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Research Article

DIGITAL SHARIA BANKING ADOPTION AND FINANCIAL INCLUSION MODELS FOR MICRO ENTERPRISES IN ASEAN

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Abstract

Rapid digital transformation in the financial sector has created new opportunities to expand financial inclusion among underserved populations, particularly micro-enterprises that frequently encounter barriers to accessing formal financial services. Digital Sharia banking has emerged as a promising solution by integrating financial technology with Islamic principles, enabling more accessible, efficient, and ethically compliant financial services. Micro-enterprises play a vital role in ASEAN economies; however, limited access to financing, payment systems, and formal banking products continues to constrain their growth and sustainability. This study aims to examine the determinants of digital Sharia banking adoption and to develop a financial inclusion model for micro-enterprises in ASEAN. A quantitative cross-sectional design was employed involving 500 micro-enterprise owners from selected ASEAN countries. Data were collected through structured questionnaires and analyzed using Structural Equation Modeling (SEM). Findings reveal that perceived usefulness, trust, digital financial literacy, regulatory support, and Sharia compliance perception significantly influence digital Sharia banking adoption. Sharia compliance perception emerged as the strongest predictor of adoption behavior. Digital Sharia banking adoption was also found to have a significant positive effect on financial inclusion, enhancing access to financing, savings, payment services, and other formal financial products. The study concludes that sustainable financial inclusion among micro-enterprises requires an integrated approach combining technological innovation, institutional trust, regulatory support, and adherence to Islamic financial principles. Such a model can strengthen inclusive economic development across ASEAN economies.

Keywords: Digital Financial Literacy, Digital Sharia Banking, Financial Inclusion

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INTRODUCTION

The rapid advancement of digital technologies has transformed the global financial landscape, creating new opportunities for improving access to financial services among underserved populations (Ghaemi Asl, Ben Jabeur, Hosseini, et al., 2024). Digital banking platforms have emerged as important instruments for expanding financial inclusion by reducing geographical barriers, lowering transaction costs, and facilitating real-time financial transactions (Khan et al., 2024). Within the ASEAN region, the growth of digital financial ecosystems has accelerated alongside increasing internet penetration, smartphone adoption, and supportive government initiatives aimed at promoting inclusive economic development. These developments have encouraged financial institutions to innovate and provide accessible financial solutions for micro-enterprises, which constitute a significant proportion of the regional economy (Mujiatun et al., 2025; Zaman et al., 2023).

Micro-enterprises play a crucial role in employment generation, poverty reduction, and economic resilience across ASEAN countries. Despite their economic significance, many micro-enterprises continue to face challenges in accessing formal financial services, including limited access to financing, inadequate credit histories, and insufficient financial literacy (Eshun & Kočenda, 2025; Kasmon et al., 2024). Traditional banking systems often struggle to serve this segment effectively because of high operational costs and perceived risks. Digital financial services have the potential to address these limitations by offering more flexible, efficient, and accessible financial products tailored to the needs of small-scale entrepreneurs (Amuda & Al-Nasser, 2024; Ramaian Vasantha et al., 2023).

Islamic banking institutions have increasingly embraced digital transformation as part of broader efforts to enhance service delivery and financial inclusion. Digital Sharia banking combines technological innovation with Islamic financial principles, providing financial solutions that comply with Sharia requirements while leveraging digital platforms to improve accessibility and efficiency (Abu Al-Haija et al., 2025; Gök et al., 2025). Growing demand for ethical and faith-based financial services in ASEAN countries has strengthened the relevance of digital Sharia banking in supporting inclusive economic participation. These developments highlight the importance of examining how digital Sharia banking adoption can contribute to financial inclusion among micro-enterprises within diverse ASEAN contexts (Abdurrahman, 2024; Alshurafat et al., 2024).

Financial exclusion remains a persistent challenge for many micro-enterprises across ASEAN despite significant progress in financial sector development. Limited access to formal financial services constrains business growth, reduces investment opportunities, and increases vulnerability to economic shocks (Cherni & Ben Amar, 2024). Many entrepreneurs continue to rely on informal financing mechanisms due to barriers associated with conventional banking institutions, including stringent eligibility requirements, extensive documentation procedures, and limited physical access to financial service providers (Alhammadi, 2023; Widiastuti et al., 2025).

Digital Sharia banking presents a promising alternative for addressing these challenges; however, adoption levels among micro-enterprises remain uneven across ASEAN countries. Variations in technological infrastructure, regulatory environments, financial literacy, digital trust, and awareness of Islamic financial products influence the utilization of digital banking services (Carè et al., 2024; Narayan et al., 2025). Uncertainty persists regarding the factors that encourage or hinder adoption among micro-enterprises, particularly within diverse socio-economic and cultural environments. Understanding these determinants is essential for developing effective strategies that promote wider participation in digital financial ecosystems (Alzarooni et al., 2024; R.V. et al., 2024).

Existing policy initiatives frequently emphasize technological innovation and digital transformation without adequately addressing the unique characteristics of micro-enterprises operating within Islamic financial contexts (Syarif & Aysan, 2024). Questions remain concerning the mechanisms through which digital Sharia banking can effectively enhance financial inclusion, improve access to financing, and support sustainable business development (Kholidah et al., 2024). Insufficient understanding of these relationships limits the ability of policymakers and financial institutions to design targeted interventions that maximize the benefits of digital financial services for underserved entrepreneurial communities (Nazir et al., 2025).

This study aims to investigate the adoption of digital Sharia banking among micro-enterprises in ASEAN and examine its role in promoting financial inclusion. Particular attention is directed toward understanding the technological, institutional, and behavioral factors that influence the acceptance and utilization of digital Islamic financial services (Idrees & Ullah, 2024; Irimia-Diéguez et al., 2024). The study seeks to provide a comprehensive perspective on how digital banking solutions can address persistent financial access challenges experienced by micro-enterprises (Heriyati et al., 2025).

Another objective of the study is to develop a conceptual model that explains the relationship between digital Sharia banking adoption and financial inclusion outcomes (Alsmadi, 2024). Analysis focuses on identifying the pathways through which digital financial services facilitate access to savings, financing, payment systems, and other essential banking products (Ghaemi Asl, Ben Jabeur, & Ben Zaied, 2024; Maksum et al., 2025). Examination of these relationships is expected to contribute to a deeper understanding of how digital Islamic finance can support entrepreneurial development and economic empowerment.

The study further aims to generate evidence-based recommendations for financial institutions, policymakers, and development practitioners seeking to strengthen financial inclusion strategies within the ASEAN region (Abdurrahman, 2025). Insights derived from the research are expected to support the design of more inclusive digital financial ecosystems that accommodate the needs of micro-enterprises while maintaining compliance with Islamic financial principles. Achievement of these objectives may contribute to broader efforts aimed at fostering sustainable and inclusive economic growth (Fathoni et al., 2025; Taufik Syamlan et al., 2025).

Previous studies have extensively explored financial inclusion, digital banking adoption, and Islamic finance as separate areas of inquiry. Existing research has identified factors such as perceived usefulness, perceived ease of use, trust, financial literacy, and regulatory support as important determinants of digital financial service adoption (Ramaian Vasantha et al., 2025; Xu et al., 2025). Studies examining Islamic banking have similarly highlighted the significance of religious compliance, ethical considerations, and customer satisfaction in shaping financial behavior. Valuable insights have emerged from these investigations regarding the opportunities and challenges associated with financial innovation (Khairisma et al., 2025; Sumadi & Rahajeng, 2025).

Current literature remains fragmented because many studies focus either on digital banking adoption or financial inclusion outcomes without examining their interaction within the specific context of digital Sharia banking for micro-enterprises (Hatem Falih et al., 2025). Research conducted in Islamic finance frequently emphasizes consumer banking behavior among individual customers rather than entrepreneurial users (Mawardi et al., 2024). Limited attention has been directed toward understanding how digital Islamic financial services influence the financial inclusion of micro-enterprises, particularly within the heterogeneous economic environments of ASEAN countries (Tanchangya et al., 2025).

Comparative and integrative models that connect technological adoption factors, Sharia compliance considerations, and financial inclusion outcomes remain relatively scarce. Insufficient empirical and conceptual exploration of these interconnected dimensions restricts the development of comprehensive frameworks capable of explaining adoption behavior and inclusion impacts simultaneously (Morshed, 2025; Tanjung & Cahyanti, 2025). Greater understanding is required regarding the mechanisms through which digital Sharia banking contributes to financial empowerment, business sustainability, and inclusive economic participation among micro-enterprises. Addressing this gap can strengthen both theoretical development and practical implementation within the field (Ali & Aysan, 2025; Probohudono et al., 2025).

The novelty of this study lies in its integrated examination of digital Sharia banking adoption and financial inclusion within the context of ASEAN micro-enterprises. Existing research frequently treats technology adoption, Islamic finance, and financial inclusion as separate analytical domains. This study seeks to bridge these domains by developing a comprehensive framework that captures their interrelationships and collective influence on entrepreneurial financial access. Such integration provides a broader understanding of how digital Islamic financial services operate within contemporary economic environments.

Innovative value is further reflected in the proposed financial inclusion model that incorporates technological, behavioral, institutional, and Sharia-related dimensions simultaneously. Inclusion of these interconnected factors enables a more comprehensive analysis than models relying exclusively on conventional technology acceptance theories or traditional financial inclusion frameworks. The study therefore contributes a multidimensional perspective capable of explaining both adoption decisions and inclusion outcomes among micro-enterprises operating within Islamic financial ecosystems.

The significance of this research extends beyond academic contributions to encompass practical and policy relevance. ASEAN economies increasingly recognize the importance of digital transformation and financial inclusion as drivers of sustainable development. Micro-enterprises remain central actors in regional economic growth, yet many continue to face barriers to formal financial participation. Findings from this study are expected to provide valuable guidance for Islamic financial institutions, regulators, and development agencies seeking to design more effective strategies for expanding financial access through digital Sharia banking. Enhanced understanding of these relationships can support the creation of inclusive financial systems that promote entrepreneurship, economic resilience, and sustainable development throughout the ASEAN region.

RESEARCH METHOD

Research Design

This study employed a quantitative research design using a cross-sectional survey approach to examine the adoption of digital Sharia banking and its relationship with financial inclusion among micro-enterprises in ASEAN countries. The quantitative approach was selected because the study aimed to investigate causal relationships among multiple variables and to develop an empirical model explaining how technological, behavioral, and institutional factors influence the utilization of digital Islamic financial services. Emphasis was placed on measuring the magnitude and direction of the relationships between digital banking adoption and financial inclusion outcomes through statistical analysis (Stroukal & Peterka, 2025).

A conceptual framework was developed by integrating the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and financial inclusion theory. The framework incorporated several independent variables, including perceived usefulness, perceived ease of use, trust, digital financial literacy, Sharia compliance perception, and regulatory support. Digital Sharia banking adoption was positioned as the mediating variable, while financial inclusion served as the dependent variable. This integrated framework enabled a comprehensive examination of both technological acceptance and inclusion outcomes within the context of Islamic finance.

Structural Equation Modeling (SEM) was employed as the primary analytical technique because it allows simultaneous examination of complex relationships among latent constructs. The research design facilitated both measurement model assessment and structural model evaluation, thereby providing a robust methodological foundation for testing the proposed financial inclusion model among micro-enterprises operating in ASEAN economies.

Research Target/Subject

The population of this study consisted of micro-enterprise owners operating within ASEAN member countries where digital financial services and Islamic banking systems have demonstrated significant growth. Particular attention was directed toward micro-enterprises engaged in trade, services, manufacturing, agriculture, and home-based industries. These enterprises represent an important segment of the regional economy and frequently encounter challenges in accessing formal financial services.

Sample selection was conducted using a purposive sampling technique. Respondents were required to meet several criteria, including ownership or management of a micro-enterprise, active business operations for at least one year, and prior experience with either digital financial services or Islamic banking products. Inclusion of these criteria ensured that participants possessed sufficient knowledge and experience to evaluate the adoption and utilization of digital Sharia banking services (Zulaikha & Faricha, 2025).

A total of 500 respondents were targeted across five ASEAN countries, namely Indonesia, Malaysia, Brunei Darussalam, Thailand, and Singapore. Sample size determination followed recommendations for SEM analysis, which require adequate observations to estimate latent variable relationships reliably. Distribution of respondents across multiple countries enhanced the representativeness of the data and enabled broader generalization of findings within the ASEAN context.

Research Procedure

Data collection commenced with the development and validation of the survey instrument. Expert evaluation and pilot testing involving 50 micro-enterprise owners were conducted to identify ambiguities and improve questionnaire clarity. Revisions were implemented based on participant feedback and statistical assessment results before large-scale data collection was initiated.

Survey administration was conducted through online and offline channels to maximize respondent participation. Digital questionnaires were distributed through business associations, entrepreneurship networks, Islamic financial institutions, and social media platforms. Face-to-face distribution was also employed in selected regions where internet accessibility remained limited. Participation was voluntary, and respondents were informed about the purpose of the study, confidentiality measures, and ethical considerations prior to completing the questionnaire (Dilla et al., 2025).

Data analysis proceeded through several stages. Preliminary analysis included data screening, missing value assessment, outlier detection, and descriptive statistical analysis. Measurement model evaluation was subsequently conducted to examine validity and reliability indicators. Structural Equation Modeling was then employed to test the hypothesized relationships among variables and evaluate the proposed financial inclusion model. Interpretation of the findings focused on identifying the determinants of digital Sharia banking adoption and assessing their contribution to financial inclusion among micro-enterprises in ASEAN. Results obtained from the analysis formed the basis for theoretical development, policy recommendations, and future research directions.

Instruments, and Data Collection Techniques

Data were collected using a structured questionnaire developed from validated instruments reported in previous studies on technology adoption, Islamic finance, and financial inclusion. The questionnaire consisted of two sections. The first section gathered demographic and business-related information, including age, gender, educational background, business sector, business age, and prior experience with digital financial services. The second section measured the latent constructs included in the conceptual framework.

Measurement items utilized a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Perceived usefulness, perceived ease of use, trust, digital financial literacy, Sharia compliance perception, regulatory support, digital Sharia banking adoption, and financial inclusion were measured using multiple indicators adapted from established scales. Instrument adaptation ensured consistency with the ASEAN micro-enterprise context while maintaining conceptual validity.

Validity and reliability assessments were conducted prior to data analysis. Content validity was evaluated through expert review involving scholars in Islamic finance, financial technology, and entrepreneurship (Al-Smadi, 2023). Construct validity was assessed using confirmatory factor analysis, while reliability was evaluated using Cronbach's alpha and composite reliability coefficients. Acceptance thresholds of 0.70 or higher were applied to ensure satisfactory measurement quality.

RESULTS AND DISCUSSION

Data analysis involved 500 micro-enterprise owners from five ASEAN countries, namely Indonesia, Malaysia, Brunei Darussalam, Thailand, and Singapore. Respondent distribution indicated that 38.4% operated in the trade sector, 27.8% in services, 18.6% in manufacturing, and 15.2% in agriculture and related industries. Male participants represented 56.2% of the sample, while female participants accounted for 43.8%. Business experience ranged from one to fifteen years, with an average operational period of 6.8 years. Digital financial service usage was reported by 82.6% of respondents, while 67.4% indicated previous utilization of Islamic banking products.

Descriptive statistics revealed relatively high levels of perceived usefulness (M = 4.18, SD = 0.61), trust (M = 4.11, SD = 0.66), and Sharia compliance perception (M = 4.27, SD = 0.58). Digital financial literacy demonstrated a moderate level (M = 3.89, SD = 0.72), while digital Sharia banking adoption recorded an average score of 4.03 (SD = 0.63). Financial inclusion exhibited a mean value of 4.09 (SD = 0.59), suggesting generally favorable access to financial services among respondents.

Table 1. Descriptive Statistics of Research Variables

Variable	Mean	SD
Perceived Usefulness	4.18	0.61
Perceived Ease of Use	4.05	0.64
Trust	4.11	0.66
Digital Financial Literacy	3.89	0.72
Sharia Compliance Perception	4.27	0.58
Regulatory Support	3.95	0.69
Digital Sharia Banking Adoption	4.03	0.63
Financial Inclusion	4.09	0.59

The descriptive findings indicate that respondents generally hold positive perceptions regarding the usefulness and reliability of digital Sharia banking services. High mean scores for perceived usefulness suggest that micro-enterprise owners recognize the practical benefits of digital banking platforms in facilitating financial transactions, improving operational efficiency, and reducing transaction costs. Positive perceptions toward Sharia compliance further indicate that religious considerations remain important determinants of financial behavior within the ASEAN Islamic finance environment.

Trust emerged as another influential factor reflected in the descriptive statistics. Respondents demonstrated confidence in the security, transparency, and ethical standards associated with digital Islamic banking platforms. Financial inclusion scores suggest that digital banking technologies have expanded access to financial products, including savings accounts, financing facilities, digital payments, and investment services. These outcomes indicate that technological innovation and religious compliance jointly contribute to greater financial participation among micro-enterprises.

Measurement model evaluation demonstrated satisfactory psychometric properties across all constructs. Factor loadings ranged from 0.721 to 0.914, exceeding the recommended threshold of 0.70. Composite reliability values varied between 0.846 and 0.931, while Cronbach's alpha coefficients ranged from 0.801 to 0.918. Average Variance Extracted (AVE) values exceeded 0.50 for all constructs, confirming convergent validity.

Discriminant validity assessment further confirmed that each construct measured a distinct conceptual domain. Cross-loading analysis and the Fornell-Larcker criterion indicated adequate differentiation among variables. These results demonstrate that the measurement model possesses strong validity and reliability characteristics, providing a robust foundation for subsequent structural model analysis and hypothesis testing.

Structural Equation Modeling results revealed significant relationships among the proposed variables. Perceived usefulness exhibited a positive and significant effect on digital Sharia banking adoption ($\beta = 0.312$, $p < 0.001$). Trust also demonstrated a significant influence ($\beta = 0.286$, $p < 0.001$), followed by digital financial literacy ($\beta = 0.248$, $p < 0.001$), Sharia compliance perception ($\beta = 0.341$, $p < 0.001$), and regulatory support ($\beta = 0.197$, $p < 0.01$). These findings indicate that technological, behavioral, institutional, and religious factors collectively influence adoption decisions.

Digital Sharia banking adoption displayed a strong positive effect on financial inclusion ($\beta = 0.624$, $p < 0.001$). The model explained 68.7% of the variance in digital banking adoption and 61.9% of the variance in financial inclusion. Goodness-of-fit indicators demonstrated satisfactory model performance, including CFI = 0.948, TLI = 0.941, RMSEA = 0.047, and SRMR = 0.043. These values confirm the adequacy of the proposed financial inclusion model.

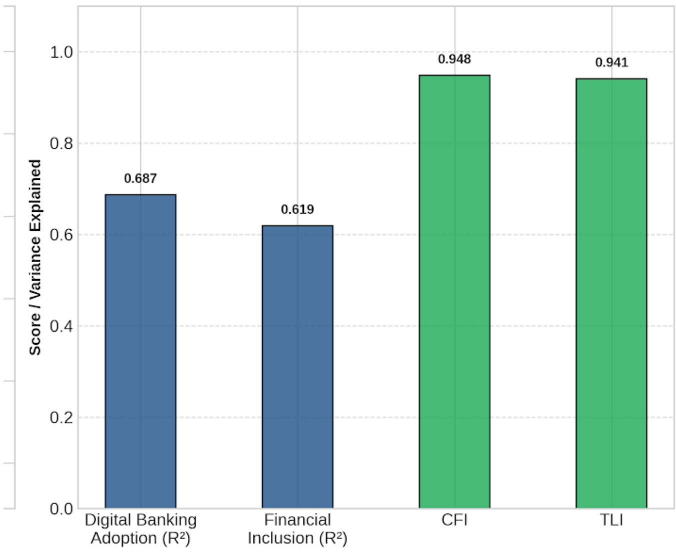

Figure 1. Model Performance (R^2) Goodness-of Fit

Analysis of the structural relationships revealed that Sharia compliance perception represented the strongest predictor of digital banking adoption among micro-enterprises. Entrepreneurs who perceived digital banking services as fully compliant with Islamic principles were significantly more likely to utilize these platforms. Religious trust therefore functions not only as a moral consideration but also as a practical determinant of financial decision-making.

Relationships among trust, digital literacy, and adoption indicate the importance of both technological competence and institutional credibility. Higher levels of digital financial literacy enhanced user confidence in navigating financial technologies. Trust simultaneously strengthened perceptions regarding security and service reliability (Abdurrahman, 2024; Alshurafat et al., 2024). These interconnected factors contributed directly to higher adoption rates and broader financial inclusion outcomes.

A representative case study was conducted involving a micro-enterprise owner in West Java, Indonesia, operating a halal food production business. Prior to adopting digital Sharia banking services, the entrepreneur relied heavily on cash transactions and informal financing sources. Business expansion opportunities were constrained by limited access to formal credit facilities and inefficient payment processes.

Implementation of a digital Sharia banking platform enabled the entrepreneur to access financing products, digital payment systems, and business savings services through a mobile application. Transaction processing time decreased substantially, while access to working capital financing improved operational flexibility. Monthly revenue increased by approximately 18% within one year following adoption of the digital banking platform.

A second case study involved a female entrepreneur in Kuala Lumpur, Malaysia, operating a home-based fashion business. Limited banking access previously restricted participation in broader digital marketplaces. Adoption of a digital Islamic banking platform facilitated integration with e-commerce systems and enhanced financial management capabilities.

Financial records indicated a significant increase in business transactions following digital adoption. Access to Sharia-compliant financing enabled inventory expansion and improved cash flow management. The entrepreneur reported greater confidence in financial planning and stronger engagement with formal financial institutions.

The Indonesian case demonstrates how digital Sharia banking can address traditional barriers associated with financial exclusion. Simplified access to financing and payment services reduced operational inefficiencies while supporting business growth (Alhammadi, 2023; Cherni & Ben Amar, 2024). Digital platforms provided practical solutions that aligned with both economic needs and religious preferences.

Observations from the Malaysian case further illustrate the role of digital financial ecosystems in promoting entrepreneurial development. Integration between digital banking and electronic commerce created opportunities for market expansion and improved financial management. Technological accessibility therefore functions as a catalyst for both business performance and financial inclusion.

Findings from both case studies reinforce the quantitative results obtained through SEM analysis. Positive impacts on financing access, transaction efficiency, and financial participation demonstrate the practical value of digital Islamic financial services. Consistency between statistical findings and real-world experiences strengthens the credibility of the proposed conceptual model.

Practical outcomes observed among the entrepreneurs highlight the importance of combining technological innovation with ethical financial principles. Adoption decisions were influenced not only by convenience and efficiency but also by confidence in Sharia compliance. This combination appears particularly relevant within the ASEAN Islamic finance landscape.

Results indicate that digital Sharia banking serves as an effective mechanism for expanding financial inclusion among micro-enterprises in ASEAN. Technological usefulness, trust, financial literacy, regulatory support, and Sharia compliance collectively influence adoption decisions. Strong adoption levels subsequently enhance access to formal financial services and strengthen entrepreneurial participation in the financial system.

Overall evidence suggests that financial inclusion strategies in ASEAN should integrate digital transformation initiatives with Islamic financial principles. Sustainable expansion of financial access requires not only technological infrastructure but also trust-building mechanisms, financial literacy programs, and regulatory frameworks that support ethical and inclusive financial innovation. The proposed model provides a comprehensive framework for understanding how digital Sharia banking can contribute to inclusive economic development across the ASEAN region (Carè et al., 2024; Widiastuti et al., 2025).

The findings demonstrate that digital Sharia banking adoption significantly contributes to financial inclusion among micro-enterprises in ASEAN. Perceived usefulness, trust, digital financial literacy, Sharia compliance perception, and regulatory support were found to positively influence adoption behavior. Digital Sharia banking adoption subsequently exhibited a strong positive effect on financial inclusion, indicating that access to digital Islamic financial services enhances entrepreneurs' ability to engage with formal financial systems.

Evidence from the structural model revealed that Sharia compliance perception emerged as the strongest predictor of adoption. Micro-enterprise owners showed a higher willingness to utilize digital financial platforms when they perceived the services to be aligned with Islamic principles. Religious assurance therefore functions as a critical determinant alongside technological and institutional considerations.

Trust also played a substantial role in shaping adoption behavior. Respondents who perceived digital Sharia banking platforms as secure, transparent, and reliable demonstrated greater engagement with digital financial services. Confidence in the integrity of financial institutions appears essential for encouraging the transition from informal to formal financial mechanisms.

Results further indicate that digital financial literacy enhances both technology acceptance and financial participation. Entrepreneurs with stronger digital competencies were more capable of navigating digital banking platforms and utilizing available financial products effectively. Increased adoption translated into broader access to financing, payment systems, savings products, and other financial services that support business sustainability.

Figure 2. From Literacy to Sustainability: The Impact of Digital Financial Competencies on Micro-Enterprises

The findings are consistent with earlier studies grounded in the Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technology. Previous research has consistently demonstrated that perceived usefulness and trust positively influence digital financial service adoption. Similar relationships were identified in the present study, confirming the relevance of these theoretical frameworks within the context of Islamic digital banking.

Results also align with studies emphasizing the role of financial literacy in promoting financial inclusion. Earlier investigations reported that individuals possessing higher levels of financial knowledge are more likely to adopt financial technologies and utilize formal financial services. Comparable patterns emerged among micro-enterprise owners in ASEAN, where digital literacy strengthened adoption behavior and inclusion outcomes.

Differences become evident when comparing the relative influence of Sharia compliance perception with findings from conventional digital banking studies. Research focusing on traditional financial institutions often identifies usefulness and trust as the dominant determinants of adoption (Narayan et al., 2025). Findings from this study suggest that religious compliance may exert an even stronger influence within Islamic financial ecosystems. Such results indicate that faith-based considerations remain central to financial decision-making among Muslim entrepreneurs.

Variations were also observed across ASEAN contexts. Several previous studies conducted in developed economies reported stronger effects of technological infrastructure and innovation readiness. Findings from the present study suggest that institutional trust and ethical alignment may be equally important within emerging markets characterized by diverse cultural and religious environments. Digital banking adoption therefore appears to be shaped by a combination of technological and socio-cultural factors.

The findings signify that financial inclusion extends beyond physical access to financial services and encompasses trust, values, and user confidence. Availability of digital banking infrastructure alone does not guarantee adoption. Entrepreneurs require assurance that financial products are secure, accessible, beneficial, and aligned with their ethical principles.

Evidence also signifies the growing convergence between technological innovation and Islamic finance. Digital transformation is no longer confined to operational efficiency but increasingly serves as a mechanism for delivering faith-based financial solutions. Integration of digital technologies with Sharia principles represents a significant evolution in the financial services sector.

Patterns identified in this study further signify that financial exclusion among micro-enterprises may be addressed through targeted technological interventions. Digital platforms have the capacity to overcome traditional barriers associated with distance, documentation requirements, and transaction costs. Financial participation therefore becomes more attainable for previously underserved entrepreneurial communities.

Results additionally signify the importance of institutional credibility in fostering sustainable financial ecosystems. Adoption decisions were strongly influenced by perceptions of transparency, fairness, and regulatory support. Financial inclusion initiatives are therefore most effective when technological innovation is accompanied by trustworthy governance structures and supportive policy environments.

Implications for policymakers involve the need to strengthen regulatory frameworks that support digital Islamic financial services. Regulatory clarity can increase consumer confidence while encouraging innovation among financial institutions. Governments seeking to expand financial inclusion should consider digital Sharia banking as a strategic instrument for reaching underserved entrepreneurial populations.

Implications for Islamic financial institutions relate to service design and customer engagement. Financial providers should prioritize user-friendly digital platforms, transparent communication, and strong cybersecurity measures. Greater emphasis on customer education may further enhance adoption and long-term utilization of digital financial products.

Implications for micro-enterprise development are equally significant. Improved access to financing, digital payments, and savings mechanisms can strengthen business resilience and support entrepreneurial growth. Digital financial inclusion enables entrepreneurs to participate more effectively in formal economic activities and broader digital marketplaces.

Implications for regional development extend to the broader ASEAN economic agenda. Expansion of inclusive digital financial ecosystems can contribute to poverty reduction, economic empowerment, and sustainable development. Financial inclusion achieved through digital Sharia banking may therefore support both economic growth and social equity objectives across the region.

The observed relationships can be explained through the practical benefits offered by digital Sharia banking platforms. Entrepreneurs are naturally inclined to adopt technologies that improve efficiency, reduce costs, and facilitate business operations. Perceived usefulness therefore becomes a powerful motivator for technology acceptance.

Religious compliance exerts a strong influence because financial decisions among many ASEAN entrepreneurs are closely connected to ethical and spiritual considerations. Sharia-compliant services provide assurance that financial activities conform to religious values. Such alignment increases both emotional comfort and institutional trust.

Trust emerged as a significant determinant because digital financial transactions inherently involve perceived risks. Concerns regarding privacy, fraud, and financial security may discourage adoption unless adequate safeguards are present. Financial institutions capable of demonstrating transparency and reliability are therefore more likely to gain customer acceptance.

Digital literacy influences adoption because technological competence reduces uncertainty and enhances confidence. Entrepreneurs who understand digital financial systems are better equipped to evaluate available services and utilize them effectively. Higher literacy levels consequently facilitate broader engagement with digital financial ecosystems and formal financial institutions.

Future research should investigate the long-term effects of digital Sharia banking adoption on business performance, financial resilience, and poverty reduction among micro-enterprises. Longitudinal studies may provide deeper insights into how sustained engagement with digital financial services influences entrepreneurial development over time.

Comparative studies involving additional ASEAN countries and other regions with significant Islamic finance sectors would further enrich understanding of contextual influences. Examination of cultural, institutional, and regulatory differences may reveal factors that strengthen or weaken adoption behavior across diverse environments.

Emerging technologies such as artificial intelligence, blockchain, and open banking deserve greater scholarly attention within Islamic finance research. Investigation of these innovations may contribute to the development of more efficient, transparent, and inclusive digital financial ecosystems capable of addressing evolving entrepreneurial needs.

Practical initiatives should focus on expanding financial literacy programs, strengthening digital infrastructure, and enhancing collaboration among governments, financial institutions, and technology providers. Comprehensive efforts combining technological innovation, regulatory support, and user education are likely to accelerate digital Sharia banking adoption and promote sustainable financial inclusion throughout ASEAN.

CONCLUSION

The most important finding of this study is that digital Sharia banking adoption serves as a significant driver of financial inclusion among micro-enterprises in ASEAN, with Sharia compliance perception emerging as the strongest determinant of adoption behavior. Unlike many conventional digital banking studies that emphasize technological usefulness and ease of use as the primary predictors, the present study demonstrates that religious alignment, trust, and ethical assurance exert a stronger influence within the Islamic financial ecosystem. Digital financial literacy, perceived usefulness, trust, and regulatory support also contribute positively to adoption decisions, while digital Sharia banking adoption significantly enhances access to formal financial services, financing opportunities, digital payment systems, and business sustainability. These findings indicate that financial inclusion among micro-enterprises is shaped by the interaction of technological, institutional, and faith-based factors rather than by technological considerations alone.

The principal contribution of this research lies in the development of an integrated conceptual model that combines technology adoption theories, Islamic finance principles, and financial inclusion perspectives within a single analytical framework. Existing studies frequently examine digital banking adoption and financial inclusion as separate domains, whereas this study establishes a comprehensive model explaining how technological acceptance, religious compliance, trust, and institutional support collectively influence financial participation among micro-enterprises. Methodologically, the study contributes empirical evidence from multiple ASEAN countries through the application of Structural Equation Modeling, thereby strengthening the understanding of digital Islamic financial ecosystems in emerging economies. The proposed model offers practical and theoretical value for scholars, policymakers, and Islamic financial institutions seeking to expand inclusive financial services in the region.

Several limitations should be acknowledged when interpreting the findings. The study utilized a cross-sectional research design, limiting the ability to capture changes in adoption behavior and financial inclusion over time. Data were collected from selected ASEAN countries, which may not fully represent the diversity of economic, regulatory, and cultural environments across the entire region. Self-reported responses may also introduce potential response bias despite efforts to ensure data quality. Future research should employ longitudinal approaches to examine the sustainability of adoption outcomes, incorporate additional ASEAN and non-ASEAN contexts for comparative analysis, and explore the influence of emerging technologies such as artificial intelligence, blockchain, open banking, and digital identity systems on the evolution of Sharia-compliant financial inclusion models. Such investigations may provide deeper insights into the future development of inclusive and sustainable digital Islamic finance ecosystems.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used BlackBox AI to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s) carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.

DECLARATION OF COMPETING INTEREST

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

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