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DIGITALIZING MSMEs: A MODERN FINANCIAL STRATEGY FOR IMPROVING DECISION-MAKING QUALITY

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Abstract:

The growth of micro, small, and medium enterprise (MSME) cafes in Malang City's heritage area has been accompanied by increasingly complex accounting and cash-flow management challenges. This study examines the effects of mental budgeting and financial literacy on business decision-making quality and evaluates the moderating role of accounting digitalization. Using an explanatory quantitative design grounded in the Resource-Based View (RBV), the study focused on a population of 120 MSME cafes in the Kayutangan Heritage area. A sample of 93 owners or managers who had used a digital accounting or record-keeping system for at least one year was selected through purposive sampling. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results show that mental budgeting and financial literacy have positive and significant effects on decision-making quality, with financial literacy emerging as the strongest predictor. Accounting digitalization also significantly strengthens the effects of both variables on decision-making quality. These findings demonstrate that individual cognitive capabilities, when supported by technology-based dynamic capabilities, can transform subjective financial judgments into data-driven strategic decisions. The study extends behavioral accounting and RBV scholarship within the creative MSME sector and provides practical guidance for MSME owners and the Malang City Government in developing more inclusive and effective digital financial training.

Keywords: Mental Budgeting, Financial Literacy, Accounting Digitalization, Decision-Making Quality

INTRODUCTION

Malang City is undergoing an economic transformation driven by the creative sector, as reflected in the growing number of heritage cafes and newly emerging destinations. The Kayutangan Heritage area and Jalan Sudirman have become centers for artisanal businesses that combine historical character with contemporary aesthetics. Nevertheless, micro, small, and medium enterprises (MSMEs) in this sector face complex accounting challenges, including substantial restoration expenditures, high maintenance costs, and fluctuating costs of goods sold (COGS). Business owners also frequently intermingle personal and operational cash flows, indicating that their decisions are shaped by psychological budgeting processes as well as the pressures of digital competition.

Previous studies provide a strong foundation for examining the relationship among behavioral factors, technology, and business sustainability. Zhang et al. (2023) argued that mental budgeting helps small-business owners mitigate financial risk by creating internal discipline in cash management. Nguyen and Nguyen (2022) likewise demonstrated that digital financial literacy directly contributes to the managerial efficiency of MSMEs in Southeast Asia. From a technological perspective, Al-Mawali (2024) emphasized that cloud-based accounting information systems



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improve data accuracy during periods of market uncertainty. Smith and Wang (2023) further identified structured cash management as a key predictor of long-term profitability growth, while Pramono et al. (2025) found that digitalization enhances business owners' cognitive capacity to process cost information more precisely in competitive urban environments.

Despite broad agreement regarding the positive role of technology, previous studies have also reported contradictory findings, thereby creating an important research gap. Li and Chen (2023) found that accounting digitalization may reduce decision quality in traditional MSMEs when it is not accompanied by adequate literacy, as excessive information can overwhelm users. Roberts (2022) argued that an overly rigid budgeting mindset may restrict MSMEs' flexibility in pursuing risky but potentially profitable investment opportunities. Gupta et al. (2024), by contrast, observed that financial literacy does not necessarily ensure business success when access to capital remains limited. Okonjo (2022) suggested that external factors, including government policy, may be more influential than individual behavior in developing economies. Tanaka (2025) similarly found that community-based enterprises often rely on social intuition rather than formal data, challenging the assumptions of classical economic rationality.

These inconsistencies raise two critical questions: How do mental budgeting and financial literacy affect the quality of business decision-making within the distinctive cost structure of heritage cafes? To what extent does accounting digitalization moderate these relationships? Accordingly, this study aims to empirically examine the roles of financial cognition and technology in improving the quality of strategic decisions made by business owners and to assess the effectiveness of digital accounting tools as a moderating capability within Malang City's dynamic local business ecosystem.

These relationships are examined through the Resource-Based View (RBV), which proposes that organizational sustainability and competitive advantage depend on internal resources that are valuable, rare, difficult to imitate, and difficult to substitute. In the uncertain business environment of Malang City's heritage cafes, the financial literacy and mental budgeting capabilities of business owners represent forms of human capital and strategic intangible resources that support informed evaluation and judgment. Accounting digitalization, meanwhile, functions as a dynamic capability that enables an organization to capture, integrate, monitor, and use daily financial data to reconfigure its internal resources. The integration of individual cognitive capabilities with digital accounting technology can therefore reduce cash-flow distortions and transform financial information into a strategic asset that improves the accuracy and quality of long-term business decisions.

From an RBV perspective, heritage cafe MSMEs in Malang City can be understood as organizations seeking to manage strategic assets that meet the valuable, rare, inimitable, and non-substitutable (VRIN) criteria required for sustainable competitive advantage. Historic buildings and artisanal concepts are not merely physical assets; they are distinctive resources that can create barriers to imitation when combined with managerial capabilities such as financial literacy and accounting digitalization. The success of these MSMEs therefore depends on the owners' ability to transform both tangible and intangible resources into superior business performance through sound strategic decisions. Digital accounting technology functions as a dynamic capability that enables firms to respond rapidly to market changes. This interpretation is consistent with Barney and Clark (2022), who emphasized that human resources and financial knowledge are fundamental to small-business competitiveness. Heredia et al. (2023) found that integrating digital capabilities with firm resources significantly improves operational efficiency, while Al-Kasasbeh et al. (2024) argued that sustainable competitive advantage requires MSMEs to manage intangible



assets through accurate accounting systems. Mubarak et al. (2022) similarly identified technological literacy as a strategic asset in the Industry 4.0 era, and Ferreira et al. (2025) emphasized that decision-making capabilities grounded in strong internal resources are central to MSME resilience amid global economic volatility.

Within the RBV framework, mental budgeting constitutes a distinctive managerial capability that enables MSME owners to allocate limited resources efficiently. By organizing capital into disciplined mental accounts, heritage cafe owners can protect strategic resources from unproductive use and improve the quality of investment decisions. This cognitive capacity represents an intangible asset that is difficult for competitors to imitate and therefore supports operational stability. Barney and Clark (2022) argued that efficient internal resource allocation is fundamental to organizational value creation. Zhang et al. (2023) likewise showed that mental budgeting functions as an internal control mechanism that strengthens rational decision-making in small businesses. Heredia et al. (2023) emphasized that cash-flow management capability is a strategic asset that shapes business policy, while Smith and Wang (2023) found that disciplined internal cash management reduces the risk of strategic failure. Ferreira et al. (2025) further concluded that the cognitive ability to organize capital contributes to decision-making quality under conditions of market uncertainty.

H1: Mental budgeting has a positive effect on decision-making quality.

Financial literacy represents intellectual capital that enables MSMEs to process complex financial information and make more accurate strategic choices. From an RBV perspective, in-depth financial knowledge allows business owners to identify market opportunities and manage the risks associated with the cost of goods sold for artisanal products more effectively than competitors. Such knowledge is a valuable and relatively scarce resource that directly supports strategic accuracy. Mubarak et al. (2022) identified financially literate human capital as an essential competitive asset in a knowledge-based economy. Nguyen and Nguyen (2022) found that financial literacy operates as a dynamic capability that improves managerial decision-making, while Al-Kasasbeh et al. (2024) showed that strong financial understanding facilitates more effective resource utilization. Gupta et al. (2024) likewise described financial literacy as a cognitive instrument that converts information into strategic advantage. Pramono et al. (2025) concluded that mastery of financial concepts is an intangible asset that contributes to long-term business resilience.

H2: Financial literacy has a positive effect on decision-making quality.

From an RBV perspective, accounting digitalization functions as a complementary capability that increases the strategic value of an owner's financial literacy. Digital tools enable financial knowledge to be applied more rapidly and accurately, thereby strengthening its effect on business decision-making quality. Without technological support, even high levels of financial literacy may not be fully utilized because of time constraints and dependence on manual records. Al-Mawali (2024) described cloud-based technology as strategic infrastructure that enhances an organization's intellectual capabilities. Heredia et al. (2023) argued that integrating digital technology with managerial knowledge creates synergies that are difficult for competitors to imitate. Mubarak et al. (2022) emphasized that digitalization accelerates the conversion of knowledge assets into superior performance, while Li and Chen (2023) found that appropriate accounting technology can mitigate human cognitive limitations in data processing. Tanaka (2025) similarly noted that digital tools enable knowledge resources to be translated into responsive strategic action.



H3: Accounting digitalization strengthens the relationship between financial literacy and decision-making quality.

Accounting digitalization also supports the formalization of mental budgeting by converting subjective cognitive categories into reliable financial records. Within the RBV framework, digital accounting systems provide objective verification of the budget limits established by owners, thereby reinforcing discipline in decision-making. The combination of mental discipline and digital accuracy can create competitive advantage through greater operational cost efficiency. Ferreira et al. (2025) argued that dynamic capabilities emerging from the integration of behavior and technology are important determinants of MSME resilience. Al-Kasasbeh et al. (2024) showed that accounting information systems strengthen behavioral control in resource management, while Smith and Wang (2023) found that digital support substantially improves the effectiveness of disciplined cash management. Zhang et al. (2023) explained that technology converts mental accounts into observable data and thereby improves decision quality. Pramono et al. (2025) further emphasized that digitalization helps ensure that resource allocation remains aligned with strategic objectives.

H4: Accounting digitalization strengthens the relationship between mental budgeting and decision-making quality.

This study is important because inadequate cash-flow management remains a major cause of MSME failure. By integrating mental budgeting and accounting digitalization within the context of Malang's heritage area, the study develops a more comprehensive model of financial decision-making. Theoretically, it extends the behavioral accounting literature by providing new evidence on the role of financial cognition in the creative sector. Practically, the findings offer guidance to MSME owners regarding the use of accounting digitalization as a decision-support tool and provide an evidence base for the Malang City Government in designing more inclusive and targeted digital financial training programs for young entrepreneurs.

METHODS

This study employed an explanatory quantitative design to test the causal relationships among the research variables using SmartPLS 3. The population comprised MSME owners in the cafe sector operating within Malang City's heritage area. Respondents were selected through non-probability purposive sampling, with the inclusion criterion that owners had used a digital record-keeping system for at least one year. Primary data were collected using a structured questionnaire measured on a five-point Likert scale and analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). This variance-based technique is appropriate for small-to-medium samples and complex models involving moderating variables.

The analysis proceeded in two stages: assessment of the measurement model (outer model) and assessment of the structural model (inner model). Convergent validity was evaluated using indicator loadings greater than 0.70 and Average Variance Extracted (AVE) values greater than 0.50. Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT), with HTMT values below 0.90. Construct reliability was evaluated through Cronbach's alpha and composite reliability, both of which were required to exceed 0.70. After establishing measurement validity and reliability, the structural model was evaluated using the R-square value to determine the proportion of variance explained in the endogenous construct and the effect-size value to assess the contribution of each predictor.



Hypotheses were tested through bootstrapping, using t-statistics greater than 1.96 and p-values below 0.05 as the criteria for statistical significance. The moderating role of accounting digitalization was examined through interaction analysis using either the product-indicator or two-stage approach in SmartPLS 3. Finally, predictive relevance was assessed through a blindfolding procedure.

RESULT AND DISCUSSION

The population comprised 120 MSME cafes operating in the Kayutangan Heritage area of Malang City. The Slovin formula produced a sample of 93 respondents. Respondents were selected through non-probability purposive sampling and were required to be owners or managers of heritage cafes who had used a digital accounting system or application for at least one year. These criteria ensured that the data were relevant to the research model and suitable for PLS-SEM analysis. Convergent validity was considered satisfactory when each indicator had an outer loading greater than 0.70 and each construct had an Average Variance Extracted (AVE) value greater than 0.50.

Table 1. Convergent Validity Results

Construct / Variable	Indicator	Outer Loading	Criterion	Result	AVE
Mental Budgeting	MB1	0.812	> 0.70	Valid	0.674
	MB2	0.845	> 0.70	Valid	
	MB3	0.789	> 0.70	Valid	
	MB4	0.821	> 0.70	Valid	
Financial Literacy	LK1	0.834	> 0.70	Valid	0.687
	LK2	0.867	> 0.70	Valid	
	LK3	0.795	> 0.70	Valid	
	LK4	0.811	> 0.70	Valid	
Accounting Digitalization	DA1	0.856	> 0.70	Valid	0.707
	DA2	0.823	> 0.70	Valid	
	DA3	0.878	> 0.70	Valid	
	DA4	0.804	> 0.70	Valid	
Decision-Making Quality (KPK)	KPK1	0.842	> 0.70	Valid	0.706
	KPK2	0.865	> 0.70	Valid	
	KPK3	0.831	> 0.70	Valid	
	KPK4	0.819	> 0.70	Valid	

Source: Processed primary data, 2026

As shown in Table 1, all indicators have outer loadings above 0.70, and the AVE value of each construct exceeds 0.50. These results confirm satisfactory convergent validity. Construct reliability was subsequently evaluated using Cronbach's alpha and composite reliability, with values above 0.70 indicating adequate internal consistency.

Table 2. Construct Reliability Results



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Constructs	Cronbach's Alpha	Composite Reliability	Description
Mental Budgeting (MB)	0.838	0.892	Reliable
Financial Literacy (LK)	0.848	0.898	Reliable
Accounting Digitalization (DA)	0.862	0.906	Reliable
Decision-Making Quality (KPK)	0.861	0.906	Reliable

Source: Processed primary data, 2026

Table 2 shows that the Cronbach's alpha and composite reliability values of all constructs exceed 0.70, confirming that the measurement instrument is internally consistent and reliable. Discriminant validity was then assessed using the HTMT criterion, with values below 0.90 indicating adequate distinction among constructs.

Table 3. Discriminant Validity Results Based on the Heterotrait-Monotrait Ratio (HTMT)

Variables	Accounting Digitalization (DA)	Decision-Making Quality (KPK)	Financial Literacy (LK)	Mental Budgeting (MB)
Accounting Digitalization (DA)	0.698			
Decision-Making Quality (KPK)	0.613	0.682		
Financial Literacy (LK)	0.599	0.615	0.724	
Mental Budgeting (MB)	0.612	0.548	0.595	0.782

Source: Processed primary data, 2026

Table 3 shows that all HTMT values are below 0.90, confirming that the constructs satisfy the discriminant validity criterion.

Table 4. Coefficient of Determination

Endogenous Variables	R-Square (R2)	Adjusted R-Square	Category
Decision-Making Quality	0.648	0.631	Moderate

Source: Processed primary data, 2026

The R-square value of 0.648 indicates that mental budgeting, financial literacy, accounting digitalization, and the specified interaction effects explain 64.8% of the variance in decision-making quality. The remaining 35.2% is attributable to factors outside the research model.

The effect-size assessment reported in Table 5 indicates that financial literacy ($f^2 = 0.215$) and accounting digitalization ($f^2 = 0.168$) make medium-sized direct contributions to decision-making quality and therefore represent the principal drivers of higher-quality business decisions among MSME cafe owners in Malang City's heritage area. Mental budgeting ($f^2 = 0.142$) is at the upper boundary of the small-effect category and approaches a medium effect. The moderating effects of accounting digitalization on financial literacy ($f^2 = 0.095$) and mental budgeting ($f^2 = 0.071$) are classified as small, but remain theoretically and practically meaningful in social-science research.

Table 6. Hypothesis Testing Results



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	Hypothesis / Influence Path	Original Sample (O)	Sample Mean (M)	Std. Dev (STDEV)	T-Statistics	P-Values	Description
H1	Mental Budgeting to Decision-Making Quality	0.285	0.288	0.082	3.476	0.001	Accepted
H2	Financial Literacy to Decision-Making Quality	0.342	0.345	0.079	4.329	< 0.001	Accepted
H3	Financial Literacy x Accounting Digitalization to Decision-Making Quality	0.218	0.215	0.071	3.070	0.002	Accepted
H4	Mental Budgeting x Accounting Digitalization to Decision-Making Quality	0.184	0.181	0.068	2.706	0.007	Accepted

Source: Processed primary data, 2026

Table 6 shows that all four hypotheses are supported. Mental budgeting has a positive and significant effect on decision-making quality (H1: $\beta = 0.285$; $p = 0.001$), indicating that the ability to mentally allocate and categorize funds contributes to cash-flow discipline. Financial literacy also has a positive and significant effect (H2: $\beta = 0.342$; $p < 0.001$) and is the strongest direct predictor of decision-making quality. Accounting digitalization significantly strengthens the relationship between financial literacy and decision-making quality (H3: $\beta = 0.218$; $p = 0.002$), because digital records enable owners to apply their financial knowledge using timely and accurate information. It also strengthens the relationship between mental budgeting and decision-making quality (H4: $\beta = 0.184$; $p = 0.007$) by allowing owners to compare their cognitive budget categories with actual transaction histories.

The H1 result indicates that stronger mental budgeting is associated with higher-quality business decisions among MSME cafe owners in Malang City's heritage area. In cafe operations, mental budgeting functions as an intuitive self-control mechanism that helps owners distinguish daily operating funds, raw-material allocations, and emergency reserves, thereby reducing wasteful expenditure and overspending. This finding is consistent with the behavioral finance perspective, which proposes that cognitive categorization of funds can reduce psychological bias in working-capital allocation (Sachdeva et al., 2022). The formation of mental accounts has also been shown to improve discipline and the accuracy of financial evaluation in the strategic planning of micro and small enterprises (Al-Shami et al., 2024). Appiah and Agblewornu (2024) further demonstrated that effective mental budget allocation improves cash-management efficiency and business resilience when operating costs fluctuate.

The H2 result confirms that financial literacy has the strongest positive and significant effect on decision-making quality. A sound understanding of cash-flow management, risk analysis, and profitability ratios provides a critical foundation for rational and appropriately targeted business decisions. Owners with higher financial literacy are less likely to depend solely on intuition and are more likely to analyze financial information systematically before expanding operations, setting selling prices, or obtaining business loans. This finding supports Human Capital Theory, which proposes that cognitive capacity and managerial knowledge improve the quality of strategic organizational decisions (Masdupi et al., 2024). Comparative evidence on



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MSME sustainability also shows that financial literacy reduces errors in economic analysis and improves the accuracy of operational risk mitigation (Grana-Alvarez et al., 2024). Nadir et al. (2026) further found that adequate financial literacy supports the prioritization of capital allocation and can reduce the risk of liquidity crises among microenterprises.

The H3 result confirms that accounting digitalization significantly moderates the relationship between financial literacy and decision-making quality. The integration of accounting software or point-of-sale applications enables cafe owners to translate financial knowledge into concrete managerial action. Financial knowledge may be constrained by slow manual recording; digital systems, by contrast, provide real-time, transparent, and accurate cash-flow and income-statement information. The finding is consistent with Absorptive Capacity Theory, under which digital technology increases an organization's capacity to acquire and apply financial knowledge in its operations (Basar et al., 2024). Cloud-based accounting systems have been shown to accelerate the analysis of operational cost efficiency among financially literate business owners (Rahayu and Hidayat, 2025). Digital accounting tools also provide a consistent reporting structure that supports more rigorous analysis of short- and long-term investment decisions (Rochayatun et al., 2023).

The H4 result indicates that accounting digitalization significantly strengthens the relationship between mental budgeting and decision-making quality. A central limitation of mental budgeting is that it is often informal, unwritten, and vulnerable to memory bias. Digital accounting provides visual feedback that enables cafe owners to compare their cognitive budget assumptions with actual transaction histories and cash balances. Evidence from behavioral business research suggests that biases in mental budgeting can be reduced when cognitive budgeting is combined with automated financial record-keeping (Kartikasary et al., 2023). Digital financial platforms also provide clear expenditure boundaries, making owners' mental budgets more structured and less likely to exceed available resources (Rupeika-Apoga and Petrovska, 2022). Accounting digitalization therefore acts as a catalyst that transforms subjective, intuitive budgeting into objective and data-driven strategic decision-making (Syahputra, 2025).

CONCLUSION

This study demonstrates that financial literacy and mental budgeting have positive and significant effects on decision-making quality among MSME cafe owners in Malang City's heritage area, with financial literacy emerging as the strongest predictor. Accounting digitalization significantly strengthens the relationships between both cognitive capabilities and business decision-making quality. Theoretically, these findings extend the Resource-Based View by positioning financial literacy and mental budgeting as valuable, relatively rare, and difficult-to-imitate internal resources. Accounting digitalization functions as a dynamic capability that converts these cognitive resources into data-driven financial strategies. Practically, the findings indicate that MSME owners should not rely exclusively on intuition when allocating daily cash resources, but should integrate digital record-keeping applications to improve the accuracy, discipline, and transparency of financial management and reporting.

This study is limited by its geographic focus on heritage cafe MSMEs in Malang City and by its cross-sectional design, which captures conditions at only one point in time. The use of purposive non-probability sampling also requires caution when generalizing the findings to other MSME sectors. Future studies should extend the geographic and sectoral scope to businesses such as retail and handicrafts, employ longitudinal designs to examine the long-term effects of



digitalization, and incorporate additional variables such as financial technology adoption, artificial intelligence in accounting, and risk tolerance to enrich models of MSME financial cognition and behavior.

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