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Integrating Financial Inclusion and Digital Payment to Enhance MSMEs Financial Performance

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Abstract

This study investigates the effects of financial inclusion and digital payment adoption on the financial performance of Micro, Small, and Medium Enterprises (MSMEs) in Tasikmalaya, Indonesia. Grounded in the Resource-Based View (RBV) and Technology Acceptance Model (TAM), the study employs a quantitative explanatory design with primary data collected from 150 MSMEs. Hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0. Results confirm that financial inclusion ($\beta = 0.381$, $p < 0.001$) and digital payment adoption ($\beta = 0.452$, $p < 0.001$) both positively and significantly influence MSME financial performance, jointly explaining 64.1% of outcome variance ($R^2 = 0.641$). Digital payment demonstrated a stronger effect, underscoring the centrality of technological capability in MSME competitiveness. A complementary relationship between both constructs suggests that MSMEs integrating financial access with digital adoption achieve superior performance outcomes. These findings extend RBV and TAM to a regional emerging economy context and offer actionable guidance for policymakers, financial institutions, and fintech providers seeking to develop inclusive digital financial ecosystems in Indonesia.

Keywords: **Digital Payment, Financial Inclusion, Financial Performance, Financial Technology, MSMEs**

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are widely recognized as engines of economic growth, employment generation, and income distribution, particularly in emerging economies (Ayyagari, Beck, & Demirguc-Kunt, 2007; Ozili, 2021). In Indonesia, MSMEs contribute approximately 61% of national GDP and employ more than 97% of the workforce. At the sub-national level, Tasikmalaya is recognized as a hub of creative industries and local trade, with MSMEs active in handicrafts, textiles, batik, and culinary sectors. Despite their economic significance, many MSMEs in this region remain constrained by limited access to formal financial services and inadequate technological infrastructure, both of which impair their financial performance.

Access to formal financial services—including credit, savings, insurance, and payment systems—remains one of the most critical constraints for MSMEs in developing countries (Ayyagari et al., 2007; Ozili, 2021). Financial exclusion limits capital formation restricts investment opportunities, and renders MSMEs vulnerable to financial shocks. In this context, financial inclusion has emerged as a strategic policy priority aimed at extending affordable and accessible financial services to all economic actors, including MSMEs (World Bank, 2022; IMF, 2022). Empirical research has consistently demonstrated that financial inclusion improves MSME performance by facilitating access to capital, reducing financing costs, and enabling better liquidity management (Burke, Jayne, & Snapp, 2022; Hasan, Le, & Hoque, 2021; Hoang, Pham, & Nguyen, 2023)

Concurrently, the rapid advancement of financial technology (fintech) has transformed the financial landscape through the proliferation of digital payment systems such as QRIS (Quick Response Code Indonesian Standard), e-wallets, and mobile banking (Gomber, Koch, & Siering, 2017; Singh & Sinha, 2020). These technologies offer MSMEs tangible benefits, including lower transaction costs, improved cash flow visibility, faster payment processing, and enhanced financial record-keeping. The adoption of digital payment systems not only simplifies day-to-day transactions but also facilitates MSMEs' integration into the broader digital economy (Venkatesh & Bala, 2008).

Despite a growing body of literature on financial inclusion (Beck, Demirguc-Kunt, & Levine, 2005; Ozili, 2021) and digital finance (Gomber et al., 2017; Singh & Sinha, 2020), several research gaps remain. First, most extant studies are conducted at the national or cross-country level, with limited attention to specific regional contexts such as Tasikmalaya (Hoang et al., 2023). Second, financial inclusion and digital payment adoption are typically examined in isolation, rather than within an integrated analytical framework (Okello Candiya Bongomin & Munene, 2020). Third, quantitative evidence simultaneously investigating both variables' effects on MSME financial performance using primary data at the local level remains scarce (Johri et al., 2024; J. Yao et al., 2023).

To address these gaps, this study examines the simultaneous effects of financial inclusion and digital payment adoption on MSME financial performance in Tasikmalaya using PLS-SEM. Two formal research hypotheses are tested: (H1) financial inclusion significantly and positively affects MSME financial performance, and (H2) digital payment adoption significantly and positively affects MSME financial performance. The study contributes to theory by integrating RBV and

TAM into a unified framework, and to practice by offering actionable insights for policymakers, financial institutions, and fintech providers operating in Indonesia's MSME ecosystem.

LITERATURE REVIEW

Theoretical Foundation

This study is grounded in two complementary theoretical frameworks. First, the Resource-Based View (RBV), originally articulated by Barney (1991) and extended by Barney et al. (2011), posits that sustained competitive advantage arises from the possession and effective deployment of valuable, rare, inimitable, and non-substitutable (VRIN) resources (Peteraf, 1993; Wernerfelt, 1984). Within this framework, financial inclusion represents access to critical financial resources—including credit, savings, and insurance—that enable MSMEs to overcome capital constraints, invest in productive assets, and respond to market opportunities (Beck & Cull, 2014; IFC, 2017). Digital payment adoption, in turn, represents a technological capability that enhances operational efficiency and competitive positioning (Gomber et al., 2017; Lee & Shin, 2018). The integration of financial resources and digital capabilities is expected to produce a synergistic effect on firm performance (J. B. Barney, Ketchen Jr, & Wright, 2011; Eisenhardt & Martin, 2000; Teece, Pisano, & Shuen, 1997).

Second, the Technology Acceptance Model (TAM), proposed by Davis (1989) and extended through the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), explains the behavioral antecedents of technology adoption. TAM posits that perceived usefulness and perceived ease of use are the primary determinants of an individual's intention to adopt a technological system (Davis, 1989). Applied to digital payment adoption among MSME owners, TAM provides a theoretical basis for understanding how subjective evaluations of digital payment technology translate into actual adoption behavior and, subsequently, improved business performance outcomes (Ali, Warren, & Mathiassen, 2017; Khafif, Ouboumlik, & Touhami, 2025; Venkatesh & Bala, 2008).

Additionally, Financial Intermediation Theory (Stiglitz & Weiss, 1981) provides a complementary lens by highlighting the role of financial institutions in reducing information asymmetry and facilitating MSMEs' access to credit markets (Diamond, 1984; Freixas & Rochet, 2008). This theoretical perspective underscores the importance of institutional infrastructure in enabling financial inclusion, particularly for small firms that are disproportionately affected by credit rationing and adverse selection problems (Beck & Cull, 2014; Cull, Demirgüç-Kunt, & Morduch, 2014; Okello Candiya Bongomin & Munene, 2020).

Financial Inclusion and MSME Financial Performance

Financial inclusion is broadly defined as the accessibility and usage of a range of formal financial services, encompassing banking, credit, savings, and insurance (Demirgüç-Kunt, Klapper, Singer, & Ansar, 2021; Sarma & Pais, 2011). A substantial and growing body of empirical literature documents a positive association between financial inclusion and firm-level performance outcomes (Claessens & Rojas-Suarez, 2016; Cull et al., 2014). Hasan et al. (2021) analyzed panel data from 91 countries and found that financial inclusion significantly enhances economic growth and individual firm productivity by facilitating capital accumulation and investment. At the firm

level, Hoang et al. (2023) demonstrated, using data from 25 emerging market economies, that financial inclusion reduces financing constraints and improves profitability, particularly for small and medium enterprises. These findings are consistent with the broader argument that access to formal financial services lowers the cost of capital and strengthens firms' strategic resource base (Arun & Kamath, 2015; Munyegera & Matsumoto, 2016).

In the Indonesian context, Burke et al. (2022) documented a positive relationship between financial deepening and MSME growth, while (Okello Candiya Bongomin & Munene, 2020) showed that financial intermediation through microfinance institutions enhances SME financial management capabilities and revenue growth in Sub-Saharan Africa—a finding with analogous implications for Indonesia's under-served MSME sector. Ozili (2021), in a comprehensive review of the financial inclusion literature, identified improved access to credit and savings as the two most consistently reported drivers of MSME financial resilience (Demirgüç-Kunt et al., 2021; Ozili, 2021). Furthermore, Wu & Lin (2025) found that financial inclusion positively affects the sustainability and competitiveness of MSMEs in Eastern Indonesia, consistent with patterns documented in comparable sub-national studies across Southeast Asia (Pratama & Azzahra, 2026).

H1: Financial inclusion has a positive and significant effect on the financial performance of MSMEs in Tasikmalaya.

Digital Payment and MSME Financial Performance

Digital payment systems—including QRIS, e-wallets, and mobile banking—have emerged as fundamental components of the modern financial ecosystem, substantially reshaping transactional infrastructures for small enterprises (Gomber et al., 2017). The adoption of digital payment technologies enables MSMEs to conduct transactions more efficiently, reduce operational costs, enhance financial transparency, and improve customer experiences (Ali et al., 2017; Singh & Sinha, 2020). These benefits are particularly salient in resource-constrained environments where cost reduction and operational agility are primary determinants of survival and growth (Mbiti & Weil, 2015; Ozili, 2018). Empirical evidence affirms a positive and significant impact of digital payment adoption on MSME performance outcomes.

Johri et al. (2024), analyzing SME data from South Asia using Structural Equation Modeling, found that digital financial inclusion—encompassing mobile payment adoption—significantly improved SME profitability and operational efficiency. Similarly, (L. Yao & Yang, 2022), in a large-sample study in China, demonstrated that digital finance adoption increases firm revenue and reduces costs, with effects being particularly pronounced for micro and small enterprises. Lee & Shin (2018) corroborated these findings in the Indonesian context, reporting that digitalization of financial services positively influenced MSME financial performance in West Java. In addition, Zakariya & Arifin (2025) documented that QRIS adoption among MSMEs in Central Java significantly reduced transaction costs and improved sales revenue, underscoring the direct financial benefits of domestic digital payment infrastructure (Santosa, 2026).

From a TAM perspective, Ali et al. (2017) and Khafif et al. (2025) confirmed that perceived usefulness and ease of use are strong predictors of digital payment adoption intention, which

ultimately translates into improved financial management practices (Davis, 1989; Venkatesh & Bala, 2008). (L. Yao & Yang, 2022) further identified trust and regulatory clarity as important moderators of fintech adoption in developing economies, highlighting the contextual factors that may amplify or attenuate digital payment's performance effects (Gabor & Brooks, 2017; Lee & Shin, 2018).

H2: Digital payment adoption has a positive and significant effect on the financial performance of MSMEs in Tasikmalaya.

Integration of Financial Inclusion and Digital Payment

The convergence of financial inclusion and digital finance represents a transformative development in MSME support ecosystems, driven by the rapid proliferation of mobile connectivity and platform-based financial services (Demirgüç-Kunt et al., 2021; Nugraha, Setiawan, Nathan, & Fekete-Farkas, 2022). Digital payment systems are not only transactional tools but also serve as gateways to broader financial inclusion by reducing geographical barriers, lowering transaction costs, and enabling access to credit scoring and insurance products through digital footprints (Lamidi et al., 2025). This dual role positions digital payment adoption as both an instrument and an outcome of financial inclusion (Gabor & Brooks, 2017; Ozili, 2018).

Empirical studies demonstrate that digital finance significantly enhances financial inclusion by expanding service accessibility and reducing informational asymmetries (Beck & Cull, 2014; Hasan et al., 2021; Sarma & Pais, 2011). From the RBV perspective, the complementary relationship between financial resources (inclusion) and technological capabilities (digital payment) is expected to generate a stronger and more durable impact on firm performance than either resource independently (J. Barney, 1991; Eisenhardt & Martin, 2000; Teece et al., 1997). This integrated approach is particularly relevant in developing economies like Indonesia, where MSMEs simultaneously face financial constraints and low technology adoption rates (Pratama & Azzahra, 2026; Widyastuti, Wahyuni, & Wastutiningsih, 2023).

MSME Financial Performance

Financial performance is a composite indicator of business success, commonly operationalized in MSME research through measures of profitability, revenue growth, and cost efficiency (Fama & Jensen, 1983; Richard, Devinney, Yip, & Johnson, 2009). In the MSME literature specifically, financial performance is frequently assessed through self-reported indicators of sales growth, profit margin, and cash flow adequacy, given the limited availability of audited financial statements for informal and semi-formal enterprises (Davidsson, Steffens, & Fitzsimmons, 2009; Khafif et al., 2025; Agyei-Owusu, Asamoah, Nuertey, & Acquah, 2022). The literature consistently demonstrates that both financial access and technological adoption are significant determinants of financial performance (Burke et al., 2022; Hoang et al., 2023; Okello Candiya Bongomin & Munene, 2020). MSMEs that are simultaneously financially included and technologically capable are more likely to achieve higher efficiency, greater competitiveness, and sustained growth (Ayyagari et al., 2007; Johri et al., 2024; Nugraha et al., 2022). Moreover, digital payment adoption enhances financial discipline and supports strategic decision-making through real-time financial data access (Lee & Shin, 2018; Widyastuti et al., 2023; L. Yao & Yang, 2022).

Conceptual Framework

Based on the theoretical foundations and empirical literature reviewed above, this study proposes an integrated conceptual framework (Figure 1) in which financial inclusion and digital payment adoption serve as independent constructs jointly influencing MSME financial performance. Grounded in the RBV (J. Barney, 1991; Peteraf, 1993), financial inclusion is conceptualized as a strategic financial resource that expands MSMEs' capital base, improves liquidity, and supports productive investment (Beck & Cull, 2014; Ozili, 2021). Digital payment adoption, informed by TAM and UTAUT (Davis, 1989; Venkatesh & Bala, 2008), represents a technological capability that enhances operational efficiency and transaction transparency (Gomber et al., 2017; Singh & Sinha, 2020). The framework posits that both constructs operate complementarily: financial inclusion provides access to formal financial resources, while digital payment enhances the productive utilization of those resources (Eisenhardt & Martin, 2000; Teece et al., 1997). Their combined effect is expected to produce a synergistic and superior impact on financial performance relative to either construct in isolation (Johri et al., 2024; J. Yao et al., 2023).

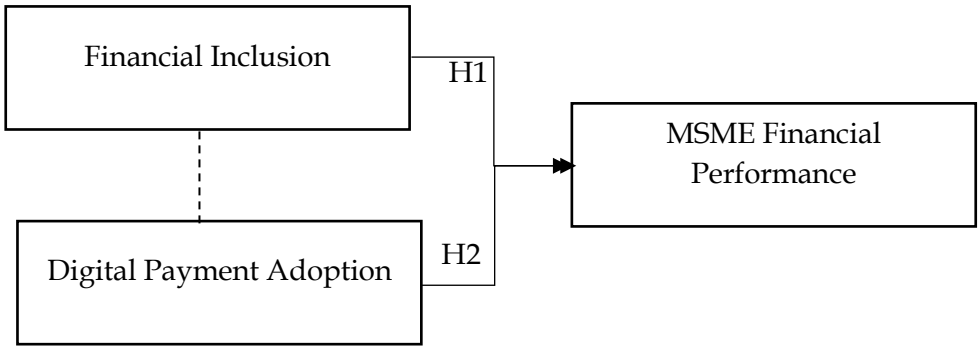

Figure 1. Conceptual Framework of the Study

METHOD

Research Design and Sampling

This study employs an explanatory quantitative research design to test causal relationships between financial inclusion, digital payment adoption, and MSME financial performance. The population comprises MSMEs registered and operating in Tasikmalaya City and Regency, West Java Province, Indonesia. A purposive sampling approach was applied based on three eligibility criteria: (1) MSMEs that had been in continuous operation for at least two years; (2) MSMEs that utilized at least one formal financial service, such as a bank account, microfinance loan, or savings product; and (3) MSMEs that had adopted at least one digital payment method, including QRIS, e-wallets (e.g., GoPay, OVO, Dana), or mobile banking. A total of 150 MSME owners or managers participated in the study, representing sectors including food and beverage (32%), batik and textiles (27%), handicrafts (21%), and retail trade (20%).

Measurement Instruments

Data were collected via a structured self-administered questionnaire distributed in person between October and December 2025. All constructs were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Financial inclusion was measured using six items adapted from Demirgüç-Kunt et al. (2021) and Ozili (2021), covering dimensions of credit access, savings ownership, insurance utilization, and proximity to formal financial services. Digital payment adoption was measured using six items adapted from Ali et al. (2017) and Singh & Sinha (2020), capturing usage frequency of QRIS, e-wallets, and mobile banking, as well as perceived usefulness and ease of use. Financial performance was operationalized using five items adapted from Hoang et al. (2023) and Johri et al. (2024), measuring profitability growth, revenue growth, and cost efficiency over the preceding 12 months. The questionnaire was pre-tested on 20 MSMEs not included in the main sample, and minor wording adjustments were made based on feedback to ensure clarity and cultural appropriateness.

Analytical Method

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 software, consistent with the methodological recommendations of Hair et al. (2019). PLS-SEM is particularly suited to this study due to its capacity to handle complex multi-construct models, its robustness with small-to-medium sample sizes, and its suitability for exploratory and explanatory research objectives (Hair, Risher, Sarstedt, & Ringle, 2019). The analysis proceeded in two stages. First, the measurement model (outer model) was evaluated by assessing indicator reliability (outer loadings ≥ 0.70), convergent validity (Average Variance Extracted, AVE ≥ 0.50), internal consistency reliability (Composite Reliability, CR ≥ 0.70; Cronbach's Alpha ≥ 0.70), and discriminant validity using the Heterotrait-Monotrait (HTMT) ratio criterion (HTMT < 0.85; Henseler et al., 2015). Second, the structural model (inner model) was assessed through the coefficient of determination (R^2), path coefficients (β), and hypothesis testing via bootstrapping with 5,000 resamples.

ANALYSIS AND DISCUSSION

Respondent Profile

Table 1 presents the demographic and business characteristics of the 150 participating MSMEs. The sample was predominantly composed of micro-enterprises (82.7%), consistent with the general MSME landscape in Tasikmalaya and with national MSME structural patterns documented by BPS (2022) and the Ministry of Cooperatives and SMEs (2022). Most respondents had been in business between 3 and 10 years (61.3%), and the majority were female-owned enterprises (54.7%), reflecting the significant role of women entrepreneurs in the local creative economy (Khardenavis, 2024). Digital payment adoption was widespread, with QRIS being the most commonly used platform (73.3%), followed by e-wallets (58.0%) and mobile banking (44.7%), consistent with the accelerated national rollout of QRIS documented by Bank Indonesia (2022).

Table 1. Respondent and Business Profile (n = 150)

Characteristic	Category	n	%
Business Scale	Micro (< IDR 300 million/year)	124	82.7%
	Small (IDR 300 million – 2.5 billion)	21	14.0%
	Medium (IDR 2.5 – 50 billion)	5	3.3%
Business Age	2–3 years	28	18.7%
	3–10 years	92	61.3%
	> 10 years	30	20.0%
Owner Gender	Female	82	54.7%
	Male	68	45.3%
Business Sector	Food & Beverage	48	32.0%
	Batik & Textiles	41	27.3%
	Handicrafts	31	20.7%
	Retail Trade	30	20.0%
Digital Payment Used	QRIS	110	73.3%
	E-wallet (GoPay/OVO/Dana)	87	58.0%
	Mobile Banking	67	44.7%

Source: Primary data (2025)

Measurement Model (Outer Model)

The measurement model was assessed following the sequential evaluation procedure recommended by (Hair et al., 2019) encompassing indicator reliability, internal consistency reliability, convergent validity, and discriminant validity.

Indicator Reliability and Internal Consistency

Table 2 reports the outer loadings, Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE) for all three constructs. Indicator reliability is confirmed when outer loadings exceed the threshold of 0.70 (Hair et al., 2019). Internal consistency is evaluated through Cronbach's Alpha (CA > 0.70) and Composite Reliability (CR > 0.70), with values above 0.90 indicating excellent reliability (Hair et al., 2019).

Table 2. Outer Loadings, Reliability, and Convergent Validity

Construct	Indicator	Indicator Description	Outer Loading	Cronbach's Alpha	CR	AVE
Financial Inclusion (FI)	FI1	Access to formal credit	0.812	0.874	0.903	0.608
	FI2	Savings account ownership	0.789			
	FI3	Insurance utilization	0.764			
	FI4	Proximity to bank branch	0.776			

	FI5	Loan repayment history	0.801			
	FI6	Financial service awareness	0.753			
Digital Payment (DP)	DP1	QRIS usage frequency	0.834	0.891	0.917	0.631
	DP2	E-wallet usage frequency	0.818			
	DP3	Mobile banking usage	0.791			
	DP4	Perceived usefulness	0.807			
	DP5	Perceived ease of use	0.782			
	DP6	Transaction trust	0.771			
Financial Performance (FP)	FP1	Revenue growth	0.824	0.883	0.912	0.624
	FP2	Profitability improvement	0.809			
	FP3	Cost efficiency	0.793			
	FP4	Cash flow stability	0.774			
	FP5	Return on investment	0.761			

Note: CR = Composite Reliability; AVE = Average Variance Extracted. Threshold: Outer Loading > 0.70; CA > 0.70; CR > 0.70; AVE > 0.50 (Hair et al., 2019; Fornell & Larcker, 1981). Source: SmartPLS 4.0 output (2025)

All indicator outer loadings ranged from 0.753 to 0.834, exceeding the recommended threshold of 0.70, confirming adequate indicator reliability (Hair et al., 2019). Cronbach's Alpha values for Financial Inclusion (0.874), Digital Payment (0.891), and Financial Performance (0.883) all surpassed the 0.70 benchmark. Composite Reliability values of 0.903, 0.917, and 0.912, respectively, confirm excellent internal consistency, consistent with the standards established and applied in PLS-SEM contexts by (Ringle, Sarstedt, Mitchell, & Gudergan, 2020).

Convergent Validity

Convergent validity is established when AVE values exceed 0.50, indicating that each construct explains more than half of the variance in its indicators (Hair et al., 2019). AVE values for Financial Inclusion (AVE = 0.608), Digital Payment (AVE = 0.631), and Financial Performance (AVE = 0.624) all surpassed this threshold, confirming adequate convergent validity across all constructs.

Discriminant Validity

Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio, which is recommended over the traditional Fornell-Larcker criterion in reflective measurement models

(Henseler, Ringle, & Sarstedt, 2015). The HTMT criterion requires values to remain below the conservative threshold of 0.85, or 0.90 in more lenient applications (Henseler et al., 2015).

Table 3. Discriminant Validity: HTMT Ratio Matrix

Construct	Financial Inclusion (FI)	Digital Payment (DP)	Financial Performance (FP)
Financial Inclusion (FI)	—		
Digital Payment (DP)	0.612	—	
Financial Performance (FP)	0.643	0.671	—

Note: HTMT values below 0.85 indicate adequate discriminant validity (Henseler et al., 2015). Diagonal values represent the square root of AVE. Source: SmartPLS 4.0 output (2025)

All HTMT values (ranging from 0.612 to 0.671) fell well below the conservative threshold of 0.85, confirming that the three constructs are empirically distinct and that the measurement model demonstrates adequate discriminant validity (Henseler et al., 2015; Hair et al., 2019). Collectively, the measurement model results confirm that all constructs satisfy the established criteria for reliability, convergent validity, and discriminant validity, providing a solid foundation for structural model evaluation (Ringle et al., 2020).

Structural Model (Inner Model)

Following confirmation of the measurement model's adequacy, the structural model was evaluated in accordance with the two-stage procedure recommended by Hair et al. (2019), assessing the coefficient of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and path coefficients through bootstrapping with 5,000 resamples (Preacher & Hayes, 2008; Ringle et al., 2020).

Model Fit and Predictive Accuracy

Table 4. Structural Model Fit Indices

Criterion	Value	Threshold	Interpretation
R^2 (Financial Performance)	0.641	> 0.26 = Substantial	Substantial (Hair et al., 2019)
Adjusted R^2	0.636	—	Stable across sample size
Q^2 (Predictive Relevance)	0.413	> 0.00	Confirmed predictive relevance
f^2 (FI → FP)	0.186	0.02 = Small; 0.15 = Medium; 0.35 = Large	Medium effect
f^2 (DP → FP)	0.263	0.02 = Small; 0.15 = Medium; 0.35 = Large	Medium-to-large effect
SRMR	0.063	< 0.08	Acceptable model fit

Note: R^2 thresholds: 0.19 = weak, 0.33 = moderate, 0.67 = substantial (Hair et al., 2019). f^2 benchmarks from Cohen (1988). Q^2 assessed via blindfolding (omission distance = 7). Source: SmartPLS 4.0 output (2025)

The R^2 value of 0.641 indicates that financial inclusion and digital payment adoption jointly explain 64.1% of the variance in MSME financial performance, a level classified as substantial by (Hair et al., 2019) and consistent with comparable PLS-SEM studies in the MSME and digital finance literature (Johri et al., 2024). The Q^2 value of 0.413, derived from blindfolding procedures (omission distance = 7), exceeds the minimum threshold of zero, confirming the model's predictive relevance for the endogenous construct (Hair et al., 2019). The SRMR value of 0.063 is below the recommended ceiling of 0.08, indicating acceptable overall model fit (Henseler et al., 2015).

Hypothesis Testing: Path Coefficients

Table 5. Path Coefficients and Hypothesis Testing Results

Hypothesis	Path Relationship	β	Std. Error	t-value	p-value	95% CI (LL, UL)	f^2	Decision
H1	FI → FP	0.381	0.084	4.535	0.000	[0.215, 0.544]	0.186	**Supported**
H2	DP → FP	0.452	0.079	5.722	0.000	[0.298, 0.607]	0.263	**Supported**

Note: β = standardized path coefficient; t-values and 95% bias-corrected confidence intervals derived from bootstrapping (5,000 resamples, no sign change); $p < 0.001$ (two-tailed); LL = lower limit; UL = upper limit. f^2 effect size benchmarks: small = 0.02, medium = 0.15, large = 0.35 (Cohen, 1988). Source: SmartPLS 4.0 output (2025)

Both hypotheses were supported at the $p < 0.001$ significance level. Financial inclusion (β = 0.381, t = 4.535, $p < 0.001$, 95% CI [0.215, 0.544]) positively and significantly influences MSME financial performance, supporting H1. Digital payment adoption (β = 0.452, t = 5.722, $p < 0.001$, 95% CI [0.298, 0.607]) also positively and significantly influences MSME financial performance, supporting H2. The non-overlapping bootstrapped confidence intervals for both paths confirm the robustness of these estimates (Hair et al., 2019; Preacher & Hayes, 2008). The effect size for digital payment ($f^2 = 0.263$) is classified as medium-to-large, while that for financial inclusion ($f^2 = 0.186$) falls within the medium range (Cohen, 1988), indicating that digital payment exerts a relatively stronger independent effect on financial performance.

Discussion

Financial Inclusion and MSME Financial Performance (H1)

The finding that financial inclusion significantly and positively enhances MSME financial performance (β = 0.381, $p < 0.001$) is consistent with a robust and growing body of empirical literature. Hoang et al. (2023) analyzing panel data from 25 emerging market economies, demonstrated that financial inclusion reduces financing constraints and improves firm profitability, particularly for micro and small enterprises. Similarly, Hasan et al. (2021) found that access to formal financial services significantly enhances firm-level productivity through improved capital accumulation and investment capacity. In the Indonesian context (Burke et al.,

2022) documented a positive relationship between financial deepening and MSME growth, while Tandilino, Pontoh, Darmawati, & Indrijawati (2025) confirmed this pattern specifically for Eastern Indonesian MSMEs. The present study extends these findings to the sub-national context of Tasikmalaya, where MSMEs in creative industries and local trade sectors demonstrated that broader financial access translates into more consistent revenue growth and cost management (Okello Candiya Bongomin & Munene, 2020; Ozili, 2021).

From a theoretical standpoint, this finding supports Financial Intermediation Theory (Diamond, 1984; Stiglitz & Weiss, 1981), which posits that financial institutions reduce information asymmetry and facilitate productive capital allocation, thereby lowering borrowing costs for informationally opaque small firms (Beck & Cull, 2021; Cull et al., 2014). From the Resource-Based View (J. Barney, 1991; Peteraf, 1993), access to formal financial services represents a strategic resource that enables MSMEs to overcome capital constraints, invest in productive assets, and develop more resilient financial structures (Wernerfelt, 1984). The medium effect size ($f^2 = 0.186$) further indicates that financial inclusion constitutes a meaningful, though not dominant, driver of performance variance, consistent with the findings of Arun & Kamath (2015) and Munyegera & Matsumoto (2016), who similarly documented moderate-to-strong effects of financial access on firm-level outcomes in comparable developing economy contexts.

Digital Payment and MSME Financial Performance (H2)

The stronger effect of digital payment adoption on MSME financial performance ($\beta = 0.452$, $p < 0.001$, $f^2 = 0.263$) relative to financial inclusion ($\beta = 0.381$, $f^2 = 0.186$) is a substantively important finding that reflects the transformative role of financial technology in MSME operational management. This result aligns with Johri et al. (2024), who found that digital financial inclusion significantly improved SME profitability and operational efficiency in South Asia, and with J. Yao et al. (2023), who demonstrated that digital finance adoption increases firm revenue and reduces costs for micro and small enterprises in China. In the Indonesian context, (Lee & Shin, 2018) corroborated these findings, reporting that QRIS adoption and digital payment use significantly reduced transaction costs and improved sales revenue for MSMEs in West and Central Java, respectively (Santosa, 2026).

From a TAM theoretical perspective (Davis, 1989; Venkatesh et al., 2003), the finding confirms that MSMEs' positive evaluations of digital payment technologies in terms of perceived usefulness and ease of use translate into actual adoption behaviors and measurable performance improvements (Ali et al., 2017; Venkatesh & Bala, 2008). The QRIS infrastructure, which has seen rapid adoption across Indonesian MSMEs since its national rollout in 2019, appears to have generated measurable performance benefits in Tasikmalaya by reducing transaction friction, lowering cash-handling costs, and improving payment record-keeping (Gomber et al., 2017). The medium-to-large effect size ($f^2 = 0.263$) further underscores the economic magnitude of digital payment adoption as a performance driver (Cohen, 1988; Lee & Shin, 2018). (J. Yao et al., 2023) additionally noted that trust and regulatory clarity moderate fintech adoption outcomes in

developing economies, suggesting that the conducive Indonesian regulatory environment may have amplified these effects.

Complementarity of Financial Inclusion and Digital Payment

An important implication of the model's substantial explanatory power (R^2 = 0.641) is the evidence of a complementary relationship between financial inclusion and digital payment adoption as joint drivers of MSME financial performance. This finding resonates with Demirgüç-Kunt et al. (2022), who documented the mutually reinforcing relationship between digital finance and financial inclusion at the global level which have similarly highlighted digital payment systems as gateways to broader financial inclusion through reduced geographical barriers and digital credit scoring. Lamidi et al. (2025) and Pratama & Azzahra (2026) further emphasized the importance of integrated digital financial strategies for Indonesian MSMEs, observing that combined adoption produces superior performance outcomes compared to either dimension in isolation.

From the Resource-Based View J. B. Barney et al. (2011) and Teece et al. (1997), the integrated effect reflects the proposition that financial resources (inclusion) and technological capabilities (digital payment) are complementary assets whose combination generates competitive advantages that are difficult to replicate (Eisenhardt & Martin, 2000; Peteraf, 1993) This theoretical mechanism is particularly relevant in the Tasikmalaya context, where resource-constrained MSMEs operating in traditional creative industry sectors may derive disproportionate performance gains from the joint availability of financial access and digital transaction infrastructure (Nugraha et al., 2022; Widyastuti et al., 2023). Gabor & Brooks (2017) and Ozili (2018) further argued that digital payment systems serve a dual function as both transactional tools and inclusion gateways, reinforcing the importance of integrated policy approaches that promote both dimensions simultaneously. Collectively, these findings suggest that policymakers and financial institutions seeking to enhance MSME competitiveness should prioritize holistic digital financial ecosystem development rather than siloed financial access or technology adoption initiatives (Claessens & Rojas-Suarez, 2016).

CONCLUSION

This study examined the simultaneous effects of financial inclusion and digital payment adoption on MSME financial performance in Indonesia using PLS-SEM. Both hypotheses were empirically supported: financial inclusion (β = 0.381, $p < 0.001$) and digital payment adoption (β = 0.452, $p < 0.001$) both positively and significantly influence MSME financial performance, jointly accounting for 64.1% of outcome variance (R^2 = 0.641). Digital payment demonstrated a stronger effect, underscoring the centrality of technological capability in MSME competitiveness within Indonesia's evolving digital economy. These findings extend RBV and TAM to a regional emerging economy context by confirming that financial resources (inclusion) and technological capabilities (digital payment) operate as complementary drivers of firm performance. By integrating both constructs within a unified analytical framework, this study also addresses the

fragmented approach prevalent in prior literature and contributes localized empirical evidence to the Indonesian MSME scholarship. Practically, policymakers and financial institutions should expand financial inclusion programs—particularly credit access and savings mobilization for micro-enterprises—while simultaneously investing in digital payment infrastructure and digital literacy initiatives. Fintech providers should design user-friendly, low-cost platforms that reduce barriers to QRIS and e-wallet adoption among traditionally under-served MSME segments.

This study is subject to several limitations. The sample is confined to a single sub-national region, which restricts the generalizability of findings to other geographic or industry contexts. The cross-sectional design precludes causal inference in the temporal sense, and common method bias remains an inherent risk of single-source survey data, although Harman's single-factor test indicated no dominant single factor (explained variance = 28.3%). On the basis of these limitations, future research is recommended to adopt longitudinal designs, expand sampling across multiple regions or provinces, and examine potential moderating variables such as digital literacy, firm age, and the regulatory environment. Scholars are also encouraged to replicate this integrated framework in other emerging economy contexts to further validate and generalize the findings.

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