrahim and Tarek Abdelfattah, "The Substance and Form of Islamic Finance Instruments: An Accounting Perspective," *Journal of Islamic Accounting and Business Research* 12, no. 6 (August 19, 2021): 872–86, <https://doi.org/10.1108/JIABR-10-2019-0200>.

¹⁶ Khando Khando, M. Sirajul Islam, and Shang Gao, "The Emerging Technologies of Digital Payments and Associated Challenges: A Systematic Literature Review," *Future Internet* 15, no. 1 (December 30, 2022): 21, <https://doi.org/10.3390/fi15010021>; Désiré Kanga et al., "The Diffusion of Fintech, Financial Inclusion and Income per Capita," *The European Journal of Finance* 28, no. 1 (January 2, 2022): 108–36, <https://doi.org/10.1080/1351847X.2021.1945646>; Husam Rjoub, Tomiwa Sunday Adebayo, and Dervis Kirikkaleli, "Blockchain Technology-Based FinTech Banking Sector Involvement Using Adaptive Neuro-Fuzzy-Based K-Nearest Neighbors Algorithm," *Financial Innovation* 9, no. 1 (March 10, 2023): 65, <https://doi.org/10.1186/s40854-023-00469-3>.

¹⁷ Sofya Glavina, Irina Aidrus, and Anna Trusova, "Assessment of the Competitiveness of Islamic Fintech Implementation: A Composite Indicator for Cross-Country Analysis," *Journal of Risk and Financial Management* 14, no. 12 (December 13, 2021): 602, <https://doi.org/10.3390/jrfm14120602>; Dwi Fidhayanti et al., "Exploring The Legal Landscape of Islamic Fintech in Indonesia: A Comprehensive Analysis of Policies and Regulations," *F1000Research* 13 (January 8, 2024): 21, <https://doi.org/10.12688/f1000research.143476.1>.

¹⁸ Tay, Tai, and Tan, "Digital Financial Inclusion: A Gateway to Sustainable Development"; Favourate Y. Mpofu and David Mhlanga, "Digital Financial Inclusion, Digital Financial Services Tax and Financial Inclusion in the Fourth Industrial Revolution Era in Africa," *Economies* 10, no. 8 (July 29, 2022): 184, <https://doi.org/10.3390/economies10080184>.

Legal Adaptation and *Ijtihād* in Contemporary Contexts

Islamic legal adaptation through *ijtihād* is widely invoked as the mechanism enabling jurisprudence to accommodate contemporary financial instruments.¹⁹ From an institutional perspective, the adoption of innovations depends on alignment between regulatory frameworks and socio-cultural norms.²⁰ Scholarly debate persists, however, over the legitimate scope and limits of *ijtihād* for novel instruments, and over the consistency and authority of divergent juristic opinions across jurisdictions. Critically, while legal adaptability is frequently asserted as a determinant of inclusion, few studies have empirically tested its effect, a gap this study directly addresses.

Financial Trust and Ethical Alignment

Trust is a fundamental determinant of financial-system adoption, especially in digital environments characterized by uncertainty.²¹ The dominant trust literature, however, is built around technology acceptance constructs such as perceived usefulness and ease of use and tends to undertheorize the role of religious and ethical congruence. Islamic ethical principles of transparency, accountability, and fairness plausibly reinforce perceived legitimacy and trust, yet ethical alignment is rarely operationalized as a construct distinct from legal compliance. This study, therefore, distinguishes and separately measures Islamic Ethical Alignment (IEA) as a determinant of financial trust.

Conceptual Integration: *Maqāṣid al-sharīʿah* and Digital Finance

This study proposes an integrated framework linking digital financial inclusion with *maqāṣid al-sharīʿah*:

Table 1. Integration of Financial Inclusion Dimensions with *Maqāṣid al-sharīʿah*

Dimension	Islamic Objective
Financial Access	Protection of wealth (<i>ḥifẓ al-māl</i>)
Social Inclusion	Protection of dignity (<i>ḥifẓ al-ʿirḍ</i>)

¹⁹ Razi, “A Comparative Study of *Maṣlaḥah* and Mischief Rule: Pakistani Perspective”; Tawffeeq A. S. Mohammed, “A Scientometric Study of *Maqasid Al-Shariah* Research: Trending Issues, Hotspot Research, and Co-Citation Analysis,” *Frontiers in Research Metrics and Analytics* 9 (November 27, 2024), <https://doi.org/10.3389/frma.2024.1439407>; Asman and Muchsin, “*Maqasid Al-Shari’ah* in Islamic Law Renewal: The Impact of New Normal Rules on Islamic Law Practices during the Covid-19 Pandemic.”

²⁰ Auvikki de Boon, Camilla Sandström, and David Christian Rose, “Governing Agricultural Innovation: A Comprehensive Framework to Underpin Sustainable Transitions,” *Journal of Rural Studies* 89 (January 2022): 407–22, <https://doi.org/10.1016/j.jrurstud.2021.07.019>; Steven W. Bradley et al., “Policy for Innovative Entrepreneurship: Institutions, Interventions, and Societal Challenges,” *Strategic Entrepreneurship Journal* 15, no. 2 (June 22, 2021): 167–84, <https://doi.org/10.1002/sej.1395>.

²¹ Christian Zeiß et al., “Re-Intermediation of the Crypto Asset Ecosystem by Banks: An Empirical Study on Acceptance Drivers among the Populace,” *Electronic Markets* 34, no. 1 (December 18, 2024): 37, <https://doi.org/10.1007/s12525-024-00720-4>; Chen Yan et al., “Factors Influencing the Adoption Intention of Using Mobile Financial Service during the COVID-19 Pandemic: The Role of FinTech,” *Environmental Science and Pollution Research* 30, no. 22 (November 13, 2021): 61271–89, <https://doi.org/10.1007/s11356-021-17437-y>; James F. Devlin et al., “Trust and FinTech: A Review and Research Agenda,” *Electronic Markets* 35, no. 1 (December 4, 2025): 62, <https://doi.org/10.1007/s12525-025-00803-w>.

Dimension	Islamic Objective
Economic Justice	Justice (<i>'adl</i>)
Welfare	Public interest (<i>maṣlaḥah</i>)

This framework demonstrates that digital financial inclusion is not merely a technological process but the realization of broader ethical objectives.

Research Gap

Taken together, the above suggest several interrelated gaps remain. The literature has not produced an integrated empirical model that simultaneously links Islamic legal adaptation and Islamic ethical alignment to digital financial inclusion and financial trust within Muslim minority contexts; empirical tests of legal adaptation as a driver of inclusion are scarce; and ethical alignment is seldom measured as a construct distinct from legal compliance. The present study addresses these gaps directly:

1. Limited integration of fintech and Islamic jurisprudence in a single empirical model
2. Lack of individual-level empirical studies situated in Muslim minority contexts
3. Insufficient testing of legal adaptation mechanisms as determinants of inclusion
4. Under-explored and rarely measured role of ethical alignment in financial trust

Hypothesis Development

This study draws an explicit conceptual distinction between two related but separate constructs. Islamic Legal Adaptation (ILA) refers to the capacity of Islamic jurisprudence, principally through *ijtihād*, to accommodate and legitimize fintech instruments, i.e., legal-regulatory permissibility. Islamic Ethical Alignment (IEA) refers to the degree to which digital financial services are perceived to embody Islamic ethical values such as transparency, fairness, and trustworthiness (*amānah*), i.e., perceived moral congruence. ILA primarily shapes inclusion, whereas IEA primarily shapes trust. Based on the literature, the following hypotheses are advanced:

1. H1: Digital financial inclusion positively influences economic participation.
2. H2: Islamic legal adaptation positively influences digital financial inclusion.
3. H3: Digital financial inclusion negatively influences economic marginalization.
4. H4: Islamic ethical alignment positively influences financial trust.

Conceptual Framework

The conceptual framework specifies four latent constructs and their hypothesized relationships:

- DFI = Digital Financial Inclusion
- ILA = Islamic Legal Adaptation
- IEA = Islamic Ethical Alignment
- EM = Economic Marginalization
- FT = Financial Trust

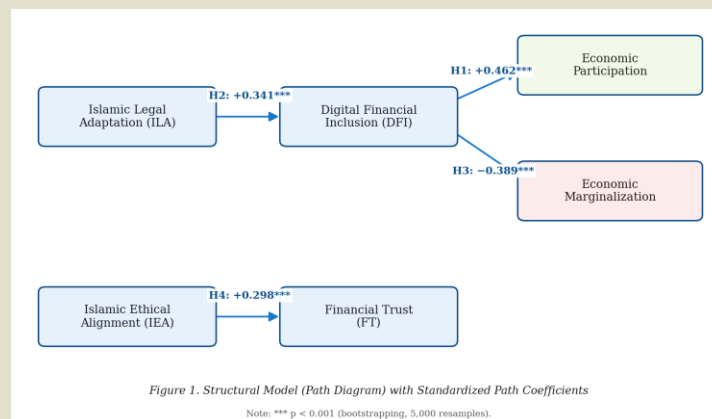


Figure 1. Structural model (path diagram) of the hypothesized relationships, annotated with standardized path coefficients. Note: *** $p < 0.001$ (bootstrapping, 5,000 resamples).

Methods

Research Design

This study employs a quantitative research design using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is well-suited to complex models and predictive research and enables simultaneous evaluation of the measurement and structural models. Measurement items were adapted from recent studies on financial inclusion and fintech adoption²² to ensure validity and contextual relevance. Consistent with the study's objectives, the empirical results are subsequently interpreted through the normative lens of *maqāṣid al-sharī'ah* (see Section "Integration with the Islamic Legal Framework"); the study does not claim to provide a standalone doctrinal-legal analysis.

Research Approach

The study follows a deductive approach in which hypotheses are derived from established theory and prior evidence. The guiding theoretical foundations are:

1. Financial Intermediation Theory
2. Capability Theory
3. Institutional Theory
4. Technology Acceptance Model (TAM)
5. Islamic jurisprudential framework (*maqāṣid al-sharī'ah*)

Together, these provide a multidisciplinary basis for examining the relationships among digital financial inclusion, legal adaptation, ethical alignment, economic marginalization, and financial trust.

²² Budi Setiawan et al., "Quest for Financial Inclusion via Digital Financial Services (Fintech) during COVID-19 Pandemic: Case Study of Women in Indonesia," *Journal of Financial Services Marketing* 29, no. 2 (June 13, 2024): 459–73, <https://doi.org/10.1057/s41264-023-00217-9>; A. Irimia-Diéguez, F. Velicia-Martín, and M. Aguayo-Camacho, "Predicting Fintech Innovation Adoption: The Mediator Role of Social Norms and Attitudes," *Financial Innovation* 9, no. 1 (January 15, 2023): 36, <https://doi.org/10.1186/s40854-022-00434-6>; Thomas Appiah and Veronica Venyo Agblewornu, "The Interplay of Perceived Benefit, Perceived Risk, and Trust in Fintech Adoption: Insights from Sub-Saharan Africa," *Heliyon* 11, no. 2 (January 2025): e41992, <https://doi.org/10.1016/j.heliyon.2025.e41992>.

Population and Sample

The study was conducted in three regencies of North Maluku Province, Indonesia (Halmahera Barat, Halmahera Tengah, and Kepulauan Sula), where Muslim communities constitute a numerical minority relative to Christian-majority populations at the local government level, ranging from approximately 28 to 43 percent of the registered population (BPS North Maluku, 2023). This context satisfies the definition of a Muslim minority region at the subnational level, distinct from Indonesia's national majority, and is characterized by limited Shariah-compliant financial infrastructure, low rates of formal banking penetration, and documented institutional exclusion of Muslim residents from locally dominant financial networks. The target population comprised individuals and economic actors who were potential or active users of digital financial services, including SME owners, professionals and employees, as well as users of mobile banking, e-wallets and fintech platforms. A purposive sampling technique was applied to ensure that respondents (a) resided in one of the three designated regencies, (b) self-identified as Muslim, (c) had direct experience with at least one digital financial service, and (d) possessed basic awareness of Islamic financial principles, assessed through a single screening item administered at the outset of the survey instrument.

Sample Size and Statistical Power

A total of 210 valid responses were collected and analyzed. Although the “10-times rule” would suggest a far smaller minimum, this heuristic has been criticized as unreliable for determining adequacy²³ The present justification, therefore, rests on an a priori power analysis. Using G*Power for a linear multiple-regression framework reflecting the most demanding endogenous construct in the model (a maximum of one predictor per endogenous construct), with a medium effect size ($f^2 = 0.15$), $\alpha = 0.05$, and target power $(1-\beta) = 0.95$, the required minimum sample is approximately 89; relaxing power to 0.80 yields approximately 55. Even under a conservative specification allowing additional predictors, the required minimum remains below 90. The achieved sample size of 210 therefore exceeds the threshold for detecting medium effects with power ≥ 0.80 at $\alpha = 0.05$.

Data Collection

Primary data were collected using a structured questionnaire distributed online and offline to broaden accessibility. The instrument comprised a demographic section and items for Digital Financial Inclusion (DFI), Islamic Legal Adaptation (ILA), Islamic Ethical Alignment (IEA), Economic Participation (EP), Economic Marginalization (EM), and Financial Trust (FT). All construct items were measured on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Measurement of Variables

Constructs were adapted from established literature on financial inclusion, fintech

²³ Zulkifli Mohd Ghazali, Wan Fairos Wan Yaacob, and Wan Marhaini Wan Omar, “LGCM and PLS-SEM in Panel Survey Data: A Systematic Review and Bibliometric Analysis,” *Data* 8, no. 2 (January 30, 2023): 32, <https://doi.org/10.3390/data8020032>; Robert Mai, Thomas Niemand, and Sascha Kraus, “A Tailored-Fit Model Evaluation Strategy for Better Decisions about Structural Equation Models,” *Technological Forecasting and Social Change* 173 (December 2021): 121142, <https://doi.org/10.1016/j.techfore.2021.121142>.

adoption, and Islamic finance and modified for the Muslim minority context.

Table 2. Measurement Instrument

Construct			Code	Measurement Item
Digital Financial Inclusion (DFI)			DFI1	I can easily access digital financial services
			DFI2	Digital financial services are affordable
			DFI3	I frequently use digital financial platforms
			DFI4	Digital finance improves my financial activities
Islamic Legal Adaptation (ILA)			ILA1	Islamic law supports digital financial innovation
			ILA2	Scholars provide guidance on fintech issues
			ILA3	Digital finance complies with Shariah principles
Islamic Ethical Alignment (IEA)			IEA1	Digital financial services reflect Islamic ethical values
			IEA2	Digital financial services operate with transparency and fairness
			IEA3	Providers act with trustworthiness (amānah)
Economic Marginalization (EM)			EM1	I face difficulty accessing financial services
			EM2	Financial systems exclude people like me
			EM3	I have limited financial opportunities
Financial Trust (FT)			FT1	I trust digital financial platforms
			FT2	Digital financial services are transparent
			FT3	I feel secure using digital financial systems
Economic Participation (EP)			EP1	Digital finance enables me to participate more actively in economic activities
			EP2	Using digital financial services has improved my income-generating capacity
			EP3	Digital financial services help me access broader economic opportunities

Data Analysis Technique

The study employs PLS-SEM using SmartPLS. PLS-SEM was selected for:

1. Its suitability for exploratory and predictive research
2. Its ability to handle complex models with multiple constructs
3. Its minimal assumptions regarding data distribution
4. Its effectiveness with relatively small to moderate sample sizes

The measurement model was assessed using indicator loadings (≥ 0.70), Cronbach's alpha (≥ 0.70), composite reliability (≥ 0.70), and average variance extracted (AVE ≥ 0.50); discriminant validity was assessed via the heterotrait-monotrait (HTMT) ratio (< 0.90). The structural model was assessed using path coefficients (β), t - and p -

values (bootstrapping, 5,000 resamples), the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). Model fit was evaluated using SRMR (< 0.08) and NFI (> 0.90).

Ethical Considerations

The study adhered to established ethical standards, including voluntary participation, informed consent, anonymity, confidentiality, and exclusive use of data for academic purposes. A pilot study with 30 respondents was conducted prior to the main data collection to refine item wording and verify instrument comprehension. To minimize common method variance (CMV), three procedural remedies were applied at the design stage: (1) item randomization within construct blocks to reduce response-order effects; (2) temporal separation of predictor and outcome items within the questionnaire through placement of an unrelated demographic section between them; and (3) explicit assurance of anonymity to reduce social-desirability bias. Post hoc, a full collinearity assessment was conducted on all construct scores using variance inflation factors (VIF). All VIF values were below 3.3, indicating that CMV does not represent a substantial threat to the validity of the structural relationships. Additionally, a Harman single-factor test confirmed that no single factor accounted for the majority of variance in the data (largest factor = 24.7%), providing further reassurance against CMV contamination.

Integration with the Islamic Legal Framework

A distinctive feature of the study is the interpretation of empirical findings within an Islamic legal framework organized around *maqāṣid al-sharī'ah* and the principles of justice (*'adl*), trust (*amānah*), and public welfare (*maṣlaḥah*). This normative interpretation complements but does not substitute for the quantitative analysis.

Results

Descriptive Statistics

Respondent profile: of the 210 valid respondents, 54.3% were male and 45.7% female. Age distribution: 18–25 years (22.4%), 26–35 years (38.1%), 36–45 years (25.7%), and above 45 years (13.8%). Educational attainment: senior high school (19.0%), diploma (14.3%), undergraduate degree (48.1%), postgraduate degree (18.6%). Occupational categories: SME owners (31.9%), salaried employees (28.6%), civil servants (18.1%), others (21.4%). Frequency of digital financial service use: daily (29.0%), several times per week (37.6%), weekly (21.4%), less than weekly (12.0%). Descriptive statistics summarizing respondents' perceptions across the six constructs are presented in Table 3.

Table 3. Descriptive Statistics

Variable	Mean	Std. Deviation
Digital Financial Inclusion (DFI)	3.56	0.68
Islamic Legal Adaptation (ILA)	3.41	0.72
Islamic Ethical Alignment (IEA)	3.49	0.70
Economic Marginalization (EM)	2.87	0.81
Economic Participation (EP)	3.44	0.74

Variable	Mean	Std. Deviation
Financial Trust (FT)	3.62	0.65

Financial Trust (3.62) and Digital Financial Inclusion (3.56) recorded the highest means, indicating generally positive perceptions of digital financial services and their trustworthiness. Economic Participation (3.44) and Islamic Ethical Alignment (3.49) reflect moderate-to-positive assessments of inclusion benefits and ethical congruence, respectively. Economic Marginalization recorded the lowest mean (2.87), suggesting that respondents perceived moderate but meaningful structural barriers to financial access in their communities.

Measurement Model (Outer Model)

Table 4. Outer Loadings

Construct	Indicator	Loading
DFI	DFI1	0.842
	DFI2	0.871
	DFI3	0.853
	DFI4	0.865
ILA	ILA1	0.824
	ILA2	0.853
	ILA3	0.831
IEA	IEA1	0.846
	IEA2	0.872
	IEA3	0.858
EM	EM1	0.801
	EM2	0.822
	EM3	0.815
EP	EP1	0.838
	EP2	0.861
	EP3	0.849
FT	FT1	0.889
	FT2	0.873
	FT3	0.861

All indicator loadings exceed 0.70, confirming indicator reliability.

Table 5. Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability	AVE
DFI	0.861	0.905	0.705
ILA	0.843	0.892	0.673
IEA	0.829	0.898	0.746
EM	0.812	0.871	0.628
EP	0.834	0.883	0.717
FT	0.889	0.921	0.795

All constructs satisfy the thresholds ($\alpha > 0.70$; CR > 0.70 ; AVE > 0.50), confirming internal consistency and convergent validity.

Table 6. Discriminant Validity (HTMT Ratio)

Construct	DFI	ILA	IEA	EM	FT
DFI		0.621	0.588	0.488	0.574
ILA			0.642	0.532	0.603
IEA				0.401	0.617
EM					0.447
FT					

All HTMT values are below 0.90, indicating adequate discriminant validity.

Structural Model (Inner Model)

Table 7. Path Coefficients and Hypothesis Testing

Hypothesis	Path	β	t-value	p-value	Result
H1	DFI $\rightarrow$ Economic Participation	0.462	7.921	< 0.001	Supported
H2	ILA $\rightarrow$ DFI	0.341	5.882	< 0.001	Supported
H3	DFI $\rightarrow$ Economic Marginalization	-0.389	6.112	< 0.001	Supported
H4	IEA $\rightarrow$ Financial Trust	0.298	4.763	< 0.001	Supported

A p-value column has been added, and H4 is specified as IEA $\rightarrow$ Financial Trust, consistent with the measurement instrument. All four hypotheses are supported at $p < 0.001$.

Table 8. Coefficient of Determination (R^2)

Endogenous Variable	R^2
Digital Financial Inclusion (DFI)	0.512
Economic Participation	0.634
Economic Marginalization (EM)	0.151
Financial Trust (FT)	0.487

These values indicate moderate to strong explanatory power.

Table 9. Effect Size (f^2) and Predictive Relevance (Q^2)

Relationship / Endogenous Construct	f^2	Q^2
ILA → DFI	0.238	0.39
DFI → Economic Participation	0.583	0.47
DFI → Economic Marginalization	0.178	0.11
IEA → Financial Trust	0.173	0.36

Effect sizes (f^2) were computed using the formula $f^2 = \beta^2 / (1 - R^2)$, consistent with the single-predictor specification of each structural path. The values indicate small-to-large effects (ILA → DFI: $f^2 = 0.238$, medium; DFI → EP: $f^2 = 0.583$, large; DFI → EM: $f^2 = 0.178$, medium; IEA → FT: $f^2 = 0.173$, medium), while all Q^2 values exceed zero, supporting the model's predictive relevance.

Table 10. Model Fit Indices

Index	Value	Threshold
SRMR	0.058	< 0.08
NFI	0.917	> 0.90

The model demonstrates a good fit. In summary, all measurement-model criteria are satisfied, all four structural hypotheses are statistically supported at $p < 0.001$, and the model exhibits adequate explanatory and predictive capacity. Interpretation of these findings is presented in the Discussion.

Discussion

The findings provide strong empirical evidence that digital financial inclusion plays a central role in enhancing economic participation and reducing financial marginalization in Muslim minority contexts. The significant positive relationship between digital financial inclusion and economic participation indicates that access to digital financial services enables individuals and small enterprises to engage more effectively in economic activity, consistent with evidence that inclusion enhances productivity, income generation, and resilience.²⁴

The significant negative relationship between digital financial inclusion and economic marginalization demonstrates its effectiveness as a tool for reducing socio-economic inequality, aligning with global evidence on digital finance and poverty reduction.²⁵ In Muslim minority populations, where access to formal institutions is often

²⁴ Alshater et al., "Fintech in Islamic Finance Literature: A Review"; Hasanul Banna et al., "Islamic Banking Stability amidst the COVID-19 Pandemic: The Role of Digital Financial Inclusion," *International Journal of Islamic and Middle Eastern Finance and Management* 15, no. 2 (April 19, 2022): 310–30, <https://doi.org/10.1108/IMEFM-08-2020-0389>.

²⁵ Naishu Yu and Yanzhe Wang, "Can Digital Inclusive Finance Narrow the Chinese Urban–Rural Income Gap? The Perspective of the Regional Urban–Rural Income Structure," *Sustainability* 13, no. 11 (June

limited, digital platforms can serve as alternative channels that mitigate exclusion.²⁶

The results also highlight the role of Islamic legal adaptation in facilitating adoption. The positive effect of ILA on digital financial inclusion suggests that jurisprudential flexibility, particularly through *ijtihad*, is important for integrating contemporary financial technologies and for supporting institutional accounts in which alignment between legal frameworks and socio-cultural values enhances legitimacy and acceptance.²⁷

Furthermore, Islamic ethical alignment significantly strengthens financial trust. In digital environments marked by uncertainty and limited physical interaction, trust is a foundational requirement for engagement. Services perceived as consistent with Islamic values, transparency, fairness, and accountability are more likely to be trusted, consistent with work emphasizing ethical and religious values in financial behavior.²⁸ This extends technology-adoption models, such as UTAUT2, by incorporating value-based dimensions,²⁹ with *amānah* serving as a principle of moral legitimacy, reinforcing accountability and stakeholder confidence.³⁰

Taken together, the results suggest that digital financial inclusion cannot be understood as a purely technological phenomenon; it is embedded in legal and socio-cultural contexts. In Muslim minority regions, the success of fintech depends on alignment with Islamic principles, reinforcing the importance of hybrid governance models in which secular regulatory frameworks coexist with religious ethical systems. By offering Shariah-compliant alternatives such as digital microfinance, crowdfunding, and peer-to-peer financing, Islamic fintech can expand access while maintaining

4, 2021): 6427, <https://doi.org/10.3390/su13116427>; Ji et al., “Has Digital Financial Inclusion Narrowed the Urban-Rural Income Gap: The Role of Entrepreneurship in China.”

²⁶ Himanshu Sharma and Antonio Díaz Andrade, “Digital Financial Services and Human Development: Current Landscape and Research Prospects,” *Information Technology for Development* 29, no. 4 (October 2, 2023): 582–606, <https://doi.org/10.1080/02681102.2023.2199189>; Carla Bonina et al., “Digital Platforms for Development: Foundations and Research Agenda,” *Information Systems Journal* 31, no. 6 (November 28, 2021): 869–902, <https://doi.org/10.1111/isj.12326>.

²⁷ Fidhayanti et al., “Exploring The Legal Landscape of Islamic Fintech in Indonesia: A Comprehensive Analysis of Policies and Regulations”; Alshater et al., “Fintech in Islamic Finance Literature: A Review.”

²⁸ Mohamed Albaity and Mahfuzur Rahman, “Customer Loyalty towards Islamic Banks: The Mediating Role of Trust and Attitude,” *Sustainability* 13, no. 19 (September 28, 2021): 10758, <https://doi.org/10.3390/su131910758>.

²⁹ Ying-Kai Liao et al., “The Integration of the Technology Acceptance Model and Value-Based Adoption Model to Study the Adoption of E-Learning: The Moderating Role of e-WOM,” *Sustainability* 14, no. 2 (January 12, 2022): 815, <https://doi.org/10.3390/su14020815>; Hee-Woong Kim, Hock Chuan Chan, and Sumeet Gupta, “Value-Based Adoption of Mobile Internet: An Empirical Investigation,” *Decision Support Systems* 43, no. 1 (February 2007): 111–26, <https://doi.org/10.1016/j.dss.2005.05.009>.

³⁰ Musmuliadi Kamaruding et al., “Islamic Leadership in Construction Project Management: Conceptual Foundations, Practical Challenges, and Prospects,” *Multidisciplinary Reviews* 9, no. 7 (December 1, 2025): 2026313, <https://doi.org/10.31893/multirev.2026313>; Sarah Zettira, Nur Ikhlasul Amal, and Muryani Arsal, “Makna Amanah Dan Akuntabilitas Dalam Praktik Keuangan Bank Syariah,” *SANTRI : Jurnal Ekonomi Dan Keuangan Islam* 4, no. 1 (February 4, 2026): 01–15, <https://doi.org/10.61132/santri.v4i1.2068>.

compliance.³¹

The findings both align with and extend prior research. Relative to studies documenting the inclusion benefits of digital finance,³² this study contributes individual-level evidence specific to Muslim minority contexts, where inclusion is shaped by both religious and economic factors. Relative to the mixed evidence on Islamic finance and inclusion, it provides an empirical test rather than assuming inclusionary effects. Relative to trust research centered on usefulness and ease of use, it demonstrates that ethical and religious congruence shapes trust, introducing moral legitimacy as a determinant of digital financial adoption. Finally, in contrast to macro-level treatments of Islamic fintech,³³ it offers micro-level evidence linking adoption, legal adaptation, ethical alignment, and socio-economic outcomes.

These findings have specific implications for each theoretical pillar of the study. With respect to Capability Theory, the significant effect of DFI on economic participation confirms that digital financial access functions as a capability-enhancing resource: it expands individuals' substantive freedoms to engage in economic life, particularly in contexts where formal institutions are inaccessible. This extends Sen's framework by demonstrating that digital infrastructure can serve as a capability converter for religiously constrained communities. Institutional Theory is supported by the significant ILA effect on DFI: jurisprudential accommodation (*ijtihād*) functions as a legitimizing institution that aligns the formal regulatory environment with informal socio-cultural and religious norms, reducing the perceived illegitimacy cost of fintech adoption.

This finding directly addresses the gap identified in the literature between asserting and empirically testing legal adaptability as a driver of inclusion. The Technology Acceptance Model (TAM) is extended by the IEA → FT pathway: beyond perceived usefulness and ease of use, moral legitimacy, operationalized as ethical and religious congruence, constitutes an independent determinant of trust. This suggests that standard TAM-derived adoption models may underestimate the role of value-based legitimacy in confessional communities. With respect to *maqāṣid al-sharī'ah*, the empirical findings can be interpreted normatively as follows. The DFI → EP relationship affirms *ḥifẓ al-māl* (protection of wealth) through expanded economic agency. The negative DFI → EM relationship instantiates *ʿadl* (justice) by reducing structural exclusion. The IEA-FT relationship embodies *amānah* (trustworthiness) as a condition of financial

³¹ Muhammad Nizar, Sukanto Sukanto, and Aslikhah Aslikhah, "THE ROLE OF FINTECH IN THE TRANSFORMATION OF THE ISLAMIC FINANCIAL SECTOR," *IEB: Journal of Islamic Economics and Business* 3, no. 2 (December 30, 2024): 61–70, <https://doi.org/10.19109/ieb.v3i2.26735>; Hanan Amin Mohamed and Toshitsugu Otake, "The Role of Islamic FinTech in Digital Financial Inclusion and Sustainable Development Post Covid-19: Cross-Country Analysis," *International Journal of Islamic and Middle Eastern Finance and Management* 18, no. 3 (April 24, 2025): 649–71, <https://doi.org/10.1108/IMEFM-02-2024-0100>.

³² Kyungha Kim, "Assessing the Impact of Mobile Money on Improving the Financial Inclusion of Nairobi Women," *Journal of Gender Studies* 31, no. 3 (April 3, 2022): 306–22, <https://doi.org/10.1080/09589236.2021.1884536>; Carla Fernandes, Maria Rosa Borges, and Jorge Caiado, "The Contribution of Digital Financial Services to Financial Inclusion in Mozambique: An ARDL Model Approach," *Applied Economics* 53, no. 3 (January 14, 2021): 400–409, <https://doi.org/10.1080/00036846.2020.1808177>.

³³ Abdul Razak and Asutay, "Financial Inclusion and Economic Well-Being: Evidence from Islamic Pawnbroking (Ar-Rahn) in Malaysia"; Alshater et al., "Fintech in Islamic Finance Literature: A Review."

legitimacy. Together, these pathways suggest that digital financial inclusion, when designed in conformity with Islamic ethical principles, constitutes not merely a financial policy objective but a fulfillment of *maqāṣid* imperatives. Despite these positive outcomes, challenges remain.

The moderate level of perceived economic marginalization ($M = 2.87$) indicates that structural barriers, including limited digital literacy, regulatory fragmentation, infrastructure deficits, and the absence of Shariah-certified digital financial products in the study region, continue to constrain the effectiveness of digital financial inclusion. This underscores the need for policy interventions that address both the technological and institutional dimensions simultaneously, rather than treating digital access as sufficient in isolation. Moreover, the $ILA \rightarrow DFI$ effect ($f^2 = 0.238$) points to the strategic importance of jurisprudential engagement: the absence of authoritative scholarly guidance on local fintech products may constitute a significant adoption barrier that neither regulation nor technology alone can overcome.

Conclusion

This study examined the role of Islamic law in facilitating digital financial inclusion within Muslim minority regions, focusing on legal adaptation, ethical alignment, and economic marginalization. The findings provide empirical and theoretical evidence that digital financial inclusion enhances economic participation and reduces exclusion; that Islamic legal adaptation, via *ijtihād*, supports inclusion; and that Islamic ethical alignment strengthens financial trust. Theoretically, the study develops a hybrid, *maqāṣid*-informed framework that extends capability theory, institutional theory, and technology-acceptance models by incorporating religious and ethical dimensions.

The study is grounded in Islamic ethical teachings. The Qur'an emphasizes justice and excellence in all dealings (Qur'an 16:90), underscoring the obligation to establish fairness and equity in economic life. Likewise, the Prophetic tradition that the truthful and trustworthy merchant will be among the prophets, the truthful, and the martyrs (reported by al-Tirmidzī) highlights the centrality of trust and integrity in the principles of commerce, which are directly relevant to digital finance.

Based on the findings, the study offers the following recommendations:

1. Develop Shariah-compliant fintech platforms to enhance financial accessibility. Strengthen legal frameworks to support Islamic digital finance.
2. Promote financial literacy programs in Muslim minority communities.
3. Encourage collaboration among regulators, scholars, and technology developers.
4. Integrate ethical principles into digital financial governance.
5. Future research should adopt longitudinal and multi-country designs to strengthen causal inference and external validity.

CRedit Authorship Contribution Statement

Abdul Qahar Zainal: Conceptualization, Methodology, Formal analysis, Data curation, Writing – original draft; Muhammad Dahham Sabbar: Formal analysis, Writing – review & editing; Amal Mansoor Hasan: Formal analysis, Data curation, Formal analysis.

Declaration of Competing Interests

The authors declare that they have no competing financial interests or personal relationships that could influence the work reported in this paper.

Data Availability

Data will be made available on request.

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