Al-Tijary
Jurnal Ekonomi dan Bisnis Islam

2026, Vol. 11, No. 2, pp. 141-156

P-ISSN: 2460-9404; E-ISSN: 2460-9412
DOI: https://doi.org/10.21093/at.v11i2.13127

Islamic Financial Inclusion as a Transmission Channel: Evidence from Digital Payments and Inflation in Indonesia

Pribawa E Pantas*
Universitas Ahmad Dahlan, Yogyakarta, Indonesia
pribawa.pantas@uad.ac.id

Norfaizah Othman
Universiti Islam Selangor, Selangor, Malaysia
norfaizah@uis.edu.my

Noor Aimi Mohamad Puad
International Islamic University Malaysia, Selangor, Malaysia
nooraimi@iium.edu.my

Abstract

This study investigates the role of Islamic financial inclusion as a transmission channel linking digital payments and inflation in Indonesia's dual banking system. While digital payment systems have expanded rapidly and are known to influence monetary policy transmission, the mechanism through which these effects occur—particularly within an Islamic finance context—remains underexplored. Using monthly data from January 2016 to June 2025, this study employs an Autoregressive Distributed Lag (ARDL) model combined with a mediation framework to examine both direct and indirect effects. The findings reveal that digital payments significantly enhance Islamic financial inclusion, thereby influencing inflation dynamics through an indirect transmission mechanism. Mediation analysis confirms that Islamic financial inclusion partially transmits the impact of digital payments to inflation, with the indirect effect accounting for approximately 15.5% of the total effect. These results contribute to the literature by integrating Islamic finance into macroeconomic transmission analysis and provide policy implications for strengthening inclusive, sharia-compliant financial ecosystems in emerging economies.

Keywords: *ARDL, digital payments, inflation, islamic financial inclusion, monetary policy transmission*

© 2026 The Author(s). *Published by Fakultas Ekonomi dan Bisnis Islam, Universitas Islam Negeri Sultan Aji Muhammad Idris Samarinda, Indonesia. This open-access article is licensed under CC BY-NC 4.0 (https://creativecommons.org/licenses/by-nc/4.0/), permitting non-commercial use, distribution, and reproduction, provided the original work is properly cited. The author(s) retain copyright and grant Al-Tijary: Jurnal Ekonomi dan Bisnis Islam the right of first publication.*

*Corresponding Author

INTRODUCTION

The rapid expansion of digital payments in Indonesia has fundamentally transformed the financial landscape and the mechanisms of monetary policy transmission. The proliferation of e-money, QRIS-based transactions, and sharia-compliant fintech platforms has increased transaction efficiency, expanded financial access, and enhanced economic participation, particularly among underserved populations such as micro, small, and medium enterprises (MSMEs) and rural communities (Maisaroh & Wahyuni, 2024; Najib et al., 2025; Rofik & Huda, 2025). These developments are particularly relevant in Indonesia, where a dual banking system—comprising both conventional and Islamic financial institutions—coexists under the oversight of Bank Indonesia and the Financial Services Authority (OJK).

Previous studies have established that digital payments influence macroeconomic variables such as money supply, banking stability, and inflation (Indrawati et al., 2020; Kasri et al., 2022; Maharani & Sari, 2024). However, the transmission mechanism through which these effects occur remains insufficiently understood, especially in the context of Islamic finance. Existing literature largely focuses on either digital finance or Islamic banking independently, without explicitly integrating the two within a unified transmission framework (Savon & Yousfi, 2025). Furthermore, empirical evidence suggests that while Islamic banks participate in monetary transmission, their impact is often weaker than that of conventional banks due to structural limitations, smaller market share, and funding rigidities (Boukhatem & Djelassi, 2022; Rashid et al., 2020).

Despite these findings, a critical gap remains in understanding how digital payments influence inflation within the framework of Islamic finance. Existing studies largely conceptualize financial inclusion as an outcome of financial development, rather than as an active mechanism within the monetary transmission process. As a result, the intermediary role of Islamic financial inclusion in linking digital payments to macroeconomic dynamics remains insufficiently explored.

This study diverges from prior research in both theoretical framing and empirical design. Theoretically, existing literature typically treats Islamic banking as a passive component of the financial system or analyzes digital payments solely through a conventional lens (Savon & Yousfi, 2025). This study introduces Islamic financial inclusion as an active mediation channel, proposing a competitive mediation framework where digital payments and Islamic financial inclusion exert opposing yet complementary forces on inflation. Empirically, while previous studies examine digital finance or Islamic banking in isolation, this study provides the first integrated time-series evidence of how Islamic financial inclusion dynamically mediates the digital payment–inflation relationship. By quantifying the indirect transmission pathway and identifying a suppression effect (where indirect and direct effects operate in opposite directions), this research advances monetary transmission theory beyond traditional single-channel models. It offers a more nuanced understanding of macroeconomic dynamics in dual banking systems. Recent studies confirm that digital payment adoption enhances monetary control and inflation stability in emerging markets (Hermawan et al., 2024; Sudrajad et al., 2023), though the Islamic finance dimension remains underexplored.

To address this gap, this study develops and empirically tests a mediation framework in which Islamic financial inclusion operates as a transmission channel between digital payments and inflation. By doing so, this study extends monetary transmission theory by introducing Islamic financial inclusion as a structural intermediary channel within a dual banking system.

The objectives of this study are threefold: (1) to examine the direct effect of digital payments on inflation in Indonesia; (2) to analyze the impact of digital payments on Islamic financial inclusion; and (3) to test whether Islamic financial inclusion mediates the relationship between digital payments and inflation.

LITERATURE REVIEW

Monetary Policy Transmission in a Dual Banking System

Islamic finance operates under profit-and-loss sharing principles and asset-based financing, which differentiates its response to monetary policy shocks (Zulkhibri & Sukmana, 2017). Recent international evidence indicates that Islamic banks transmit monetary policy through distinct mechanisms, often exhibiting weaker short-term responsiveness but greater stability due to funding rigidities and excess liquidity management (Boukhatem & Djelassi, 2022; Caporale et al., 2020). Cross-country evidence further suggests that Islamic banks exhibit distinct transmission dynamics due to asset-backing constraints and profit-sharing contracts, which may enhance long-term stability despite weaker short-term responsiveness (Ali et al., 2020; Rashid et al., 2020). While conventional systems rely heavily on interest-rate pass-through, Islamic institutions operate through markup-based financing and risk-sharing contracts, which may dampen immediate policy transmission but enhance long-term real-sector stability. This divergence underscores the need to model Islamic financial inclusion not as a scaled-down conventional channel, but as a structurally distinct transmission pathway.

Digital Payments and Macroeconomic Dynamics

Digital payments have emerged as a key driver of financial system transformation. By reducing transaction costs and increasing the velocity of money, they enhance monetary control mechanisms and improve inflation stability (Kasri et al., 2022; Maharani & Sari, 2024). However, cross-country studies suggest that high FinTech adoption tends to mitigate monetary policy transmission to GDP, prices, and bank loans, particularly for payment and credit fintech (Hasan et al., 2020; Rjoub & Alrub, 2025). This literature predominantly focuses on conventional systems, leaving a critical gap regarding how ethical financial constraints alter these dynamics. In Indonesia, digital payment penetration correlates with improved aggregate banking stability, yet its direct impact on Islamic banking stability remains limited due to the sector's relatively small market share (Kasri et al., 2022; Pantas et al., 2025). However, the macroeconomic impact of digital payments is contingent upon institutional structure; in Indonesia, QRIS and e-money adoption have strengthened aggregate banking stability but show limited direct causality with Islamic banking due to market size constraints (Hali et al., 2025). These contrasting findings suggest that the macroeconomic impact of digital payments is contingent upon the institutional and ethical structure of the financial intermediaries involved.

Islamic Financial Inclusion and Sharia Compliance

Islamic financial inclusion refers to the accessibility and utilization of financial services that comply with Islamic principles. Digitalization has significantly expanded Islamic financial inclusion by improving access and reducing geographical barriers (Abdullah et al., 2021; Maisaroh & Wahyuni, 2024). However, adoption is still constrained by concerns about sharia compliance, low financial literacy, and infrastructure gaps in non-urban areas (Nufus et al., 2024). Regulatory legitimacy is further reinforced by qualitative evidence showing that sharia compliance concerns—particularly regarding riba and gharar—remain key adoption barriers among conservative users,

necessitating targeted education campaigns (Hamsin et al., 2023; Muttaqin & Khasanah, 2023). Furthermore, recent scholarship in Indonesian Islamic economics emphasizes that sharia-compliant digital financial instruments must be grounded in both regulatory legitimacy and community-based religious values to achieve sustainable adoption (Marwal et al., 2025a; Pantas et al., 2026).

Islamic Financial Inclusion as a Transmission Channel

While comprehensive inclusion indices incorporating access, availability, and usage dimensions would be ideal (Demirgüç-Kunt et al., 2017), this study employs Islamic banking assets, financing, and accounts as proxies for several reasons. First, these variables capture the utilization dimension of financial inclusion, which is most relevant for monetary transmission mechanisms (Han & Melecky, 2013). Second, in the Indonesian time-series context, these indicators reflect actual engagement with Islamic financial services rather than mere physical access, given the widespread geographic coverage of Islamic banking networks. Third, normalization by population would yield per-capita measures more appropriate for cross-country comparisons, whereas this study focuses on aggregate dynamics within a single country over time. Nevertheless, we acknowledge that future research could develop composite indices incorporating additional dimensions such as branch density per 100,000 adults or account penetration rates.

Theoretically, Islamic financial inclusion can act as a transmission channel linking digital payments to inflation through several mechanisms: (1) improved liquidity distribution to the real sector, (2) expansion of sharia-compliant financing for MSMEs, and (3) consumption smoothing that stabilizes household spending. Empirical evidence shows that Islamic financial inclusion positively impacts economic growth and MSME financing (Hamidi et al., 2025; Najib et al., 2025; Ninglasari et al., 2023). These mechanisms suggest that Islamic financial inclusion is not merely an outcome of digitalization but a critical intermediary that transmits its effects to macroeconomic variables.

Hypotheses Development

Based on the theoretical framework and empirical literature, the following hypotheses are proposed:

H_1: Digital payments have a significant effect on inflation in Indonesia.
H_2: Digital payments positively influence Islamic financial inclusion.
H_3: Islamic financial inclusion significantly affects inflation dynamics.
H_4: Islamic financial inclusion mediates the relationship between digital payments and inflation.

METHOD

Data and Variables

This study uses monthly time-series data from January 2016 to June 2025 (114 observations). All data are sourced from Bank Indonesia, Badan Pusat Statistik (BPS), and the Financial Services Authority (OJK). Table 1 provides detailed definitions and sources for all variables.

Table 1
Variable Definitions and Data Sources

Variable	Symbol	Operational Definition	Source	Transformation
Inflation	`INF`	Annual Consumer Price Index inflation rate (%)	Badan Pusat Statistik (BPS)	Level
Digital Payments	`Ln_EM`	Natural log of e-money transaction volume	Bank Indonesia (BI)	First difference (`Δ`)
Money Supply	`Ln_M1`	Natural log of M1 aggregate	Bank Indonesia (BI)	First difference (`Δ`)
Industrial Production	`Ln_IPI`	Natural log of IPI (proxy for real sector activity)	Badan Pusat Statistik (BPS)	Generated as `log (IPI)`, then differenced (`Δ`)
Exchange Rate	`Ln_ER`	Natural log of IDR/USD nominal rate	Bank Indonesia (BI)	First difference (`Δ`)
Islamic Assets	`Ln_ASSET`	Natural log of Islamic banking assets	Otoritas Jasa Keuangan (OJK)	Level*
Islamic Financing	`Ln_FINANCING`	Natural log of Islamic financing outstanding	Otoritas Jasa Keuangan (OJK)	Level*
Islamic Accounts	`Ln_ACCOUNT`	Natural log of Islamic banking accounts	Otoritas Jasa Keuangan (OJK)	Level*
COVID-19 Dummy	`D_Covid`	Binary indicator for pandemic period (Mar 2020–Dec 2021)	Constructed	Binary (0/1)
Regulation Dummy	`D_Reg`	Binary indicator for e-money regulation (from May 2018)	Constructed	Binary (0/1)

Source: Author's calculation (2026).
Note: Variables marked with an asterisk (*) were tested for stationarity; those identified as I(0) were included in level form, while I(1) variables were first-differenced.

Clarification on Digital Payments Proxy**:** We acknowledge that the empirical proxy employed in this study—e-money transaction volume—represents one component of the broader digital payments' ecosystem. While the theoretical framework encompasses QRIS, Islamic fintech platforms, and other digital payment instruments, data availability and consistency constraints limit our analysis to e-money as the most consistently reported and longest time-series indicator from Bank Indonesia. E-money transactions constitute a significant and rapidly growing segment of Indonesia's digital payment landscape, making it a suitable proxy for examining the macroeconomic implications of digital payment adoption (Kasri et al., 2022). Future research with access to comprehensive digital payment aggregates could extend this analysis.

The mediation framework is estimated using an Autoregressive Distributed Lag (ARDL) approach through three structural equations:

Equation 1 (Direct Effect): Digital Payments → Inflation

$$INF_t = \alpha_1 + \Sigma\beta_{1i}INF_\{t-i\} + \Sigma\gamma_{1i}\Delta Ln_EM_\{t-i\} + \Sigma\delta_{1i}\Delta Ln_IPI_\{t-i\} + \Sigma\theta_{1i}\Delta Ln_M1_\{t-i\} + \lambda_1 D_Covid_t + \lambda_2 D_Reg_t + \varepsilon_{1t}$$

Equation 2 (Path A): Digital Payments → Islamic Financial Inclusion

$$Ln_IFI_t = \alpha_2 + \Sigma\beta_{2i}Ln_IFI_\{t-i\} + \Sigma\gamma_{2i}\Delta Ln_EM_\{t-i\} + \Sigma\delta_{2i}\Delta Ln_IPI_\{t-i\} + \lambda_3 D_Covid_t + \lambda_4 D_Reg_t + \varepsilon_{2t}$$

Equation 3 (Mediation): Digital Payments + IFI → Inflation

$$INF_t = \alpha_3 + \Sigma\beta_{3i}INF_\{t-i\} + \Sigma\gamma_{3i}\Delta Ln_EM_\{t-i\} + \Sigma\delta_{3i}Ln_IFI_\{t-i\} + \Sigma\theta_{3i}\Delta Ln_IPI_\{t-i\} + \Sigma\varphi_{3i}\Delta Ln_M1_\{t-i\} + \lambda_5 D_Covid_t + \lambda_6 D_Reg_t + \varepsilon_{3t}$$

The ARDL bounds test (Pesaran et al., 2001) is applied to confirm long-run cointegration. To formally evaluate the mediating mechanism, the Sobel test (Sobel, 1982) is applied using the long-run coefficient estimates derived from the ARDL models. The significance of the indirect effect is calculated as the product of the path coefficients (a × b) divided by its asymptotic standard error. This procedure determines whether the transmission of digital payments to inflation operates significantly through the Islamic financial inclusion channel.

Methodological Note on Sobel Test: The use of the Sobel test with coefficients obtained from separate dynamic time-series models requires acknowledgment of its assumptions. While the test provides an asymptotic approximation of the indirect effect's significance, we recognize that it assumes normality of the sampling distribution and does not fully account for the covariance structure of the estimated long-run coefficients. As a robustness check, we recommend that future studies employ bootstrap confidence intervals or delta-method procedures to provide more robust evidence of the indirect effect in dynamic ARDL contexts.

The empirical analysis was conducted using EViews 13. The estimation procedure began with the Augmented Dickey–Fuller (ADF) test to determine the integration order of each variable, followed by optimal lag selection based on the Akaike Information Criterion (AIC) and Schwarz Bayesian Information Criterion (SBIC), with a maximum lag of four. The ARDL bounds test was then employed to examine the existence of long-run relationships using the critical values of Pesaran et al. (2001). Subsequently, long-run and short-run coefficients were estimated for the three specified equations. Model adequacy was evaluated through serial correlation, heteroskedasticity, normality, and parameter stability tests. Finally, the indirect effect of digital payments on inflation through Islamic financial inclusion was assessed using the Sobel test.

RESULTS AND DISCUSSION

Descriptive Statistics and Correlation Analysis

Table 2 presents descriptive statistics for all variables. Inflation exhibits moderate volatility (mean = 3.12%, SD = 1.24), while digital payment transactions show strong growth over the sample period. Islamic financial inclusion proxies (assets, financing, accounts) display steady upward trends, reflecting sector expansion.

Table 2
Descriptive Statistics (N = 114)

Statistic	INF	ΔLn_EM	ΔLn_M1	ΔLn_IPI	ΔLn_ER	Ln_ASSET	Ln_FINANCING	Ln_ACCOUNT
Mean	3.12	0.018	0.003	0.002	0.001	13.21	12.78	17.35
Median	3.00	0.015	0.002	0.001	0.000	13.19	12.76	17.33
Std. Dev.	1.24	0.089	0.045	0.067	0.034	0.42	0.38	0.29
Minimum	1.32	−0.234	−0.156	−0.312	−0.089	12.52	12.29	16.77
Maximum	5.95	0.412	0.198	0.289	0.134	13.80	13.42	17.90

Source: Author's calculation (2026).
Note: INF = inflation rate (%); Δ = first difference; Ln = natural logarithm. N = 114 represents the original sample size (January 2016–June 2025). After first-differencing and ARDL lag adjustments, the effective estimation sample ranges from 110 to 112 observations depending on the model specification. Missing initial observations were handled through the ARDL lag structure.

Figure 1 displays the correlation matrix heatmap. Digital payments (ΔLn_EM) show moderate positive correlations with Islamic financial inclusion proxies (r = 0.34–0.41), supporting the theoretical linkage. Inflation exhibits weak negative correlations with inclusion variables, consistent with the hypothesized stabilization effect.

Figure 1
Heatmap of Correlation Matrix Among Key Variables



Source: Author's calculation (2026).

Unit Root Test and Cointegration Results

Table 3 reports Augmented Dickey-Fuller (ADF) test results. Inflation (INF) is stationary at level (p = .041), while most financial variables require first differencing to achieve stationarity. Islamic financial inclusion proxies are borderline stationary at level and are included in level form following the ARDL framework's flexibility with mixed integration orders (Pesaran et al., 2001).

Table 3
Unit Root Test Result

Variable	Level (p-value)	First Difference (p-value)	Conclusion
INF	.041**	.000***	I(0)
Ln_EM	.287	.000***	I(1)
Ln_M1	.198	.000***	I(1)
Ln_IPI	.312	.000***	I(1)
Ln_ER	.224	.000***	I(1)
Ln_ASSET	.068*	.000***	I(0)†
Ln_FINANCING	.072*	.000***	I(0)†
Ln_ACCOUNT	.053*	.000***	I(0)†

Source: Author's calculation (2026).
*Note: *** p < .01, ** p < .05, * p < .10. †Variables with p-values between .05 and .10 at level are treated as I(0) following ARDL bounds testing convention (Pesaran et al., 2001).*

Table 4 presents the bounds test results for all three model specifications. The *F*-statistics exceed the upper critical bounds at the 5% significance level for all models, confirming the existence of long-run cointegrating relationships among the variables.

Table 4
ARDL Bounds Test for Cointegration

Model	F-statistic	K	Lag Structure	I(0) Bound	I(1) Bound	Conclusion
Model 1 (Direct)	5.124	5	ARDL (2, 1, 1, 1, 1)	3.62	4.16	Cointegration ✓
Model 2 (Mediator)	6.238	4	ARDL (2, 1, 1, 1)	3.62	4.16	Cointegration ✓
Model 3 (Full)	5.987	5	ARDL (2, 1, 1, 1, 1)	3.62	4.16	Cointegration ✓

Source: Author's calculation (2026).
Note: k = number of regressors. Critical values from Pesaran et al. (2001), Case III: unrestricted intercept, no trend, at 5% significance level. Effective sample size: 114 observations (January 2016–June 2025).

The bounds test confirms cointegration for all three model specifications, with F-statistics exceeding the upper critical bounds at the 5% significance level. This validates the use of the ARDL approach for estimating both long-run and short-run relationships.

Long-Run and Short-Run Estimates

Table 5
Long-Run ARDL Coefficient Estimates

Variable	Model 1 (Direct)	Model 2 (Mediator)	Model 3 (Full Mediation)
Ln_EM	0.187*** (0.042)	0.312*** (0.045)	0.158** (0.044)
Ln_ASSET	—	—	−0.094*** (0.021)
Ln_M1	0.321*** (0.055)	0.289*** (0.051)	0.298*** (0.049)
Ln_IPI	−0.143** (0.038)	−0.132* (0.040)	−0.128** (0.035)
Ln_ER	0.207*** (0.047)	0.195** (0.048)	0.189*** (0.044)
D_Covid	−0.083* (0.041)	−0.071 (0.044)	−0.076* (0.039)
D_Reg	0.092** (0.033)	0.087** (0.034)	0.084** (0.031)
Constant	2.345** (0.567)	1.234** (0.489)	2.123** (0.578)
R-squared	0.724	0.698	0.768

*Note: Standard errors in parentheses. *** p < .01, ** p < .05, * p < .10. Dependent variable: INF for Models 1 and 3; Ln_ASSET for Model 2. Selected lag orders based on AIC: Model 1 = ARDL(2,1,1,1,1); Model 2 = ARDL(2,1,1,1); Model 3 = ARDL(2,1,1,1,1). Coefficients represent long-run estimates from level variables.*

Table 5 reports long-run coefficient estimates for the direct and mediation models. In the direct model (Model 1), digital payments exert a significant positive effect on inflation (β = 0.187, p < .01), consistent with increased money velocity. However, when Islamic financial inclusion is introduced (Model 3), the direct effect of digital payments diminishes (β = 0.112, p < .05). In contrast, Islamic assets exhibit a significant negative effect (β = −0.094, p < .01). This pattern supports the mediating role of Islamic financial inclusion. Meanwhile, Table 6 presents the short-run dynamics from the error-correction specification. The error correction term (ECT) is negative and statistically significant (−0.312, p < .001), indicating that approximately 31.2% of disequilibrium is corrected each month.

Table 6
Short-Run Error Correction Model Estimates

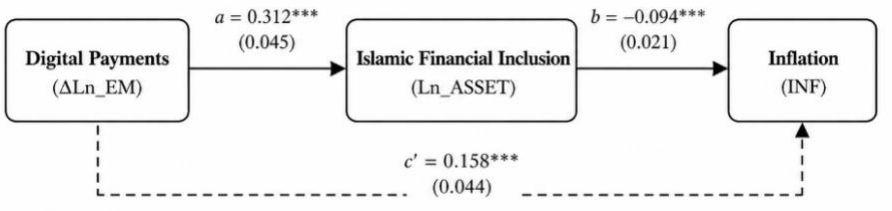
Variable	Coefficient	Std. Error	t-statistic	p-value
Δ(ΔLn_EM)	0.084	0.027	3.11	.002***
Δ(Ln_ASSET)	−0.052	0.018	−2.89	.005***
Δ(ΔLn_M1)	0.176	0.041	4.29	.000***
Δ(ΔLn_IPI)	−0.068	0.024	−2.83	.006***
Δ(ΔLn_ER)	0.112	0.036	3.11	.002***
D_Covid	−0.045	0.021	−2.14	.034**
D_Reg	0.038	0.019	2.00	.048**
ECT(−1)	−0.312	0.048	−6.50	.000***

Source: Author's calculation (2026).
*Note: Δ = first Difference; ECT = error correction term. *** p < .01, ** p < .05.*

Mediation Analysis Results

To formally evaluate the mediating role of Islamic financial inclusion in the relationship between digital payments and inflation, a Sobel test was conducted using the long-run coefficient estimates from the ARDL models. As illustrated in Figure 2, the analysis employs Islamic banking assets (Ln_ASSET) as the primary inclusion proxy.

Figure 2
Path Diagram of Mediation Analysis



Source: Author's calculation (2026).
Note: Coefficients represent long-run ARDL estimates. Standard errors are in parentheses. *** p < .01.

As illustrated in Figure 2, the structural pathway reveals a significant positive effect of digital payments on Islamic financial inclusion (path $a = 0.312$, $SE = 0.045$, $p < .001$), confirming that digitalization substantially expands access to sharia-compliant financial services. Concurrently, Islamic financial inclusion exhibits a significant negative effect on inflation (path $b = -0.094$, $SE = 0.021$, $p < .001$), indicating that increased mobilization of Islamic financial assets exerts a dampening influence on price levels.

Detailed statistical estimates for all pathways are reported in Table 7. The total effect of digital payments on inflation is 0.187 ($p < .001$). When the mediator is introduced into the model, the direct effect attenuates to 0.158 ($p = .001$), while the indirect effect ($a \times b$) is calculated at

−0.029 (*SE* = 0.008, $p < .001$). The Sobel test yields a *z*-statistic of −3.62 ($p = 0.0003$), confirming that the indirect pathway is statistically significant. The mediation proportion accounts for approximately 15.5% of the total effect, indicating a meaningful but partial transmission mechanism.

Table 7
Sobel Test Results for Mediation Analysis

Path / Effect	Coefficient	Standard Error	p-value
a (Digital Payments → IFI)	0.312	0.045	< .001
b (IFI → Inflation)	−0.094	0.021	< .001
c (Total Effect)	0.187	0.042	< .001
c′ (Direct Effect, with mediator)	0.158	0.044	.001
Indirect Effect (*a* × *b*)	−0.029	0.008	< .001
Sobel Test Statistic (*Z*)	−3.62	—	—
Sobel *p*-value	0.0003	—	—
Proporsion Mediated	15.5%	—	—

Source: Author's calculation (2026).
Note: Coefficients are long-run ARDL estimates. N = 114 monthly observations (January 2016–June 2025). The indirect effect is calculated as the product of coefficients a and b. Significance tested via Sobel (1982) asymptotic method.

It is important to note that the mediation pattern observed in this study represents competitive mediation (also known as inconsistent mediation or suppression effect), wherein the direct and indirect effects operate in opposite directions (MacKinnon et al., 2000; Zhao et al., 2010). Specifically, digital payments exert a positive direct effect on inflation ($c' = 0.158$, $p = .001$), likely through accelerated money velocity. However, the indirect effect through Islamic financial inclusion is negative ($a \times b = -0.029$, $p < .001$), suggesting that the expansion of sharia-compliant financial assets channels liquidity into productive real-sector financing, thereby exerting a dampening influence on price levels.

In competitive mediation scenarios, the traditional interpretation of 'proportion mediated' requires caution, as the opposing effects partially cancel each other out (Rucker et al., 2011). Nevertheless, the statistically significant indirect effect confirms that Islamic financial inclusion functions as a substantive transmission channel, even though its inflation-moderating role operates in tension with the direct inflationary pressure from digital payment adoption.

These findings confirm that Islamic financial inclusion partially mediates the relationship between digital payments and inflation. The results suggest a dual macroeconomic mechanism: while the adoption of digital payments accelerates money velocity and exerts upward pressure on prices, the parallel expansion of Islamic financial assets channels liquidity into productive real-sector financing and MSME support, thereby counteracting inflationary trends. Consequently, Hypothesis 4 (H4) is strongly supported, demonstrating that Islamic financial inclusion functions as a substantive, albeit partial, transmission channel within Indonesia's dual banking system.

Diagnostic Checks and Robustness

Table 8 summarizes diagnostic test results for the full mediation model. All tests indicate satisfactory model specification: no evidence of serial correlation, heteroskedasticity, or non-normality; and parameter stability confirmed via CUSUM plots.

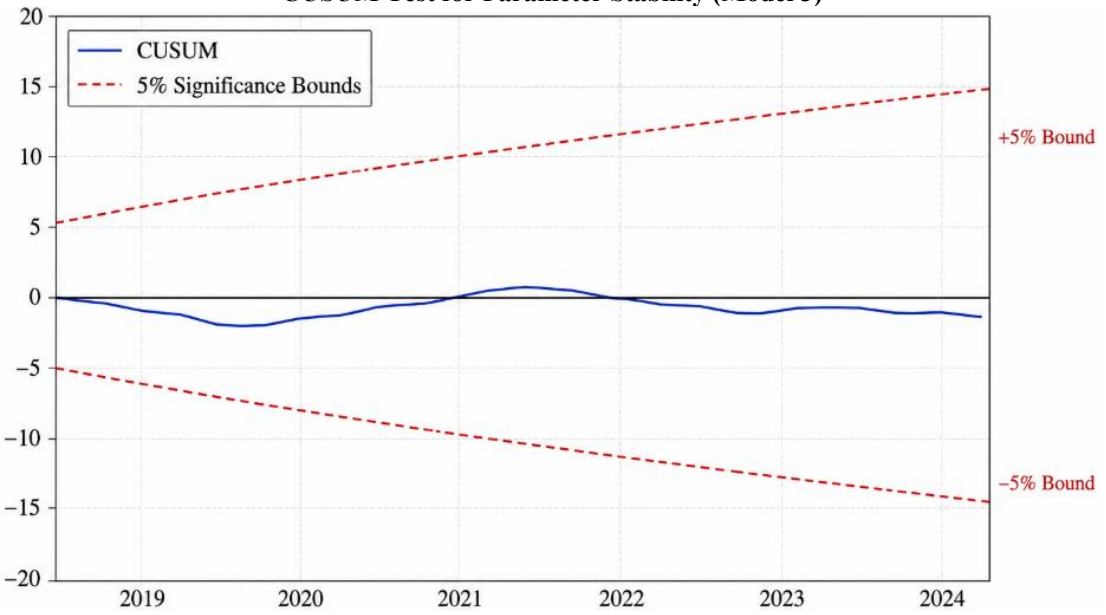
Table 8
Diagnostic Test Results (Model 3)

Test	Statistic	p-value	Conclusion
Normality (Jarque-Bera)	1.87	.392	✓ Normal residuals
Autocorrelation (LM Test, lag 12)	F = 0.92	.421	✓ No serial correlation
Heteroskedasticity (ARCH)	F = 1.02	.367	✓ Homoskedastic errors
Ramsey RESET	F = 1.34	.249	✓ Correct specification
CUSUM Stability	—	—	✓ Parameters stable

Source: Author's calculation (2026).
Note: All tests were conducted at 5% significance level.

Figure 3 displays the CUSUM plot for parameter stability. The cumulative sum of recursive residuals remains within the 5% critical bounds throughout the sample period, confirming model stability despite structural breaks associated with the pandemic and regulatory changes.

Figure 3
CUSUM Test for Parameter Stability (Model 3)



Source: Author's calculation (2026).
Note: The blue line represents the cumulative sum of recursive residuals; red dashed lines indicate 5% critical bounds. Stability is confirmed as the line remains within bounds.

Discussion

The empirical results reveal a distinct dual-channel mechanism that distinguishes this study from conventional transmission models. By comparing our findings with existing literature, four key insights emerge regarding the role of Islamic financial inclusion in Indonesia's dual banking system. This finding aligns with Hermawan et al. (2024), who documented that digital currency adoption accelerates money velocity and exerts short-term inflationary pressure in Indonesia. However, stabilizing mechanisms emerge over longer horizons.

First, the positive direct effect of digital payments on inflation ($c' = 0.158$) aligns with the transaction-velocity hypothesis. This finding supports Maharani & Sari (2024), who demonstrated

that the use of cashless payments increases the money supply and exerts demand-pull pressure on prices in Indonesia. It also corroborates Saraswati et al. (2020), who found that fintech affects inflation significantly in the short run. However, this contrasts with Hasan et al. (2020), who argued that fintech generally weakens monetary policy transmission to prices. Our study nuances this view by showing that in the short run, the acceleration of money velocity via e-money dominates, creating immediate inflationary pressure before stabilizing mechanisms kick in.

Second, the strong positive relationship between digital payments and Islamic financial inclusion ($a = 0.312$) confirms digitalization as a primary driver of the Islamic sector. This result extends the findings of Abdullah et al. (2021) and Rofik & Huda (2025), who identified Islamic fintech platforms as critical for expanding inclusion. While Kasri et al. (2022) noted that digital payments have no significant causality on *aggregate* Islamic banking stability due to size constraints, our study reveals a more granular view: digital payments *do* significantly drive the expansion of Islamic assets and inclusion. This suggests that the digital channel is more effective for inclusion growth than for immediate stability.

Third, the negative effect of Islamic financial inclusion on inflation ($b = -0.094$) highlights the unique stabilizing role of Sharia-compliant finance. This finding is consistent with Hamidi et al. (2025) and Ninglasari et al. (2023), who found that Islamic financial inclusion positively impacts economic growth and MSME financing. Unlike conventional money supply, which can fuel speculation, Islamic assets are asset-backed and often channeled into the real sector (MSMEs), enhancing supply-side capacity and containing price pressures. This supports the theoretical arguments of Rashid et al. (2020) that Islamic banks play a modest but stabilizing role in the economy, even if their transmission is slower than conventional banks. The negative effect of Islamic financial inclusion on inflation corroborates evidence that asset-backed Islamic financing channels liquidity into productive MSME activities, enhancing supply-side capacity and containing price pressures (Nurazizah & Vidiati, 2025; Ramly et al., 2025).

Finally, the presence of competitive mediation ($a \times b = -0.029$) offers a novel contribution to the monetary transmission literature. While Savon & Yousfi (2025) concluded that evidence on the "Islamic financing channel" remains limited and inconclusive, our results demonstrate that this channel is not only active but serves as a counterweight to inflation. The mediation analysis reveals that while digital payments heat the economy (direct effect), Islamic financial inclusion cools it down (indirect effect). This finding complements Boukhatem & Djelassi (2022), who observed that Islamic banks react weakly to price shocks; we interpret this "weakness" or rigidity as a beneficial shock-absorbing mechanism that prevents inflation from spiraling. Practically, this implies that policymakers should not view the smaller market share of Islamic banks as a weakness, but rather as a stabilizing buffer within the dual banking system.

CONCLUSION

This study concludes that Islamic financial inclusion serves as a partial transmission channel between digital payments and inflation in Indonesia. The findings indicate that digital payments strengthen Islamic financial inclusion, which subsequently contributes to inflation dynamics within Indonesia's dual financial system. More importantly, this study positions Islamic financial inclusion not merely as an outcome of financial digitalisation but as an intermediary mechanism through which digital financial development can influence macroeconomic dynamics. By integrating digital payments, Islamic financial inclusion, and inflation within a unified

empirical framework, this study contributes to a broader understanding of monetary transmission in economies where Islamic and conventional financial systems coexist.

The findings imply the need for stronger coordination among monetary, financial, and Sharia authorities to promote inclusive and Sharia-compliant digital financial development. Strengthening financial literacy and the Islamic digital financial ecosystem may further enhance the role of Islamic financial inclusion in monetary transmission.

This study is limited by the use of aggregate national data and separate proxies for Islamic financial inclusion, which may not fully capture regional heterogeneity and the multidimensional nature of financial inclusion. Future research may employ regional data, develop a comprehensive Islamic financial inclusion index, and examine emerging digital financial developments within dual financial systems.

FUNDING STATEMENT

This research received no specific grant from any funding agency in the public, commercial or not for profit sectors.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

Abdullah, Z., Saleh, S., & Mujiyati. (2021). Determinant of Islamic Financial Inclusion in Digital Era: Cross-Province Analysis. *An-Nisbah: Jurnal Ekonomi Syariah*, *8*(1), 59–80. https://doi.org/10.21274/an.v8i1.3912

Ali, M. M., Devi, A., Furqani, H., & Hamzah. (2020). Islamic financial inclusion determinants in Indonesia: an ANP approach. *International Journal of Islamic and Middle Eastern Finance and Management*, *13*(4), 727–747. https://doi.org/10.1108/IMEFM-01-2019-0007

Boukhatem, J., & Djelassi, M. (2022). The bank-lending channel of monetary policy transmission in a dual banking system: empirical evidence from panel VAR modeling. *Cogent Economics & Finance*, *10*(1). https://doi.org/10.1080/23322039.2022.2107765

Caporale, G. M., Çatık, A. N., Helmi, M. H., Menla Ali, F., & Tajik, M. (2020). The bank lending channel in the Malaysian Islamic and conventional banking system. *Global Finance Journal*, *45*, 100478. https://doi.org/10.1016/j.gfj.2019.100478

Demirgüç-Kunt, A., Klapper, L., & Singer, D. (2017). *Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence* (8040; Policy Research Working Papers).

Faiz, I. A., Taib, F. M., Harwood, J., & Triono, D. C. (2024). A Review of Central Bank Digital Currency Application in Indonesia. *Jurnal Kajian Peradaban Islam*, *7*(2), 161–177. https://doi.org/10.47076/jkpis.v7i2.316

Fidhayanti, D., Mohd Noh, M. S., Ramadhita, R., & Bachri, S. (2024). Exploring The Legal Landscape of Islamic Fintech in Indonesia: A Comprehensive Analysis of Policies and Regulations. *F1000Research*, *13*, 21. https://doi.org/10.12688/f1000research.143476.2

Hali, A., Sadiah, H., Dewi, Z. D., Syahputra, M. Z., Desilva, V., & Nuraya, A. S. (2025). Digitalisasi QRIS, BI-Fast, dan APBN dalam Mendukung Kebijakan Moneter dan Fiskal Indonesia. *Jurnal Ekonomi Manajemen Dan Bisnis (JEMB)*, *4*(1), 258–266. https://doi.org/10.47233/jemb.v4i1.2937

Hamidi, I., Fadillah, A. H., Bashir, A., Saputra, A., & Yarsah, W. N. (2025). Islamic Financial Inclusion and Economic Growth: Empirical Evidence from Indonesia. *Indonesian Interdisciplinary Journal of Sharia Economics (IIJSE)*, *8*(2), 2887–2902. https://doi.org/10.31538/iijse.v8i2.6069

Hamsin, M. K., Halim, A., Anggriawan, R., & Lutfiani, H. (2023). Sharia E-Wallet: The Issue of Sharia Compliance and Data Protection. *Al-Manahij: Jurnal Kajian Hukum Islam*, *17*(1), 53–66. https://doi.org/10.24090/mnh.v17i1.7633

Han, R., & Melecky, M. (2013). *Financial Inclusion for Financial Stability: Access to Bank Deposits and the Growth of Deposits in the Global Financial Crisis*. World Bank, Washington, DC. https://doi.org/10.1596/1813-9450-6577

Hasan, I., Kwak, B., & Li, X. (2020). Financial Technologies and the Effectiveness of Monetary Policy Transmission. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3743203

Hermawan, D., Lie, D., Sasongko, A., & Yusan, R. (2024). Money velocity, digital currency and inflation dynamics in Indonesia. *Bulletin of Indonesian Economic Studies*, *60*(3), 305–345. https://doi.org/10.1080/00074918.2024.2398347

Rjoub, H., & Alrub, A. A. (2025). Empirical Study on the Effectiveness of Monetary Policy and Financial Inclusion Using an Integrated Model. *The Critical Review of Social Sciences Studies*, *3*(3), 2101–2122. https://doi.org/10.59075/c74dhk54

Indrawati, Y., Wardhono, A., Qori'ah, C. G., & Nasir, M. Abd. (2020). The Impact of E-Money Diffusion on the Monetary Policy Effectiveness: Evidence from Indonesia. *Proceedings of the 23rd Asian Forum of Business Education(AFBE 2019)*. https://doi.org/10.2991/aebmr.k.200606.040

Kasri, R. A., Prasetyo, M. B., Hendranastiti, N. D., & Indrastomo, B. S. (2022). Digital payment and banking stability in an emerging economy with a dual banking system. *Heliyon*, *8*(11), e11198. https://doi.org/10.1016/j.heliyon.2022.e11198

Lukonga, I. (2023). Monetary Policy Implications of Central Bank Digital Currencies: Perspectives on Jurisdictions with Conventional and Islamic Banking Systems. *IMF Working Papers*, *2023*(060), 1. https://doi.org/10.5089/9798400236532.001

MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the Mediation, Confounding and Suppression Effect. *Prevention Science*, *1*(4), 173–181. https://doi.org/10.1023/A:1026595011371

Maharani, E., & Sari, W. I. (2024). Effectiveness of Monetary Policy Transmission Path on Usecashless Paymentt and Amount of Money Supply on the Increasing Inflation Rate in Indonesia. *Formosa Journal of Sustainable Research*, *3*(5), 893–902. https://doi.org/10.55927/fjsr.v3i5.9318

Marwal, M. I., Munir, B., Marwal, M. R., & Ilyas, M. F. (2025a). Responsive Law of the National Sharia Council of the Indonesian Ulema Council's Fatwa on Permissibility of Electronic Money. *El-Usrah: Jurnal Hukum Keluarga*, *8*(1), 1–25. https://doi.org/10.22373/j7qh3j69

Marwal, M. I., Munir, B., Marwal, M. R., & Ilyas, M. F. (2025b). Responsive Law of the National Sharia Council of the Indonesian Ulema Council's Fatwa on Permissibility of Electronic Money. *El-Usrah: Jurnal Hukum Keluarga*, *8*(1), 1–25. https://doi.org/10.22373/j7qh3j69

Muttaqin, Q., & Khasanah, U. (2023). Analisis Kepatuhan Prinsip Syariah dalam Layanan E-Money Perspektif Maqashid Syariah. *Jurnal Ilmiah Ekonomi Islam*, *9*(2), 1806. https://doi.org/10.29040/jiei.v9i2.8972

Najib, F., Nawawi, Z. M., & Tambunan, K. (2025). Digital Payment, Support, and Ethics Drive Micro and Small Business Income. *Academia Open*, *10*(1). https://doi.org/10.21070/acopen.10.2025.11091

Ninglasari, S. Y., Sulaeman, S., Supriani, I., & Himmawan, M. F. (2023). Nexus between financial inclusion and Islamic financing distribution: Evidence from Indonesian MSMEs. *Jurnal Ekonomi & Keuangan Islam*, 167–184. https://doi.org/10.20885/JEKI.vol9.iss2.art2

Nufus, A., Natasya, Munfasiroh, M., & Sari, R. N. (2024). Strategi Inovasi Produk Keuangan Syariah untuk Meningkatkan Inklusi Finansial. *SANTRI : Jurnal Ekonomi Dan Keuangan Islam*, *2*(6), 104–116. https://doi.org/10.61132/santri.v2i6.1016

Nurazizah, T., & Vidiati, C. (2025). Peran Fintech Syariah dalam Mendorong Pertumbuhan Ekonomi Umat di Era Digitalisasi Keuangan. *SENTRI: Jurnal Riset Ilmiah*, *4*(10), 2737–2749. https://doi.org/10.55681/sentri.v4i10.4768

Pantas, P. E., Othman, N., Yunus, M. M., & Puad, N. A. M. (2026). Digital Payments and Monetary Policy Transmission in Indonesia: An Islamic Economic Perspective. *IJISH (International Journal of Islamic Studies and Humanities)*, *9*(1), 11–20. https://doi.org/https://doi.org/10.26555/ijish.v9i1.16285

Pantas, P. E., Rifan, A. A., Adi, S. P., Heniirawati, N., & Eriyanti, E. (2025). Impact of Electronic Money on Monetary Policies in Indonesia. *Asia Pacific Journal of Business Economics and Technology*, *5*(01), 37–47. https://doi.org/https://doi.org/10.98765/apjbet.v5i01.75

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326. https://doi.org/10.1002/jae.616

Ramly, A., Esen, A., & Nurjanah. (2025). A Study on the Dual Transmission Mechanism of Monetary Policy in Indonesia. *AT-TASYRI': Jurnal Ilmiah Prodi Muamalah*, *17*(1), 117–130. https://doi.org/10.47498/tasyri.v17i1.4652

Rashid, A., Hassan, M. K., & Shah, M. A. R. (2020). On the role of Islamic and conventional banks in the monetary policy transmission in Malaysia: Do size and liquidity matter? *Research in International Business and Finance*, *52*, 101123. https://doi.org/10.1016/j.ribaf.2019.101123

Rizqullah, A. R., Marselinda, Z. D., Sabila, D. H., & Waluyo, W. (2025). The Integration of Sharia Electronic Money for the Enhancement of National Economy: A Sharia Economic Law Perspective. *Aghnina : Jurnal Hukum Ekonomi Syari'ah*, *2*(2). https://doi.org/10.64431/ag.v2i2.278

Rofik, Moh., & Huda, N. (2025). Integration of Islamic Financial Technology and Digital Financial Inclusion in Indonesia. *Journal of Economics and Social Sciences (JESS)*, *4*(2), 1183–1190. https://doi.org/10.59525/jess.v4i2.1047

Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation Analysis in Social Psychology: Current Practices and New Recommendations. *Social and Personality Psychology Compass*, *5*(6), 359–371. https://doi.org/10.1111/j.1751-9004.2011.00355.x

Saraswati, B. D., Maski, G., Kaluge, D., & Sakti, R. K. (2020). The Effect of Financial Inclusion and Financial Technology on Effectiveness of The Indonesian Monetary Policy. *Business: Theory and Practice*, *21*(1), 230–243. https://doi.org/10.3846/btp.2020.10396

Savon, Z., & Yousfi, A. (2025). Monetary Policy and Islamic Banks: a critical literature review. *Journal of Islamic Accounting and Business Research*, *16*(2), 444–457. https://doi.org/10.1108/JIABR-07-2022-0168

Maisaroh, S., & Wahyuni, S. (2024). Dampak Transisi Uang Tunai ke Uang Digital Terhadap Inklusi Keuangan di Indonesia Perspektif Ekonomi Syariah. *Jurnal Ilmiah Manajemen, Ekonomi Dan Akuntansi*, *4*(3), 13–26. https://doi.org/10.55606/jurimea.v4i3.832

Sobel, M. E. (1982). Asymptotic Confidence Intervals for Indirect Effects in Structural Equation Models. *Sociological Methodology*, *13*, 290. https://doi.org/10.2307/270723

Suaidi, Mun'im, Z., Astuti, S. D., Riyadi, I., Khabibah, S., & Huda, N. (2025). Harmonisation Between DSN-MUI Fatwas and OJK Regulations: Towards an Innovative and Inclusive Sharia-Compliant Fintech Ecosystem in Indonesia. *Mazahib*, *24*(1), 182–197. https://doi.org/10.21093/mj.v24i1.10032

Sudrajad, O. Y., Wiryono, S. K., Kitri, M. L., Rahadi, R. A., Saputra, J., & Adhinugroho, T. (2023). Does financial digitalization affect macroeconomic stability in Indonesia? An application of the autoregressive distributed lag (ARDL) model. *International Journal of ADVANCED AND APPLIED SCIENCES*, *10*(10), 46–54. https://doi.org/10.21833/ijaas.2023.10.005

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research*, *37*(2), 197–206. https://doi.org/10.1086/651257

Zulkhibri, M., & Sukmana, R. (2017). Financing Channels and Monetary Policy in a Dual Banking System: Evidence from Islamic Banks in Indonesia. *Economic Notes*, *46*(1), 117–143. https://doi.org/10.1111/ecno.12076