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DIGITAL ACCOUNTING TRANSFORMATION AND ITS IMPACT ON THE FINANCIAL PERFORMANCE OF MSMES IN BOGOR REGENCY

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Abstract

The digital transformation of financial and accounting practices has fundamentally restructured the operational paradigms of Micro, Small, and Medium Enterprises (MSMEs) within emerging economies. Grounded in the Resource-Based View (RBV) theory, this extensive research investigates the distinct impacts of internal digital accounting systems and external digital payment integrations, specifically the Quick Response Code Indonesian Standard (QRIS), on the financial performance of MSMEs in Bogor Regency, West Java, Indonesia. Despite robust governmental initiatives to digitize the grassroots economy, a persistent accountability gap restricts nearly 60–70% of Indonesian MSMEs from accessing formal credit due to substandard financial reporting. Utilizing a quantitative survey design, empirical data was collected from 396 MSME owners across Bogor Regency's 40 districts, proportionally representing a total population of 35,542 registered enterprises. The research deploys Partial Least Squares Structural Equation Modeling (PLS-SEM) to rigorously assess both the measurement and structural models, applying contemporary thresholds for composite reliability and discriminant validity via the Heterotrait-Monotrait (HTMT) ratio. The empirical results demonstrate that the adoption of digital accounting applications—specifically free, cash-basis platforms such as SI APIK—significantly and positively impacts financial reporting quality and overall financial performance. Conversely, the impact of digital payments presents an economic paradox; while QRIS enhances transaction efficiency and market access, its positive effect on financial performance is partially suppressed by administrative friction, specifically the Merchant Discount Rate (MDR) fees and settlement time lags, which constrain the daily capital turnover of micro-enterprises. Furthermore, structural compliance with the Financial Accounting Standards for Micro, Small, and Medium Entities (SAK EMKM) acts as a crucial mediating mechanism, transforming digital platform capabilities into tangible financial outcomes and institutional bankability. These findings provide vital policy implications for regional authorities seeking to accelerate financial inclusion and optimize digital literacy programs beyond mere payment adoption.

Keywords: Digital Accounting; MSME Financial Performance; Resource-Based View; PLS-SEM; QRIS; SAK EMKM; SI APIK; Bogor Regency.

INTRODUCTION

The Macroeconomic Imperative of MSME Digitalization

Micro, Small, and Medium Enterprises (MSMEs) function as the indispensable backbone of macroeconomic stability and socio-economic integration in emerging markets. In the context of the Indonesian economy, the MSME sector serves as a vital engine of growth, contributing

approximately 60.5% to the national Gross Domestic Product (GDP) and absorbing over 97% of the total domestic workforce[1]. As the global economic architecture pivots toward systemic digitalization, driven by the technological imperatives of the Fourth Industrial Revolution (Industry 4.0), the MSME ecosystem is undergoing profound structural and operational shifts. The integration of advanced digital technologies into daily business operations—ranging from cloud-based enterprise resource planning (ERP) architectures to mobile digital payment gateways—offers unprecedented avenues for enhancing operational efficiency, expanding geographical market reach, and securing sustainable competitive advantages[2].

However, realizing these macroeconomic opportunities is contingent upon overcoming deeply entrenched structural barriers. A critical impediment universally identified within this sector is the pervasive accountability gap[5]. This gap manifests as a systemic lack of financial transparency, administrative discipline, and standardized bookkeeping, which effectively severs these enterprises from formal financial ecosystems[5]. Empirical evidence suggests that between 60% and 70% of Indonesian MSMEs lack access to formal commercial bank financing, an exclusion primarily attributable to their inability to produce credible, standards-compliant financial reports and demonstrate historical solvency to prospective creditors[5].

The Accountability Gap and the Shift to Digital Accounting

To bridge this accountability gap, the transition from traditional, manual bookkeeping to Digital Accounting Systems (DAS) has emerged as a strategic imperative for small business operators. Digital accounting involves the use of information and communication technology to systematically record, process, and communicate financial information electronically[6]. The adoption of digital accounting software simplifies complex transaction recording, minimizes human calculation errors, and facilitates real-time monitoring of cash flows, thereby drastically enhancing the relevance, accuracy, and reliability of financial information[3].

To support this transition, governmental and regulatory bodies in Indonesia have introduced specific reporting frameworks, such as the Financial Accounting Standards for Micro, Small, and Medium Entities (SAK EMKM), designed to standardize MSME reporting without overwhelming small operators with the complexities of International Financial Reporting Standards (IFRS)[10]. Concurrently, digital applications such as SI APIK (Sistem Informasi Aplikasi Pencatatan Informasi Keuangan), developed by Bank Indonesia in collaboration with the Financial Services Authority (OJK), have been launched to facilitate this compliance for free[12].

Parallel to internal accounting digitalization is the explosive external growth of digital payment infrastructure, most notably the Quick Response Code Indonesian Standard (QRIS). QRIS integrates various digital payment systems and mobile wallets into a single interoperable platform, drastically altering consumer behavior and transactional velocity[14]. Yet, the academic literature remains fragmented regarding the net financial impact of these parallel digital transformations. Many studies conflate internal accounting capabilities with external payment gateways, failing to measure how each distinct technology influences the actual profitability and liquidity of MSMEs.

Regional Context: The Digitalization Landscape of Bogor Regency

The geographic and demographic focus of this empirical report is Bogor Regency, a vital and rapidly expanding economic hub located in West Java Province, Indonesia. Bogor Regency represents a unique demographic and economic microcosm for studying MSME digitalization due to its vast administrative scale and sectorial diversity. According to comprehensive 2026 data extracted from the Regional Cooperative and MSME Information System (SIDAKUM),

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Bogor Regency hosts a massive agglomeration of 35,542 MSMEs and 802 cooperatives distributed across 40 distinct districts and 436 villages[17]. The spatial distribution reveals dense entrepreneurial activity in key districts such as Pamijahan (3,036 MSMEs), Sukaraja (2,793 MSMEs), Bojong Gede (2,299 MSMEs), Citeureup (703 MSMEs), and Tamansari (674 MSMEs)[17]. The sectorial composition is highly diversified, encompassing primary agriculture, specialized food and beverage processing (e.g., cocoa, coffee, and fruit preservation), and creative retail industries[18].

The local government, spearheaded by the Department of Cooperatives and MSMEs (Dinas Koperasi dan UMKM Kabupaten Bogor) and the Department of Communication and Informatics (Diskominfo), has aggressively pushed initiatives to modernize these enterprises. These regional authorities have launched extensive "UMKM Go Online" programs, established Bogor as a pilot project for village cooperative digitalization, and conducted numerous digital financial training sessions[19]. Despite these robust institutional pushes, field observations and preliminary qualitative studies indicate a stark digital divide. Many MSMEs in Bogor Regency continue to struggle with the complexities of digital accounting software and remain hesitant to fully adopt digital payments due to perceived high administrative costs, liquidity traps, and a fundamental lack of digital financial literacy[23].

Research Problem, Objectives, and Contributions

While the qualitative benefits of digitalization are frequently touted in policy briefings, rigorous empirical assessments measuring the distinct pathways through which digital accounting and digital payments influence financial performance remain scarce. Previous studies have often treated digitalization as a monolithic construct. Furthermore, the mediating role of standardized financial reporting (SAK EMKM) in translating digital capabilities into tangible bankability is poorly understood in the context of grassroots economies.

Therefore, this research is designed to achieve the following core objectives: First, to exhaustively quantify the impact of internal digital accounting transformation on the financial performance of MSMEs in Bogor Regency. Second, to analyze the paradoxical impact of digital payment (QRIS) adoption on MSME liquidity and profitability, specifically factoring in the moderating role of perceived transaction costs. Third, to determine the mediating role of SAK EMKM compliance in the relationship between digital accounting capabilities and long-term financial performance. Fourth, to provide a robust empirical model utilizing Partial Least Squares Structural Equation Modeling (PLS-SEM) to map these causal mechanisms under the theoretical umbrella of the Resource-Based View (RBV).

By isolating the effects of internal accounting capabilities from external payment adoption, this study contributes a highly nuanced, context-specific framework to the growing discourse on digital financial inclusion, offering actionable insights for policymakers, financial institutions, and MSME operators.

LITERATURE REVIEW

The Resource-Based View (RBV) in the Digital Economy

The theoretical foundation of this research is firmly anchored in the Resource-Based View (RBV) of the firm, initially conceptualized by Barney (1991) and subsequently adapted for the digital economy[1]. RBV posits that a firm's sustainable competitive advantage and superior financial performance are determined by its possession, control, and effective utilization of strategic resources that are Valuable, Rare, Inimitable, and Non-substitutable (VRIN)[1]. In the context of the highly competitive and perpetually resource-constrained MSME sector, physical

and financial capital are often scarce. Consequently, intangible internal resources—such as managerial financial literacy, digital accounting system capabilities, and organizational technological adaptiveness—emerge as critical strategic assets[1].

According to recent expansions of the RBV framework within information systems research, the mere procurement of technology (e.g., purchasing a smartphone or downloading a financial application) does not constitute a VRIN resource. Instead, it is the dynamic capability to embed these digital systems into daily organizational routines to enhance decision-making and operational control that creates sustainable value[1]. Thus, digital accounting and financial literacy act as complementary internal capabilities that reinforce one another, transforming raw technological infrastructure into a dynamic capability capable of navigating economic shocks, inflation, and market volatility[5]. Under this theoretical lens, the adoption of digital accounting systems is viewed not as an administrative chore, but as a strategic capability deployment aimed at long-term survival.

Digital Accounting Systems (DAS) as a Strategic Capability

Digital Accounting Systems (DAS) encompass the use of specialized software, cloud-based architectures, and mobile applications to systematically record, store, process, and analyze financial data[7]. For the vast majority of MSMEs, the implementation of DAS represents a monumental paradigm shift from error-prone, manual ledger books to automated, real-time financial dashboards. Empirical studies confirm that accounting digitalization significantly improves operational efficiency by drastically reducing the time required to process routine transactions, minimizing manual calculation errors, and eliminating the redundancy of physical data storage[8].

In Indonesia, the introduction of government-backed applications like SI APIK has revolutionized DAS accessibility for micro-enterprises. Developed jointly by Bank Indonesia and the OJK, SI APIK is tailored specifically for the demographic realities of MSMEs. The platform is entirely free to use, highly intuitive, does not require complex theoretical accounting knowledge (such as understanding debits, credits, and complex accruals), and operates on a cash-basis principle that perfectly mirrors the actual cash flow realities of small traditional traders[12]. By utilizing SI APIK or similar commercial digital tools (like Accurate Lite), MSMEs can automatically generate standard financial reports—such as income statements and balance sheets—that are historically credible, thereby resolving the information asymmetry that traditionally deters commercial banks from extending credit[6].

The Mediating Role of SAK EMKM Compliance

The existence of a digital tool is inherently insufficient without strict adherence to recognized, standardized accounting frameworks. SAK EMKM (Standar Akuntansi Keuangan Entitas Mikro, Kecil, dan Menengah) serves as the definitive financial accounting standard designed for MSMEs in Indonesia, promoting simplicity, relevance, and uniformity[10]. The implementation of SAK EMKM ensures that the financial statements generated via digital platforms are not merely informal internal tracking tools, but highly standardized documents recognized by external stakeholders, including equity investors, tax authorities, and formal financial institutions[10].

Prior research indicates that an entrepreneur's fundamental understanding of accounting principles and their digital readiness significantly predict their ability to successfully implement SAK EMKM[9]. In the theoretical model proposed by this study, SAK EMKM compliance serves as a vital mediating variable. Digital accounting provides the necessary technological conduit and automation, but it is the successful output of SAK EMKM-compliant

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reports that ultimately triggers structural improvements in financial performance through unlocked access to capital (bankability) and superior, data-driven strategic planning[29].

The QRIS Paradox: Digital Payments, Efficiency, and Transaction Costs

The adoption of external digital payments, spearheaded by the QRIS interoperability framework, has fundamentally altered consumer-MSME interactions across Indonesia. QRIS offers immense benefits regarding transaction efficiency, the total reduction of cash-handling risks (such as physical theft and counterfeit money), and the ability to serve a rapidly growing, tech-savvy cashless society[16]. Numerous studies have documented that QRIS adoption significantly influences MSME sales turnover, accelerates transaction times, and bolsters consumer purchase intentions by offering seamless checkout experiences[14].

However, a deeper review of the literature reveals a distinct economic paradox regarding digital payments in the micro-enterprise sector. Unlike internal digital accounting, which primarily streamlines costs and eliminates waste, digital payment gateways introduce new friction points in the form of mandatory administrative fees. The Merchant Discount Rate (MDR)—which typically sits at 0.3% for standard MSME transactions—represents a direct, unmitigated deduction from gross profit margins[15]. While 0.3% appears statistically negligible at a macroeconomic level, for micro-enterprises operating on razor-thin margins in highly competitive environments (e.g., food stalls, traditional markets, and small retail kiosks), this fee is frequently perceived as a severe operational burden[15].

Furthermore, digital payments inherently introduce a settlement time lag; funds processed via QRIS often take 24 to 48 hours to clear into the merchant's physical bank account. This delay can severely hamper the daily capital turnover required by micro-businesses, who often rely on today's cash receipts to purchase raw inventory at the market the very next morning[15]. Thus, while QRIS undeniably increases gross transaction volume and market participation, its net effect on the actual financial performance (specifically short-term liquidity and net profit) may be heavily compromised by these transaction costs and settlement delays.

Hypotheses Development

Synthesizing the theoretical intersections of the Resource-Based View, the operational capabilities of digital accounting, the structural requirements of SAK EMKM, and the dual-edged nature of digital payments, this report proposes the following structural hypotheses for empirical testing:

- **H1:** Digital Accounting Transformation has a significant and positive impact on the Financial Performance of MSMEs.
- **H2a:** The adoption of Digital Payments (QRIS) has a significant positive baseline impact on Financial Performance.
- **H2b:** The positive impact of Digital Payment Adoption on Financial Performance is significantly and negatively moderated by the perception of transaction costs (MDR fees and settlement lags).
- **H3:** Digital Accounting Transformation significantly and positively influences SAK EMKM Compliance.
- **H4:** SAK EMKM Compliance significantly mediates the relationship between Digital Accounting Transformation and Financial Performance, acting as the mechanism that converts digital data into strategic bankability.

METHOD

The target population for this empirical study encompasses all formally registered

MSMEs operating within the administrative boundaries of Bogor Regency, West Java. To ensure the highest degree of data accuracy and demographic fidelity, population figures were extracted from the official SIDAKUM (Sistem Informasi Data Koperasi dan UMKM) database managed by the Bogor Regency Government. As of 2026, the database records exactly 35,542 active MSMEs spread across 40 districts[17].

To determine a statistically robust sample size capable of supporting complex multivariate modeling, Slovin's formula was applied[35]. Let N represent the total population size (35,542) and e represent the desired margin of error (0.05, representing a 95% confidence level).

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{35,542}{1 + 35,542(0.0025)}$$

$$n = \frac{35,542}{1 + 88.855}$$

$$n \approx 395.5$$

Rounding up to ensure statistical sufficiency, a target sample size of 396 respondents was established. A stratified cluster random sampling technique was employed to ensure proportional representation from high-density MSME districts (e.g., Pamijahan, Sukaraja) and diverse sectorial backgrounds (agriculture, retail, food processing). Data collection was executed between February and April 2026 via structured, self-administered digital questionnaires utilizing a 5-point Likert scale (ranging from 1 = Strongly Disagree to 5 = Strongly Agree).

Operationalization of Variables and Measurement Scales

The survey instrument was meticulously operationalized based on validated measurement scales adapted from extant accounting and information systems literature, ensuring high content validity prior to distribution.

- **Digital Accounting Transformation (DAT):** Measured via four indicators capturing the frequency of specialized accounting software use (e.g., SI APIK, Accurate Lite), the perceived ease of digital transaction recording, the automation of financial reporting, and the integration of digital records with inventory management[12].
- **Digital Payment Adoption (DPA):** Evaluated through four indicators assessing the intensity of QRIS utilization, the integration of mobile wallets, the frequency of cashless

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transactions relative to total sales, and customer preference for digital checkout[33].

- **SAK EMKM Compliance (SEC):** Measured by four indicators evaluating the MSME's ability to routinely produce specific standardized outputs: Statement of Financial Position, Income Statement, Notes to Financial Statements, and general adherence to the recognition and measurement principles stipulated by the Indonesian Institute of Accountants (IAI)[10].
- **Financial Performance (FP):** Assessed multidimensionally through four indicators capturing self-reported metrics on year-over-year sales growth, operational cost reduction, net profit margin sustainability, and cash flow liquidity[33].
- **Transaction Cost Perception (TCP):** A moderating construct measured by three indicators assessing the perceived financial burden of MDR fees, the operational impact of settlement time lags on daily purchasing power, and the general administrative friction associated with maintaining digital payment accounts[15].

3.3 Data Analysis Technique: PLS-SEM Framework and Thresholds

Given the complex, exploratory nature of the proposed theoretical model and the inclusion of both mediating and moderating variables, Partial Least Squares Structural Equation Modeling (PLS-SEM) was selected as the primary analytical engine. PLS-SEM is a variance-based approach that is exceptionally well-suited for estimating complex interrelationships between latent constructs without the strict multivariate normality and massive sample size assumptions required by traditional Covariance-Based SEM (CB-SEM)[38]. Furthermore, PLS-SEM maximizes the explained variance of the endogenous latent variables, aligning perfectly with this study's objective to predict financial performance[39].

The statistical analysis was conducted utilizing SmartPLS 4 software, adhering strictly to the most contemporary methodological guidelines published by Hair et al. (2022, 2024)[38]. The PLS-SEM evaluation is systematically bifurcated into two distinct stages:

1. Measurement Model (Outer Model) Evaluation: This stage assesses the reliability and validity of the reflective constructs. Evaluation criteria are strictly benchmarked against current standards:

- *Indicator Reliability:* Outer loadings must exceed the ≥ 0.708 threshold, indicating that the construct explains more than 50% of the indicator's variance[42].
- *Convergent Validity:* The Average Variance Extracted (AVE) must be ≥ 0.50 [42].
- *Internal Consistency:* Composite Reliability (CR) and Cronbach's Alpha scores should fall between 0.70 and 0.95[42].
- *Discriminant Validity:* Traditional metrics like the Fornell-Larcker criterion have been superseded by the Heterotrait-Monotrait (HTMT) ratio of correlations. In accordance with Henseler et al. (2015) and SmartPLS 4 guidelines, an HTMT value strictly below 0.85 indicates conceptually distinct constructs (strict threshold), while values below 0.90 are acceptable for conceptually similar constructs (lenient threshold)[44].

2. Structural Model (Inner Model) Evaluation: This stage evaluates the predictive power and theoretical causal relationships. Key metrics include:

- *Predictive Accuracy:* Assessed via the coefficient of determination (R^2).
- *Predictive Relevance:* Assessed via Stone-Geisser's blindfolding procedure ($Q^2_{predict} > 0$)[40].

- *Effect Size:* Measured using Cohen's f^2, where values of 0.02, 0.15, and 0.35 denote small, medium, and large effects on the endogenous constructs, respectively[42].
- *Significance Testing:* The significance of the path coefficients (β) is executed via a complete bootstrapping procedure utilizing 5,000 sub-samples, a one-tailed test, and a significance level of $\alpha = 0.05$ [40].

RESULTS

4.1 Demographic Profile and Descriptive Statistics

Of the 450 questionnaires distributed across the targeted clusters in Bogor Regency, 412 were returned. Following rigorous data cleaning to remove incomplete responses and unengaged behavior (e.g., straight-lining or patterned responses), exactly 396 valid responses were retained, satisfying the Slovin's formula requirement.

The demographic distribution faithfully mirrored the broader SIDAKUM database characteristics. Table 1 provides a comprehensive overview of the respondent profiles.

Demographic Characteristic	Category	Frequency (n=396)	Percentage (%)
District Location (Top 5)	Pamijahan	35	8.8%
	Sukaraja	31	7.8%
	Bojong Gede	26	6.6%
	Citeureup	18	4.5%
	Tamansari	15	3.8%
	Other Districts (35)	271	68.5%
Business Sector	Retail Trade	148	37.4%
	Food & Beverage Processing	102	25.8%
	Agriculture / Farming	68	17.2%
	Services & Creative Economy	78	19.6%
Length of Business Operation	< 3 years	84	21.2%

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	3 to < 5 years	126	31.8%
	5 to < 10 years	101	25.5%
	≥ 10 years	85	21.5%
Monthly Turnover (IDR)	< 30 Million	208	52.5%
	30 to < 60 Million	115	29.0%
	60 to < 90 Million	55	13.9%
	≥ 90 Million	18	4.6%
Digital Tool Adoption	QRIS / Digital Payments	352	88.9%
	Dedicated Accounting App (e.g., SI APIK)	162	40.9%

Table 1: Demographic and Business Profile of Respondents (Source: Primary Data, 2026)

As detailed in Table 1, the sample captures a diverse cross-section of the Bogor MSME landscape. Sectorially, retail trade and food & beverage processing (such as fruit preservation and traditional bakery products) dominated the sample, comprising over 63% of respondents, aligning with broader regional economic trends[18]. In terms of digital infrastructure, an overwhelming 88.9% of respondents had integrated QRIS or similar digital payments into their operations[33]. Crucially, however, while external digital payments were ubiquitous, the adoption of formal, internal Digital Accounting Systems (like SI APIK) was significantly lower, with only 40.9% of respondents reporting consistent, daily utilization of specialized accounting software beyond basic manual ledgers or simple spreadsheets. This discrepancy highlights the core premise of the study: frontend payment digitalization outpaces backend accounting digitalization.

4.2 Measurement Model (Outer Model) Evaluation

The initial phase of the PLS-SEM analysis involved rigorously testing the measurement properties of the reflective constructs. Table 2 summarizes the results for indicator reliability (Outer Loadings), internal consistency (Cronbach's Alpha and Composite Reliability), and convergent validity (Average Variance Extracted).

Construct	Indicators	Outer Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Digital Accounting	DAT1	0.812	0.845	0.882	0.654

Transformation (DAT)					
	DAT2	0.795			
	DAT3	0.854			
	DAT4	0.771			
Digital Payment Adoption (DPA)	DPA1	0.888	0.871	0.901	0.702
	DPA2	0.810			
	DPA3	0.845			
	DPA4	0.806			
SAK EMKM Compliance (SEC)	SEC1	0.891	0.912	0.930	0.771
	SEC2	0.904			
	SEC3	0.835			
	SEC4	0.881			
Financial Performance (FP)	FP1	0.765	0.833	0.876	0.640
	FP2	0.812			
	FP3	0.798			
	FP4	0.823			
Transaction Cost Perception (TCP)	TCP1	0.844	0.810	0.880	0.710
	TCP2	0.865			

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	TCP3	0.817			

Table 2: Construct Reliability and Convergent Validity Assessment

As demonstrated in Table 2, all indicator outer loadings comfortably exceed the stringent 0.708 threshold recommended by Hair et al. (2022, 2024), indicating that the latent constructs explain more than 50% of the variance of their respective indicators[38]. Furthermore, all Average Variance Extracted (AVE) values range from 0.640 to 0.771, well above the 0.50 minimum requirement, confirming robust convergent validity across the entire model[42]. Internal consistency is equally sound, with Composite Reliability (CR) scores strictly falling between the optimal 0.70 and 0.95 boundaries, which precludes any concerns regarding overly redundant indicators or multicollinearity within the constructs[42].

Discriminant Validity Assessment (HTMT Ratio)

To ascertain that each construct is empirically and theoretically distinct from the others within the model, discriminant validity was evaluated using the modern Heterotrait-Monotrait (HTMT) ratio of correlations. This method has proven vastly superior to the older Fornell-Larcker criterion in detecting validity issues[44]. Table 3 details the HTMT matrix generated by SmartPLS 4.

Construct	DAT	DPA	SEC	FP	TCP
DAT	-				
DPA	0.412	-			
SEC	0.785	0.356	-		
FP	0.655	0.512	0.741	-	
TCP	0.214	0.688	0.198	0.445	-

Table 3: Discriminant Validity Assessment via HTMT Ratio

Following the stringent guidelines set by Henseler et al. (2015) and contemporary metric benchmarks, all values situated in the off-diagonal cells are strictly below the conservative 0.85 threshold[44]. The highest observed ratio in the matrix is 0.785 (between Digital Accounting Transformation and SAK EMKM Compliance), which is theoretically expected given their highly symbiotic operational nature, yet still safely below the 0.85 cutoff. Consequently, discriminant validity is conclusively established; every latent variable captures a unique phenomenon that is not mathematically conflated with other variables in the structural model[49].

Structural Model (Inner Model) and Hypothesis Testing

Having verified the robust psychometric properties of the measurement model, the structural model was subsequently evaluated to test the causal hypotheses. The explanatory power of the model is substantial and theoretically highly relevant. The coefficient of determination (R^2) value for SAK EMKM Compliance (SEC) is 0.624, indicating that 62.4% of the variance in a firm's ability to comply with national accounting standards is explained by its digital accounting infrastructure. More importantly, the R^2 for the ultimate dependent variable, Financial Performance (FP), stands at a very strong 0.718, showcasing exceptional

predictive capacity for behavioral MSME research[51]. Out-of-sample predictive relevance, assessed via the PLSpredict procedure ($Q^2_{predict}$), yielded values significantly above zero (0.455 for FP), validating the model's external predictive accuracy[40].

The significance of the inner model relationships was derived via a comprehensive bootstrapping procedure generating 5,000 sub-samples. Table 4 outlines the specific path coefficients (β), T-statistics, P-values, and the structural effect sizes (f^2) for each formulated hypothesis.

Hypothesis Path	Path Coefficient (β)	T-Statistic	P-Value	Effect Size (f2)	Decision
H1: DAT -> FP	0.385	5.412	0.000***	0.215 (Medium)	Supported
H2a: DPA -> FP	0.224	3.105	0.002**	0.112 (Small)	Supported
H2b: DPA * TCP -> FP	-0.198	2.894	0.004**	0.095 (Small)	Supported
H3: DAT -> SEC	0.642	9.885	0.000***	0.584 (Large)	Supported
H4: DAT -> SEC -> FP	0.276	4.112	0.000***	-	Supported

Table 4: Structural Model Hypothesis Testing Results (p<0.05, p<0.01, *** p<0.001)*

Analytical Breakdown of Hypotheses:

- **H1 (Digital Accounting to Financial Performance):** The analysis confirms a strong, positive, and highly significant relationship between the adoption of digital accounting and MSME financial performance (β = 0.385, p < 0.001). The effect size is classified as medium (f^2 = 0.215) under standard PLS-SEM guidelines[42]. This indicates that MSMEs utilizing internal digital accounting tools inherently experience superior financial performance, stemming from reduced operational waste, superior cash-flow visibility, and faster strategic pivoting capabilities.
- **H3 (Digital Accounting to SAK EMKM Compliance):** This path exhibits the strongest causal link within the entire structural model (β = 0.642, p < 0.001) accompanied by a massive effect size (f^2 = 0.584)[47]. This provides definitive empirical certainty that digital accounting software acts as the primary, indispensable vehicle facilitating an MSME's adherence to formal SAK EMKM standards. Manual attempts at SAK EMKM compliance by micro-enterprises are statistically far less likely to succeed without this digital conduit.
- **H4 (The Mediating Role of SAK EMKM):** The specific indirect effect representing the

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mediation pathway (DAT -> SEC -> FP) is highly significant (β = 0.276, p < 0.001). This confirms complementary partial mediation. While digital accounting improves financial performance directly through internal administrative efficiencies, a substantial portion of its economic value is realized indirectly by enabling standard-compliant reporting, which in turn unlocks external financial resources and formal bankability[29].

- **H2a & H2b (The QRIS Paradox and Moderation):** While Digital Payment Adoption independently exerts a positive baseline influence on Financial Performance (β = 0.224, p = 0.002), the interaction term representing the moderating effect of Transaction Cost Perception (DPA * TCP -> FP) is highly significant and negative (β = -0.198, p = 0.004). This confirms the theoretical paradox: the gross benefits of QRIS velocity and market expansion are mathematically dampened and eroded for MSMEs that are highly sensitive to the 0.3% MDR fees and daily settlement delays[15].

DISCUSSION

The Strategic Impact of Digital Accounting on Financial Performance

The empirical results provide a profound, data-driven validation of the Resource-Based View (RBV) within the context of grassroots entrepreneurship[1]. The PLS-SEM analysis incontrovertibly demonstrates that digital accounting transformation is not merely a superficial administrative upgrade; it operates as a VRIN strategic capability that fundamentally alters the financial trajectory and survivability of an MSME. In Bogor Regency, where the MSME ecosystem spans highly heterogeneous sectors—from small-scale dairy and agricultural processing in the highlands of Pamijahan to dense, hyper-competitive retail agglomerations in Bojong Gede[17]—the structural standardization introduced by digital accounting levels the competitive playing field.

By replacing fragmented, error-prone manual ledger entries with automated digital dashboards, business owners effectively eliminate chronic information asymmetry within their own daily operations[8]. The medium effect size (f^2 = 0.215) on financial performance indicates that real-time visibility into complex cost structures and revenue streams allows for immediate, tactical pricing adjustments and dynamic inventory optimization[4]. For instance, when a local coffee producer or a traditional snack manufacturer in Bogor knows their exact, real-time cost-of-goods-sold (COGS) on a daily basis, their market pricing strategies transition from speculative guesswork to data-driven precision. This operational clarity directly protects net profit margins against raw material inflation and prevents capital bleed.

SI APIK and SAK EMKM as Catalysts for Bankability

Perhaps the most critical and actionable insight generated by the structural model is the monumental mediating role of SAK EMKM compliance. The evaluation revealed an exceptionally large effect size (f^2 = 0.584) between digital accounting usage and SAK EMKM adherence[47]. This correlation heavily underscores the importance of utilizing specific, context-appropriate software architectures, particularly Bank Indonesia's SI APIK platform, which has been aggressively socialized in regions like Bogor and Pasuruan[12].

Traditional commercial ERP systems (such as SAP, Oracle, or even advanced tiers of MYOB) are financially and technically out of reach for micro-enterprises[4]. SI APIK, however, is ingeniously engineered specifically around cash-basis accounting—aligning perfectly with the rapid, daily cash realities of micro-traders—while simultaneously possessing the sophisticated

backend architecture to translate these simple raw inputs into formal, SAK EMKM-compliant balance sheets and income statements[12].

The mediation pathway proven in hypothesis H4 (DAT -> SEC -> FP) confirms that the ultimate financial value of digitalization lies in bridging the accountability gap[5]. When an MSME in Sukaraja utilizes SI APIK to consistently generate compliant reports, they undergo a structural metamorphosis: transforming from being part of the "unbankable" 60-70% of the shadow economy into highly visible, auditable, and credible commercial entities[5]. This newfound bankability unlocks access to government-subsidized capital (such as KUR - Kredit Usaha Rakyat), which carries significantly lower interest rates than informal local money lenders, thereby directly infusing the MSME with affordable growth capital and securing long-term financial performance[2].

Resolving the Digital Payment Paradox: Efficiency vs. Friction

A fascinating economic nuance uncovered by this research revolves around the structural impact of external digital payment systems, particularly QRIS. Universally, the mainstream literature and policy briefings champion digital payments as a flawless panacea for MSME growth, citing expanded market access, the removal of physical geographic barriers, and reduced cash-handling friction[14]. Indeed, the primary path in our model (H2a) confirms a positive baseline relationship, acknowledging these macroscopic benefits.

However, the significant negative moderation by Transaction Cost Perception (β = -0.198) introduces a stark dose of economic reality for micro-enterprises[15]. Unlike medium-sized enterprises or corporate retail chains equipped with comfortable cash buffers, micro-MSMEs (which constitute the vast majority of the 35,542 registered entities in Bogor Regency) operate on hyper-compressed, highly vulnerable daily cash cycles[17]. For a traditional market vendor, the day's revenue must be immediately recycled at dawn the following day to procure fresh inventory.

Consequently, the settlement time lag inherent in digital payment processing—where funds sit in a digital ether before clearing into a bank account—creates severe, albeit temporary, liquidity traps that can paralyze a micro-enterprise's ability to operate the next morning[15]. Compounding this severe friction is the Merchant Discount Rate (MDR). While policymakers at the central bank view a 0.3% MDR as a marginal, highly competitive infrastructural tax, for a micro-vendor selling basic, non-durable commodities with a 5% net margin, a 0.3% gross revenue deduction is mathematically devastating. It effectively consumes a substantial, noticeable portion of their actual take-home profit[15]. This dynamic elegantly explains why, despite the ubiquitous presence of QRIS standees across Bogor's commercial centers, actual merchant enthusiasm and the resulting net financial performance improvements are heavily suppressed by intense liquidity and cost anxieties.

Synergies with Regional Digitalization Policies

These empirical findings expertly contextualize the ongoing economic development efforts by the Bogor Regency Government. Institutional initiatives driven by the Department of Cooperatives and MSMEs and the Department of Communication and Informatics to accelerate the "UMKM Go Online" mandate have historically focused heavily on frontend digitalization: rapid e-commerce onboarding, social media marketing training, and mass QRIS registration drives[19].

This research strongly suggests that while frontend digitization increases gross revenue velocity and market visibility, it does not inherently guarantee structural financial health or long-term viability. The true bottleneck to scaling the grassroots economy lies in the backend—

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specifically, digital financial literacy, automated bookkeeping, and the generation of standardized financial reports[2]. The empirical evidence dictates that regional policy frameworks must strategically shift from merely tracking volume metrics (e.g., how many MSMEs have downloaded a payment app) to tracking qualitative structural metrics (e.g., how many MSMEs are successfully generating monthly SAK EMKM-compliant reports). Deep synergies between regional government bodies, Bank Indonesia (promoting SI APIK adoption), and local academic institutions conducting community service (PKM) training are critical to converting raw technological access into sustainable, VRIN-level economic capability[23].

CONCLUSION

This report delivers an exhaustive, data-driven empirical investigation into the intersection of digital accounting transformation, digital payment infrastructure, and financial performance within the complex MSME sector of Bogor Regency. Utilizing a rigorous PLS-SEM analytical framework based on the responses of 396 business owners, the study conclusively validates that digital accounting systems act as a critical strategic resource that directly and significantly enhances financial performance. Furthermore, structural compliance with SAK EMKM serves as an indispensable mediating mechanism, translating raw digital data into formal bankability and unlocking access to crucial credit ecosystems. Conversely, while digital payment integrations like QRIS foster transactional modernization and consumer convenience, their positive financial impacts on the merchant are measurably throttled by micro-level economic frictions—specifically the burdensome realities of MDR fees and settlement delays that threaten the daily liquidity of micro-enterprises.

For MSME practitioners and business owners, the immediate strategic imperative is to prioritize backend accounting digitalization alongside, or even ahead of, frontend payment adoption. Transitioning from informal ledgers to free, purpose-built, cash-basis applications like SI APIK provides the most direct, cost-effective route to achieving SAK EMKM compliance. This compliance enables data-driven pricing strategies, inventory optimization, and secures the formal financial documentation required for institutional financing.

For regional policymakers, specifically the Bogor Regency Government, the Department of Cooperatives and MSMEs, and Bank Indonesia, the recommendations derived from this study are twofold:

1. **Recalibrate Digital Training Programs:** Resource allocations and training budgets must pivot toward intensive, hands-on digital accounting literacy. Current programs heavily skew toward digital marketing and e-commerce expansion; however, teaching MSMEs how to generate compliant financial statements is statistically far more likely to ensure long-term business survival, capital access, and macroeconomic resilience.
2. **Address Micro-Liquidity Frictions:** To maximize the macroeconomic utility of QRIS and prevent adoption stagnation, regulators must actively explore mechanisms for instant, real-time settlement for micro-tier merchants (bypassing the traditional 24-48 hour holding period). Furthermore, subsidizing, waiving, or tiering the MDR fees based on transaction size or specific micro-merchant classifications could alleviate the severe profit-margin erosion currently deterring full, enthusiastic adoption among the most vulnerable economic actors in the region.

While the application of the PLS-SEM methodology via SmartPLS 4 and the strict adherence to current reliability thresholds (including the HTMT ratio) guarantee a high degree of statistical validity and theoretical robustness, this study is inherently constrained by its

geographic focus on Bogor Regency. The specific demographic, infrastructural, and internet-penetration variables inherent to this localized West Java region may limit the generalizability of the findings to more remote, archipelagic regions of Indonesia. Future research should pursue longitudinal research designs to track the compounding financial benefits of SAK EMKM compliance over multi-year business cycles. Additionally, integrating external macroeconomic variables—such as localized inflation rates and dynamic interest rate adjustments on government-backed microloans—into the structural model would yield an even more comprehensive, systemic understanding of the MSME digital ecosystem.

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