

**AFFILIATION:**

^{1,2,3} Universitas Islam Negeri
Sumatera Utara, Medan, Indonesia

***CORRESPONDENCE :**

rizadeliyaniharahap@gmail.com

THIS ARTICLE IS AVAILABLE IN:

<https://e-journal.umc.ac.id/index.php/JPK>

DOI: 10.32534/jpk.v13i3.8834

CITATION:

Harahap, R. D., Harahap, I., & Nurlaila, N. (2026). Financial Literacy, Inclusion, and Technology Effects on Culinary MSME Performance in Medan. *Jurnal Proaksi*, 13(3), 407-427

ARTICLE HISTORY:**Received:**

4 August 2-26

Reviewed:

28 August 2026

Revised:

4 September 2026

Accepted:

26 September 2026

Financial Literacy, Inclusion, and Technology Effects on Culinary MSME Performance in Medan

Riza Deliyani Harahap^{1*}, Isnaini Harahap², Nurlaila³

Abstract

Main Purpose - This study aims to examine the effects of financial literacy, financial inclusion, and financial technology on the performance of culinary micro, small, and medium enterprises (MSMEs) in Medan City.

Method - This study employed a quantitative associative approach using primary data collected through questionnaires from 100 owners or managers of culinary MSMEs selected through purposive sampling. The data were analyzed using multiple linear regression with SPSS, supported by validity, reliability, classical assumption, and coefficient of determination analyses.

Main Findings - Financial literacy does not have a significant effect on culinary MSME performance, indicating that financial knowledge alone may not improve business outcomes when it is not consistently translated into effective financial management practices. In contrast, financial inclusion and financial technology have positive and significant effects on MSME performance. Access to formal financial services supports working-capital management and financial flexibility, while digital financial technology facilitates transaction efficiency and business operations.

Theory and Practical Implications - The findings are consistent with the Resource-Based View by showing that financial access and technological capabilities can function as strategic resources for MSME performance, while the Technology Acceptance Model provides a supporting perspective for interpreting the utilization of financial technology. Practically, culinary MSME development should combine applied financial-management assistance, broader access to formal financial services, and effective adoption of digital financial technology.

Novelty - This study provides contextual empirical evidence that distinguishes financial knowledge from actual financial access and technological capabilities used by culinary MSMEs. Unlike previous studies that generally report a positive relationship between financial literacy and MSME performance, this study finds no significant direct relationship between financial literacy and performance, whereas financial inclusion and financial technology demonstrate stronger empirical relationships with the performance of culinary MSMEs in Medan City.

Keywords: Financial Literacy, Financial Inclusion, Financial Technology, MSME Performance, Culinary Msmes.

Abstrak

Tujuan Utama - Penelitian ini bertujuan menganalisis pengaruh literasi keuangan, inklusi keuangan, dan financial technology terhadap kinerja usaha mikro, kecil, dan menengah (UMKM) kuliner di Kota Medan.

Metode - Penelitian ini menggunakan pendekatan kuantitatif asosiatif dengan data primer yang dikumpulkan melalui kuesioner dari 100 pemilik atau pengelola UMKM kuliner yang dipilih menggunakan purposive sampling. Data dianalisis menggunakan regresi linear berganda melalui SPSS yang didukung oleh uji validitas, reliabilitas, asumsi klasik, dan koefisien determinasi.

Temuan Utama - Literasi keuangan tidak berpengaruh signifikan terhadap kinerja UMKM kuliner, yang menunjukkan bahwa pengetahuan keuangan saja belum mampu meningkatkan kinerja usaha apabila tidak diterapkan secara konsisten dalam praktik pengelolaan keuangan. Sebaliknya, inklusi keuangan dan financial technology berpengaruh positif dan signifikan terhadap kinerja UMKM. Akses terhadap layanan keuangan formal mendukung pengelolaan modal dan fleksibilitas keuangan, sedangkan pemanfaatan teknologi keuangan digital meningkatkan efisiensi transaksi dan mendukung kegiatan operasional usaha.

Implikasi Teori dan Praktis - Temuan penelitian sejalan dengan perspektif Resource-Based View yang menunjukkan bahwa akses terhadap sumber daya keuangan dan kapabilitas teknologi dapat menjadi sumber daya strategis bagi kinerja UMKM, sedangkan Technology Acceptance Model digunakan sebagai perspektif pendukung dalam menjelaskan pemanfaatan teknologi keuangan. Secara praktis, pengembangan UMKM kuliner perlu mengintegrasikan pendampingan pengelolaan keuangan, perluasan akses terhadap layanan keuangan formal, dan pemanfaatan teknologi keuangan digital secara efektif.

Kebaruhan Penelitian - Penelitian ini memberikan bukti empiris kontekstual yang membedakan antara pengetahuan keuangan dengan kemampuan aktual dalam mengakses sumber daya keuangan dan memanfaatkan teknologi. Berbeda dengan sejumlah penelitian terdahulu yang menunjukkan hubungan positif antara literasi keuangan dan kinerja UMKM, penelitian ini tidak menemukan hubungan langsung yang signifikan antara literasi keuangan dan kinerja, sedangkan inklusi keuangan dan financial technology menunjukkan hubungan empiris yang lebih kuat dengan kinerja UMKM kuliner di Kota Medan.

Kata Kunci: Literasi keuangan, inklusi keuangan, teknologi keuangan, kinerja UMKM, UMKM kuliner.

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are important contributors to Indonesia's economic development because they support employment creation, income distribution, and local economic activities. However, the increasing number of MSMEs has not always been followed by improvements in managerial capability, financial management practices, and technological readiness. These challenges are particularly relevant for culinary MSMEs, which operate with rapid transaction cycles, fluctuating raw material prices, intensive customer interaction, and high dependence on daily cash-flow management. Therefore, strengthening financial capability, access to financial services, and technological adaptation has become essential to improve MSME sustainability and competitiveness.

The development of MSMEs is also evident in Medan City. The number of MSMEs increased from approximately 38,343 units registered through the SIMDAKOP program in 2023 to 90,246 business units in 2025, comprising 90,041 micro enterprises, 145 small enterprises, and 60 medium enterprises ([Badan Pusat Statistik Kota Medan, 2025](#)). This substantial growth reflects the increasing importance of MSMEs in Medan's local economy, including businesses operating in the culinary sector. Culinary MSMEs continue to develop along with changes in urban consumption patterns, growing demand for food and beverage services, and increasing use of digital transactions. However, business growth has not always been accompanied by improvements in managerial capability, financial administration, and technological readiness. Culinary MSMEs in Medan still face challenges in financial record keeping, separation of personal and business finances, determination of production costs, and effective utilization of digital financial services ([Marliyah et al., 2022](#)). These conditions indicate that the increasing number of MSMEs needs to be accompanied by stronger financial management capabilities, broader access to financial services, and more effective adoption of financial technology to support sustainable business performance.

The performance of culinary MSMEs reflects the ability of business owners to manage resources, maintain operational activities, and achieve business objectives. Performance can be measured through sales growth, profit growth, customer growth, and operational efficiency ([Fadilah et al., 2022](#)). In culinary businesses, these indicators are closely related to financial decision-making, access to capital, and the ability to adopt appropriate technology. Financial literacy becomes important because it provides business owners with knowledge and skills to prepare budgets, manage cash flows, evaluate business performance, and determine suitable financing alternatives. Nevertheless, financial knowledge does not always improve business outcomes unless it is implemented through disciplined bookkeeping, cost control, and effective financial behavior ([Agyei, 2018](#)).

Financial inclusion also plays an important role because access to formal financial products, financing facilities, payment services, and savings instruments can support MSMEs in managing liquidity and expanding business activities. Financial literacy and financial inclusion are closely connected because individuals with better financial knowledge tend to be more capable of selecting and utilizing appropriate financial services ([Grohmann et al., 2018](#)).

Financial technology has become another important factor influencing MSME performance. Digital financial services such as QRIS, electronic wallets, mobile banking, and other payment platforms can improve transaction efficiency, reduce cash management problems, and provide transaction records that support business monitoring. However, the adoption of financial technology among culinary MSMEs in Medan City remains uneven because some business owners experience limitations in digital skills, internet accessibility, and concerns regarding transaction security. These conditions indicate that technological availability alone is insufficient; MSME owners also require financial capability and readiness to utilize digital financial services effectively.

Previous studies have produced inconsistent findings regarding the relationship between financial literacy and MSME performance. Several studies report that financial literacy contributes positively to business performance by improving financial capability and managerial decision-making,

whereas other studies indicate that its effect depends on financial behavior, managerial practices, and organizational capabilities ([Duréndez et al., 2023](#); [Graña-Alvarez et al., 2024](#); [Gunawan et al., 2023](#)). These inconsistencies indicate that financial knowledge does not necessarily translate directly into improved business performance. At the same time, financial inclusion and financial technology are increasingly important in facilitating access to financial resources and transaction efficiency. However, limited evidence explains whether financial access and technological capabilities play a stronger role than financial knowledge itself within culinary MSMEs, which operate under rapid cash turnover, fluctuating input costs, and intensive daily transactions. This unresolved issue constitutes the empirical gap addressed in this study.

Accordingly, the contribution of this study lies not merely in combining financial literacy, financial inclusion, and financial technology within a single model, but in examining whether financial knowledge, financial access, and technological capability contribute differently to culinary MSME performance. By focusing on culinary MSMEs characterized by rapid cash circulation and intensive digital transactions, this study provides contextual evidence on whether access to financial resources and digital financial capabilities may play a more immediate role in business performance than financial knowledge alone.

Based on these considerations, this study aims to analyze the influence of financial literacy, financial inclusion, and financial technology on the performance of culinary MSMEs in Medan City. Theoretically, this study contributes by explaining MSME performance through the perspective of financial capability, access to financial resources, and technological capability as strategic business resources. Empirically, this study provides evidence from culinary MSMEs in Medan City, a sector characterized by rapid financial transactions and increasing digital payment adoption. Practically, the findings are expected to provide insights for MSME owners, financial institutions, and policymakers in developing strategies to strengthen financial management and digital transformation among culinary MSMEs.

LITERATURE REVIEW

Resource-Based View (RBV)

The Resource-Based View (RBV) is positioned as the grand theory in this study because it explains how internal resources and organizational capabilities contribute to sustainable business performance. RBV argues that firms can achieve competitive advantage when they possess and effectively utilize resources that are valuable, rare, imperfectly imitable, and non-substitutable ([Barney, 1991](#)). These resources are not limited to tangible assets, such as financial capital and physical resources, but also include intangible resources such as knowledge, managerial skills, organizational capabilities, technological competence, and the ability to adapt to environmental changes.

In the context of MSMEs, financial literacy, financial inclusion, and financial technology can be considered strategic resources that influence business owners' ability to manage capital, control operational activities, make financial decisions, and respond to increasingly digital business environments. Financial literacy represents a knowledge-based resource because it enables MSME owners to understand financial information, prepare financial plans, manage cash flows, evaluate financing alternatives, and make rational business decisions. From the RBV perspective, the ability to transform financial knowledge into effective managerial practices becomes an important organizational capability that can improve MSME performance.

Previous studies support this perspective by demonstrating that financial and technological literacy can strengthen MSME performance through improved risk management practices and more structured managerial decision-making ([Kulathunga et al., 2020](#)). Furthermore, the ability of MSME owners to identify and utilize formal and digital financial services represents an organizational capability that can enhance financial performance ([Sholihah et al., 2023](#)). Recent evidence also

indicates that digital adoption and financial literacy improve business performance by increasing the effectiveness of technological and financial resource utilization among micro and small enterprises (Affandi et al., 2024). In addition, the interaction between dynamic capabilities and financial behavior contributes to accelerating MSME performance and business sustainability (Supramono et al., 2025).

Supporting Theory: Technology Acceptance Model (TAM)

In addition to RBV, this study employs the Technology Acceptance Model (TAM) as a supporting theory to explain the acceptance and utilization of financial technology among MSME owners. TAM was developed to explain individual behavioral intentions in adopting information technology, particularly through two main perceptions: perceived usefulness and perceived ease of use (Davis, 1989). Perceived usefulness refers to the extent to which users believe that technology can improve their performance, whereas perceived ease of use refers to the extent to which users perceive that technology can be operated with minimal effort (Davis, 1989).

Within MSMEs, financial technology adoption becomes more effective when business owners perceive digital financial services as useful, accessible, and easy to operate. Digital finance can improve transaction efficiency, strengthen financial inclusion, and support business performance when users are willing and capable of utilizing these technologies (Thathsarani & Jianguo, 2022). Digital financial services can also reduce geographical and transaction barriers; however, their effectiveness depends on supporting factors such as infrastructure availability, security, financial knowledge, and consumer protection.

In this study, TAM is used only as a supporting theoretical perspective to explain why MSME owners may accept and utilize financial technology. Perceived usefulness and perceived ease of use are not examined as independent constructs in the empirical model; rather, they provide a conceptual basis for understanding the behavioral acceptance of digital financial services. The empirical model directly examines financial technology as an organizational and technological capability associated with MSME performance. Accordingly, RBV remains the primary theoretical foundation of the study, while TAM provides complementary explanatory support for the utilization of financial technology.

MSME Performance

MSME performance refers to the achievements obtained by a business in carrying out its activities and realizing its objectives within a particular period. In this study, performance is assessed using financial and non-financial indicators. Financial indicators include sales growth and profit growth, while non-financial indicators include customer growth and operational efficiency. Sales growth reflects an increase in turnover or transaction volume, whereas profit growth indicates the ability of a business to generate higher net earnings. Customer growth represents market expansion, while operational efficiency reflects the ability to manage capital, labor, raw materials, and technology while controlling unnecessary expenses.

Sound financial governance and simple bookkeeping can help MSME owners monitor business development, control costs, and evaluate operational outcomes more accurately (Wati et al., 2024). MSME performance may also be strengthened through the interaction of financial literacy, financial inclusion, and financial technology because these factors improve financial capability, access to business resources, and operational efficiency (Gunawan et al., 2023; Hasanudin & Panigfat, 2023). Evidence from Indonesian MSMEs further indicates that digital adoption and financial literacy are closely associated with stronger business performance. In the culinary sector, digital transformation and the ability to manage financial resources can also contribute to improved financial performance (Rita & Nastiti, 2024). Similarly, innovation and competitive strategies have been identified as important determinants of culinary MSME performance in Indonesia (Pusung et al., 2023). Therefore, MSME performance in this study represents the ability of culinary business owners to improve sales, profits, customer growth, and operational efficiency through the effective management of financial and technological resources.

Financial Literacy

Financial literacy refers to the knowledge, awareness, skills, attitudes, and behaviors required to understand financial matters and make appropriate financial decisions. It includes financial planning, budgeting, savings, borrowing, insurance, investment, risk management, and the evaluation of financial alternatives (OECD, 2018). For MSME owners, financial literacy supports the preparation of business budgets, separation of personal and business funds, determination of the cost of goods sold, debt management, and profitability evaluation. The indicators used in this study include basic financial knowledge, savings and loans, insurance, and investment.

Financial literacy is important because knowledgeable business owners are generally better able to control expenses, plan cash flows, select appropriate financing sources, and reduce inappropriate financial decisions. The financial literacy of SME managers can strengthen business decision-making capacity and support access to financial services. However, its influence may vary according to cultural, organizational, educational, and business conditions (Agyei, 2018). Financial literacy may also promote business sustainability when it supports access to finance, responsible risk attitudes, and appropriate managerial behavior. More recent studies confirm that the effect of financial literacy on SME outcomes depends on how financial knowledge is translated into managerial practices, financing decisions, and organizational capabilities. Financial literacy can also facilitate formal credit access and contribute to MSME performance when business owners are capable of using financial knowledge to evaluate financing alternatives (Widyastuti et al., 2023).

Evidence involving MSMEs in Medan City further indicates that financial literacy can contribute to business performance, although financial inclusion does not necessarily mediate this relationship (Gunawan et al., 2023). Financial literacy has also been associated with financial behavior and the ability of business actors to make more appropriate financial decisions (Asmara et al., 2025). These findings reinforce the importance of distinguishing between financial knowledge itself and its practical implementation in business management.

Financial Inclusion

Financial inclusion refers to a condition in which individuals and businesses can access and effectively use formal financial products and services that are secure, affordable, timely, and appropriate to their needs. These services include bank accounts, business savings, loans, insurance, digital payments, and other financing facilities. Financial inclusion does not merely indicate ownership of a financial account but also reflects the productive and continuous use of financial services. It provides MSMEs with opportunities to strengthen working capital, maintain liquidity, manage financial risks, and finance business expansion (Nurlaila et al., 2022; Otoritas Jasa Keuangan, 2016).

Financial literacy and financial inclusion are closely related because individuals with better financial knowledge are generally more capable of evaluating and using appropriate financial products. Financial literacy contributes to broader access to and use of formal financial services (Grohmann et al., 2018), while access to digital finance may improve SME performance by facilitating transactions, improving financial documentation, and reducing financing constraints (Frimpong et al., 2022). MSMEs also benefit substantially from improved access to finance because they often experience greater credit constraints than larger enterprises. Formal financing allows them to invest in productive assets and pursue sustainable business growth. Financial inclusion can further support sales growth by reducing financial barriers and enabling businesses to respond more effectively to operational and market needs (Lee et al., 2020).

Recent studies show that digital and financial literacy can increase MSMEs' ability to access formal and digital financial services, thereby strengthening financial inclusion (Al-shami et al., 2024). Digital financial inclusion can also function as a mechanism through which digital financial literacy and institutional support contribute to MSME performance (Tandilino et al., 2025). Evidence from Indonesian MSMEs further demonstrates that financial literacy and financial inclusion can reinforce

business performance when supported by appropriate access to financing and financial services (Mujiatun et al., 2023; Widyastuti et al., 2023). Financial literacy and financial inclusion are also associated with stronger financial behavior and more effective financial decision-making (Asmara et al., 2025).

From the RBV perspective, financial inclusion functions as access to external resources that can strengthen the internal capacity of MSMEs. Working capital, savings facilities, payment services, and affordable financing can help business owners stabilize cash flows and develop their business scale. These benefits become stronger when financial services are used productively and supported by adequate financial literacy and technological capability.

Financial Technology

Financial technology refers to financial service innovations that use digital technology to provide faster, more accessible, flexible, and efficient services. These services include QRIS, electronic wallets, mobile banking, electronic payments, digital loans, and other technology-based financial platforms. For culinary MSMEs, financial technology can reduce transaction time, minimize errors in handling cash, provide customers with more flexible payment options, and generate digital transaction records that can assist business owners in monitoring daily sales and cash inflows.

The implementation of financial technology among MSMEs can improve transaction efficiency and support digital business operations. However, its effectiveness is influenced by business owners' digital skills, human-resource readiness, internet infrastructure, and confidence in transaction security (Akbar et al., 2024). From the TAM perspective, perceived usefulness and perceived ease of use provide a conceptual explanation for MSME owners' willingness to adopt financial technology, although these perceptions are not examined as separate constructs in the present empirical model. Electronic payment and e-commerce services can improve MSME supply-chain performance by accelerating transactions and supporting business digitalization (Kilay et al., 2022). FinTech adoption is particularly relevant to small food businesses because their activities involve rapid cash turnover, frequent consumer transactions, and the need for efficient payment systems (Najib et al., 2021).

Financial technology can also improve financial accessibility, productivity, and operational flexibility. Digital payment adoption may strengthen financial transparency, efficiency, and competitiveness among Indonesian MSMEs (Sutrisno & Nainggolan, 2025). FinTech has also been found to positively affect SME performance, although its impact may become stronger when business owners possess adequate financial literacy (Lontchi et al., 2023). Recent studies confirm that FinTech can enhance SME performance by expanding financing opportunities and reducing transaction and financing constraints (Li et al., 2024; Sanga & Aziakpono, 2023). Digital transformation has likewise been associated with stronger financial performance among Indonesian culinary MSMEs.

Digital adoption and financial knowledge can work together to support sustainable MSME performance because technological adoption becomes more productive when business owners possess sufficient financial capability to utilize digital services appropriately (Nugraheni et al., 2025). Financial literacy, FinTech lending, digitalization, and marketing strategies have also been identified as important factors supporting MSME sustainability (Gitama et al., 2025). Financial technology therefore functions not only as a payment instrument but also as a technological capability that enables MSMEs to adapt to cashless consumer behavior and manage business transactions more effectively.

HYPOTHESES DEVELOPMENT

Financial Literacy and MSME Performance

Financial literacy provides business owners with the knowledge and skills required to manage capital, control costs, prepare cash-flow plans, evaluate financial performance, and select appropriate financing alternatives. From the Resource-Based View (RBV) perspective, financial literacy represents

an intangible knowledge-based resource because it strengthens managerial capability and enables business owners to utilize financial information effectively in decision-making processes (Barney, 1991). In MSMEs, financial knowledge becomes valuable when it is transformed into practical capabilities, such as disciplined bookkeeping, cost control, financial planning, and appropriate financing decisions.

Previous studies demonstrate that financial literacy contributes to MSME performance by improving financial behavior, risk management practices, and managerial decision-making capabilities. Financial and technological literacy have been found to strengthen SME performance through improved enterprise risk management practices and more structured business decisions (Kulathunga et al., 2020). Financial literacy also supports business growth by improving access to finance and strengthening responsible financial behavior among entrepreneurs (Agyei, 2018). Empirical evidence from Indonesian MSMEs indicates that financial literacy contributes to business performance by enhancing financial capability and managerial effectiveness (Gunawan et al., 2023). Furthermore, financial literacy has been shown to support MSME growth when financial knowledge is applied in business planning and resource management (Affandi et al., 2024; Widyastuti et al., 2023). Recent findings also indicate that financial literacy influences financial behavior, which subsequently strengthens business sustainability and performance (Asmara et al., 2025; Supramono et al., 2025).

Based on the RBV perspective and previous empirical findings, financial literacy can be considered a strategic resource that enables MSME owners to manage business resources more effectively and improve performance. Therefore, the first hypothesis is formulated as follows:

H1 : Financial literacy has a positive effect on MSME performance.

Financial Inclusion and MSME Performance

Financial inclusion provides MSMEs with access to formal financial resources that can support working capital, liquidity, investment, and business expansion. From the RBV perspective, financial inclusion represents access to external strategic resources that can strengthen internal business capacity. Formal financial access can reduce financing constraints, facilitate investment in productive assets, and support sustainable business growth. Financial inclusion may also strengthen SME performance through improved access to digital finance and more productive financial service utilization (Sholihah et al., 2023).

Recent evidence demonstrates that financial and digital financial literacy can facilitate financial inclusion among Indonesian small enterprises (Al-shami et al., 2024). Digital financial inclusion may also mediate the contribution of digital financial literacy and institutional support to MSME performance (Tandilino et al., 2025). Financial inclusion can further contribute to MSME performance when combined with FinTech lending and adequate business capital (Hasanudin & Panigfat, 2023). Financial literacy and financial inclusion are also closely related to financial behavior and the productive utilization of financial services (Asmara et al., 2025). Therefore, the second hypothesis is formulated as follows:

H2 : Financial inclusion has a positive effect on MSME performance.

Financial Technology and MSME Performance

Financial technology provides MSMEs with faster and more flexible payment facilities, digital transaction records, wider access to financial services, and improved transaction efficiency. From the TAM perspective, perceived usefulness and perceived ease of use provide a conceptual explanation for MSME owners' willingness to adopt financial technology, although these perceptions are not examined as separate constructs in the present empirical model. The adoption of e-payment and e-commerce services can support MSME performance by accelerating transactions and strengthening business digitalization (Kilay et al., 2022). FinTech adoption among small food businesses is also associated with transaction convenience, innovation opportunities, and expected performance improvements (Najib et al., 2021).

Digital payments may further strengthen transparency, efficiency, and MSME competitiveness (Sutrisno & Nainggolan, 2025), while FinTech has been found to positively affect SME performance when supported by sufficient financial capability (Lontchi et al., 2023). More recent evidence demonstrates that FinTech contributes to SME performance by facilitating financing, reducing financing costs, and improving business efficiency (Li et al., 2024). Digital finance is also associated with improved MSME performance through broader financial access and more efficient transactions. In the Indonesian culinary sector, digital transformation has similarly been associated with improved financial performance. FinTech lending and digitalization can contribute to MSME sustainability when combined with financial literacy and appropriate business strategies (Gitama et al., 2025). Therefore, the third hypothesis is formulated as follows:

H3 : Financial technology has a positive effect on MSME performance.

Based on the theoretical foundation and hypothesis development, the proposed conceptual framework is presented in Figure 1.

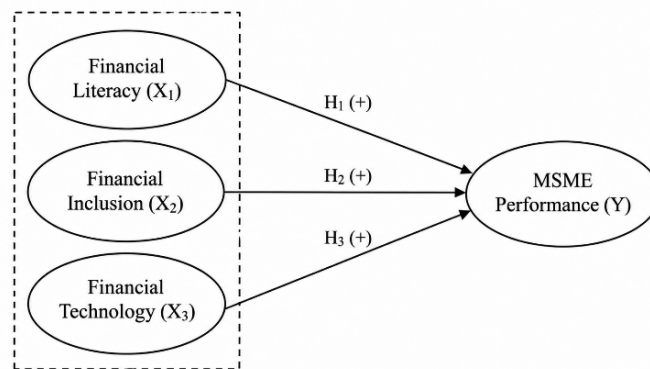


Figure 1. Conceptual Framework

Source: Authors' elaboration, 2026.

RESEARCH METHOD

This study employed a quantitative associative and cross-sectional approach to examine the statistical relationships between financial literacy, financial inclusion, financial technology, and the performance of culinary MSMEs in Medan City. The quantitative approach was selected because the study analyzes numerical questionnaire data and evaluates the proposed relationships among variables using statistical procedures (Sugiyono, 2022). Given the cross-sectional design, the analysis focuses on statistical associations rather than establishing definitive causal relationships.

The target population consisted of owners or managers of culinary MSMEs operating in Medan City who were directly involved in business management and decision-making. Respondents were selected using purposive sampling based on the following criteria: (1) owning or managing a culinary MSME in Medan City, (2) having operated the business for at least one year, and (3) being directly involved in decisions related to financial management, capital utilization, and financial technology adoption. The final analytical sample consisted of 100 respondents. Sample adequacy was evaluated using Green's (1991) recommendation for multiple regression, $N \geq 50 + 8m$, where m represents the number of predictor variables (Green, 1991). With three predictors, the minimum recommended sample size was 74 respondents; therefore, the final sample of 100 respondents exceeded this minimum requirement. Green's original article provides support for the $N \geq 50 + 8m$ rule for testing the overall multiple correlation, while also noting that sample-size requirements should ideally consider effect size.

Data were collected using a structured questionnaire administered to eligible respondents. The questionnaire also collected respondent characteristics, including gender, age, educational background, duration of business operation, and business scale. The main research instrument measured four constructs: financial literacy, financial inclusion, financial technology, and MSME performance. Financial literacy and financial inclusion were each measured using 12 items, while MSME performance was measured using 12 items. Financial technology was initially measured using 18 items; following item-validity screening, one item that did not meet the validity criterion was excluded, resulting in 17 items retained for subsequent analysis. Responses were recorded using a five-point Likert scale, with higher scores indicating higher levels of the respective constructs. The operational definitions and measurement specifications are presented in Table 1.

Instrument quality was evaluated through item-validity and internal-consistency reliability testing. Item validity was assessed using corrected item-total correlations, with the value of each individual item reported to allow verification of item performance. Reliability was evaluated using Cronbach's Alpha. Because the instrument was used in an exploratory measurement context, coefficients of approximately 0.60 or higher were treated as minimally acceptable, while coefficients below 0.70 were interpreted cautiously as indicating moderate rather than strong internal consistency. This cautious interpretation is important because Cronbach's Alpha should be evaluated in relation to the number and nature of items rather than treated as an absolute indicator of measurement quality (Taber, 2018).

The statistical analysis began with respondent demographic profiles and descriptive statistics for each research variable, including the minimum, maximum, mean, and standard deviation. Multiple linear regression was subsequently used to estimate the relationships between financial literacy, financial inclusion, financial technology, and MSME performance. Prior to regression analysis, normality, multicollinearity, and heteroscedasticity diagnostics were conducted. Because all constructs were obtained from the same self-report questionnaire, an additional single-factor diagnostic was used as a supplementary assessment of potential common method bias (Podsakoff et al., 2003). The multiple regression model was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

where Y represents MSME performance, X_1 represents financial literacy, X_2 represents financial inclusion, X_3 represents financial technology, β_0 represents the regression constant, $\beta_1 - \beta_3$ represent the estimated regression coefficients, and ε represents the error term. The t-test was used to evaluate the regression coefficient associated with each independent variable, while the F-test was used exclusively to assess the overall statistical significance of the regression model. The coefficient of determination (R^2) and adjusted R^2 were used to evaluate the explanatory ability of the model. Regression hypothesis tests were evaluated at a significance level of 5%.

Table 1. Operationalization of Research Variables

Variable	Operational Definition	Indicators	Initial / Retained Items	Scale	Scoring
Financial Literacy (X_1)	The knowledge and capability of MSME owners to understand and manage financial matters relevant to business decision-making.	Basic financial knowledge; savings and loans; insurance; investment	12 / 12	Likert 1–5	Sum of retained item scores; higher scores indicate higher financial literacy

Financial Inclusion (X2)	The ability of MSME owners to access and effectively utilize formal financial products and services for business purposes.	Access to financial services; availability and suitability of services; utilization of financial services; benefits of financial access	12 / 12	Likert 1–5	Sum of retained item scores; higher scores indicate greater financial inclusion
Financial Technology (X3)	The utilization of technology-based financial services to facilitate financial transactions and support business activities.	Usefulness and transaction benefits; ease of use; accessibility and convenience; utilization of digital financial services	18 / 17	Likert 1–5	Sum of 17 retained item scores; higher scores indicate greater financial technology utilization
MSME Performance (Y)	The achievement of culinary MSMEs in financial and non-financial aspects of business operations.	Sales growth; profit growth; customer growth; operational efficiency	12 / 12	Likert 1–5	Sum of retained item scores; higher scores indicate stronger MSME performance

Source: Authors' operationalization based on the research instrument and relevant literature, 2026.

RESULTS

This study involved 100 owners or managers of culinary MSMEs in Medan City who met the predetermined respondent criteria. The results are presented sequentially through respondent characteristics, descriptive statistics, measurement-instrument evaluation, regression-assumption diagnostics, and multiple regression analysis.

Respondent Characteristics

The demographic profile was examined to provide an overview of the respondents involved in the study. The characteristics included gender, age, educational background, duration of business operation, and business scale. The respondent profile is presented in Table 2.

Table 2. Respondent Characteristics

Characteristic	Category	Frequency	Percentage
Gender	Male	26	26%
	Female	74	74%
Age	< 30 years	47	47%
	≥ 30 years	53	53%
Education	Senior High School	52	52%
	Diploma/Bachelor's Degree	48	48%
Business Duration	> 1 year	100	100%
Business Scale	Micro	72	72%
	Small	22	22%
	Medium	6	6%

Source: Processed Research Data, 2026.

The respondent profile indicates that female business actors constituted the majority of the sample (74%), while male respondents represented 26%. Respondents aged 30 years or older

accounted for 53%, while 47% were younger than 30 years. In terms of educational background, 52% had completed senior high school and 48% held a diploma or bachelor's degree. All respondents had operated their businesses for more than one year, consistent with the sampling criteria. Based on business scale, most respondents operated micro enterprises (72%), followed by small enterprises (22%) and medium enterprises (6%).

Descriptive Statistics

Descriptive statistics were used to summarize the distribution of the research variables. The minimum, maximum, mean, and standard deviation values are presented in Table 3.

Table 3. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Financial Literacy	100	35	60	49.94	4.017
Financial Inclusion	100	32	60	49.80	4.269
Financial Technology	100	59	85	71.68	5.128
MSME Performance	100	39	60	50.63	3.850

Source: Processed Research Data, 2026.

The descriptive statistics show variation across all research variables. Financial literacy obtained a mean score of 49.94 with a standard deviation of 4.017, while financial inclusion had a mean of 49.80 with a standard deviation of 4.269. Financial technology obtained a mean score of 71.68 with a standard deviation of 5.128, whereas MSME performance had a mean of 50.63 and a standard deviation of 3.850. Because financial technology was measured using 17 retained items while the other constructs consisted of 12 items, the raw mean scores should be interpreted within each construct rather than compared directly across variables.

Validity Test

Item validity was evaluated using the corrected item-total correlation. The criterion used in the instrument screening was a correlation value greater than 0.165. The results are presented individually for each questionnaire item in Table 4, as required to enable verification of the measurement instrument.

Table 4. Item Validity Test Results

Variable	Item	Corrected Item-Total Correlation	Criterion	Result
Financial Literacy	X1.1	0.445	0.165	Valid
	X1.2	0.302	0.165	Valid
	X1.3	0.209	0.165	Valid
	X1.4	0.277	0.165	Valid
	X1.5	0.303	0.165	Valid
	X1.6	0.228	0.165	Valid
	X1.7	0.269	0.165	Valid
	X1.8	0.299	0.165	Valid
	X1.9	0.196	0.165	Valid
	X1.10	0.415	0.165	Valid
	X1.11	0.384	0.165	Valid
	X1.12	0.241	0.165	Valid
Financial Inclusion	X2.1	0.386	0.165	Valid
	X2.2	0.311	0.165	Valid
	X2.3	0.198	0.165	Valid
	X2.4	0.271	0.165	Valid

Harahap, Harahap & Nurlaila

Financial Literacy, Inclusion, and Technology Effects on Culinary MSME Performance in Medan

	X2.5	0.409	0.165	Valid
	X2.6	0.293	0.165	Valid
	X2.7	0.245	0.165	Valid
	X2.8	0.446	0.165	Valid
	X2.9	0.269	0.165	Valid
	X2.10	0.386	0.165	Valid
	X2.11	0.426	0.165	Valid
	X2.12	0.310	0.165	Valid
Financial Technology	X3.1	0.214	0.165	Valid
	X3.2	0.435	0.165	Valid
	X3.3	0.260	0.165	Valid
	X3.4	0.227	0.165	Valid
	X3.5	0.287	0.165	Valid
	X3.6	0.131	0.165	Invalid/Excluded
	X3.7	0.276	0.165	Valid
	X3.8	0.281	0.165	Valid
	X3.9	0.359	0.165	Valid
	X3.10	0.324	0.165	Valid
	X3.11	0.306	0.165	Valid
	X3.12	0.209	0.165	Valid
	X3.13	0.287	0.165	Valid
	X3.14	0.363	0.165	Valid
	X3.15	0.388	0.165	Valid
	X3.16	0.408	0.165	Valid
	X3.17	0.409	0.165	Valid
	X3.18	0.280	0.165	Valid
MSME Performance	Y1	0.276	0.165	Valid
	Y2	0.364	0.165	Valid
	Y3	0.239	0.165	Valid
	Y4	0.337	0.165	Valid
	Y5	0.343	0.165	Valid
	Y6	0.402	0.165	Valid
	Y7	0.312	0.165	Valid
	Y8	0.300	0.165	Valid
	Y9	0.272	0.165	Valid
	Y10	0.259	0.165	Valid
	Y11	0.238	0.165	Valid
	Y12	0.206	0.165	Valid

Source: Processed Research Data, 2026.

The results show that all financial literacy, financial inclusion, and MSME performance items exceeded the validity criterion. Financial technology initially consisted of 18 items; however, item X3.6 did not meet the validity criterion and was therefore excluded. Consequently, 17 financial technology items were retained for subsequent statistical analysis.

Reliability Test

Reliability was evaluated using Cronbach's Alpha to assess the internal consistency of the retained questionnaire items.

Table 5. Reliability Test Results

Variable	Retained Items	Cronbach's Alpha	Criterion	Interpretation
Financial Literacy	12	0.655	0.600	Acceptable
Financial Inclusion	12	0.692	0.600	Acceptable
Financial Technology	17	0.726	0.600	Acceptable
MSME Performance	12	0.655	0.600	Acceptable

Source: Processed SPSS Data, 2026.

All constructs exceeded the minimum reliability criterion of 0.600. Financial technology showed the highest internal consistency ($\alpha = 0.726$), followed by financial inclusion ($\alpha = 0.692$). Financial literacy and MSME performance each obtained an alpha coefficient of 0.655. Although these two coefficients exceeded the minimum criterion, their values indicate moderate rather than high internal consistency and should therefore be interpreted cautiously.

Regression Assumption Diagnostics

Before estimating the multiple regression model, normality, multicollinearity, and heteroscedasticity diagnostics were conducted.

Table 6. Normality Test Results

Indicator	Value
N	100
Kolmogorov–Smirnov Statistic	0.084
Asymp. Sig. (2-tailed)	0.075

Source: Processed SPSS Data, 2026.

The residual normality test produced a probability value of 0.075. Because this value exceeded the 0.05 significance level, the residual distribution did not show a statistically significant deviation from normality.

Table 7. Multicollinearity Test Results

Variable	Tolerance	VIF
Financial Literacy	0.603	1.659
Financial Inclusion	0.429	2.330
Financial Technology	0.446	2.244

Source: Processed Research Data, 2026.

All tolerance values exceeded 0.10 and all VIF values were below 10. Therefore, the final regression model did not indicate problematic multicollinearity among financial literacy, financial inclusion, and financial technology.

Table 8. Heteroscedasticity Test Results

Variable	Sig.
Financial Literacy	0.694
Financial Inclusion	0.863
Financial Technology	0.336

Source: Processed Research Data, 2026.

The Glejser-test significance values for all independent variables exceeded 0.05, indicating that the final regression model did not show evidence of heteroscedasticity.

Supplementary Common Method Bias Diagnostic

Because the independent and dependent variables were measured using the same self-reported questionnaire, a supplementary single-factor diagnostic was conducted to assess whether a single

common factor dominated the variance of the measurement items. The first unrotated factor accounted for approximately 16.0% of the total variance. This proportion was substantially below 50%, indicating that no single factor dominated the responses. Accordingly, the diagnostic did not indicate a serious single-factor common method pattern, although this test should be interpreted as a supplementary rather than definitive assessment of common method bias.

Coefficient of Determination

The coefficient of determination was used to evaluate the proportion of variation in culinary MSME performance explained by the final regression model.

Table 9. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.789	0.622	0.610	2.403

Source: Processed SPSS Data, 2026.

The model produced an R^2 value of 0.622 and an Adjusted R^2 value of 0.610. Thus, after accounting for the number of predictors included in the model, financial literacy, financial inclusion, and financial technology explained approximately 61.0% of the variation in culinary MSME performance, while the remaining 39.0% was associated with factors outside the research model.

Regression Coefficients and Hypothesis Testing

The regression coefficients were evaluated using the t-test at a significance level of 5%. The results are presented in Table 10.

Table 10. Regression Coefficients and Hypothesis Testing

Variable	B	Std. Error	Beta	t	Sig.	Hypothesis
Constant	9.547	3.629	—	2.631	0.010	—
Financial Literacy	-0.095	0.077	-0.099	-1.223	0.224	H1 Not Supported
Financial Inclusion	0.306	0.086	0.339	3.543	<0.001	H2 Supported
Financial Technology	0.427	0.071	0.568	6.045	<0.001	H3 Supported

Source: Processed Research Data, 2026.

Financial literacy had a negative regression coefficient of -0.095 with a standardized coefficient of -0.099 and a probability value of 0.224. Because the probability value exceeded 0.05, the coefficient was not statistically significant. Therefore, H1 was not supported.

Financial inclusion produced a positive regression coefficient of 0.306 and a standardized coefficient of 0.339, with a probability value below 0.001. This finding indicates a positive and statistically significant relationship between financial inclusion and culinary MSME performance. Therefore, H2 was supported.

Financial technology produced a positive regression coefficient of 0.427 and a standardized coefficient of 0.568, with a probability value below 0.001. Accordingly, financial technology had a positive and statistically significant relationship with culinary MSME performance. Its standardized coefficient was the largest among the three predictors, indicating that financial technology had the strongest statistical relationship with MSME performance within the estimated model. Therefore, H3 was supported. Based on the unstandardized coefficients, the final multiple regression equation was:

$$Y = 9.547 - 0.095X_1 + 0.306X_2 + 0.427X_3 + \varepsilon$$

Where Y represents MSME performance, X_1 represents financial literacy, X_2 represents financial inclusion, and X_3 represents financial technology.

Overall Significance of the Regression Model

The F-test was used only to evaluate the overall statistical significance of the regression model and was not treated as a separate research hypothesis.

Table 11. Overall Regression Model Significance

Model	df1	df2	F	Sig.
Regression Model	3	96	52.682	<0.001

Source: Processed Research Data, 2026.

The F-test produced an F-value of 52.682 with a probability value below 0.001. This result indicates that the regression model was statistically significant overall and had explanatory value for variation in the performance of culinary MSMEs in Medan City.

DISCUSSION

Financial Literacy and MSME Performance

The finding indicates that financial literacy does not have a statistically significant relationship with the performance of culinary MSMEs in Medan City. From the Resource-Based View (RBV) perspective, financial literacy represents an intangible knowledge-based resource; however, such a resource is unlikely to contribute to business performance unless it is transformed into practical managerial capabilities. Financial knowledge therefore needs to be implemented through budgeting, bookkeeping, cash-flow management, cost control, and financial evaluation before it can generate measurable business outcomes.

This finding is consistent with studies suggesting that the contribution of financial literacy to SME performance may depend on the ability of business owners to convert financial knowledge into managerial practices and organizational capabilities. The relationship between financial literacy and SME outcomes may operate through financial behavior, management control systems, risk-taking, and other organizational mechanisms rather than through a direct relationship alone (Duréndez et al., 2023; Graña-Alvarez et al., 2024; Supramono et al., 2025). Accordingly, the absence of a significant direct relationship in this study does not imply that financial literacy is unimportant, but rather that financial knowledge by itself may be insufficient to improve business performance.

The result differs from several previous studies reporting a positive relationship between financial literacy and MSME performance. Financial literacy has been associated with stronger managerial capability, access to finance, and more structured business decision-making (Affandi et al., 2024; Gunawan et al., 2023; Widyastuti et al., 2023). This difference reinforces the empirical gap identified in this study: the contribution of financial literacy may vary according to business context and the extent to which knowledge is translated into financial behavior and business practices. Evidence from financial-behavior research also supports the view that financial knowledge becomes more meaningful when accompanied by appropriate financial decision-making and implementation (Asmara et al., 2025).

From a practical perspective, the finding suggests that financial-literacy programs for culinary MSMEs should move beyond conceptual knowledge. Training should emphasize applied competencies such as simple bookkeeping, separation of personal and business funds, cash-flow planning, cost calculation, and periodic financial evaluation. Such practices may help transform financial literacy from passive knowledge into an organizational capability that can support MSME performance (Wati et al., 2024).

Financial Inclusion and MSME Performance

Financial inclusion shows a positive and statistically significant relationship with culinary MSME performance. This finding indicates that access to and productive utilization of formal financial services can provide MSMEs with resources required to maintain liquidity, manage working capital,

and support business development. For MSMEs, financial inclusion is therefore not limited to ownership of a bank account but also includes effective utilization of savings, financing, payment services, and other formal financial facilities.

The finding is consistent with previous studies demonstrating that broader access to financial services can reduce financing constraints and strengthen SME performance. Digital and formal financial services may facilitate business transactions, improve financial accessibility, and support productive business activities (Frimpong et al., 2022; Sholihah et al., 2023). Recent evidence further indicates that financial and digital financial literacy can facilitate financial inclusion, while digital financial inclusion may serve as an important mechanism linking financial capability and institutional support with MSME performance (Al-shami et al., 2024; Tandilino et al., 2025).

From the RBV perspective, financial inclusion provides MSMEs with access to external strategic resources that can complement their internal capabilities. Financing, savings facilities, and payment services can strengthen the capacity of business owners to allocate resources and respond to operational needs. Previous evidence also suggests that access to formal financing contributes to productive investment and business performance when financial services are used appropriately (Widyastuti et al., 2023). Thus, the significance of financial inclusion in this study supports the view that access to financial resources is an important component of MSME capability.

The result also has practical implications for financial institutions and policymakers. Expanding financial inclusion should not focus solely on increasing account ownership, but also on encouraging productive utilization of formal financing and payment services. Financial institutions can support culinary MSMEs through simpler financing procedures, business-oriented financial products, and assistance in selecting financial services appropriate to business needs.

Financial Technology and MSME Performance

Financial technology has a positive and statistically significant relationship with culinary MSME performance and shows the strongest statistical relationship among the predictors included in the model. This result highlights the importance of digital financial services in supporting increasingly digital MSME operations. Financial technology provides MSMEs with faster payment facilities, transaction records, wider payment options, and greater flexibility in conducting daily business transactions.

This finding is consistent with previous studies showing that electronic payments and digital financial services can improve MSME operations by increasing transaction efficiency and supporting business digitalization. E-payment and e-commerce services have been associated with improved MSME and supply-chain performance (Kilay et al., 2022), while digital payment adoption can strengthen operational efficiency, transparency, and competitiveness among Indonesian MSMEs (Sutrisno & Nainggolan, 2025). Evidence from the Indonesian culinary sector also indicates that digital transformation can support stronger financial performance by improving business processes and responsiveness to market changes (Rita & Nastiti, 2024).

The result can also be interpreted through the Technology Acceptance Model (TAM). In this study, TAM does not function as an independently tested empirical model; rather, it provides a supporting explanation for the utilization of financial technology. When digital financial services are perceived as useful and relatively easy to operate, MSME owners are more likely to integrate them into their business activities. The practical advantages of digital payment systems, transaction histories, and mobile financial services may therefore help explain why financial technology shows a comparatively strong relationship with business performance.

Nevertheless, the benefits of financial technology should not be interpreted as automatic. Effective utilization still depends on digital capability, infrastructure availability, and confidence in transaction security (Akbar et al., 2024; Lontchi et al., 2023). Therefore, digitalization programs for

culinary MSMEs should combine access to financial technology with practical assistance in operating digital payment systems, managing transaction records, and maintaining transaction security.

CONCLUSION

This study examined the relationships between financial literacy, financial inclusion, financial technology, and the performance of culinary MSMEs in Medan City. The findings show that financial literacy does not have a statistically significant relationship with MSME performance, indicating that financial knowledge alone may be insufficient to improve business outcomes when it is not translated into consistent financial management practices. In contrast, financial inclusion and financial technology have positive and statistically significant relationships with MSME performance. Financial technology demonstrates the strongest statistical relationship among the predictors, highlighting the importance of digital financial services in supporting transaction efficiency and business operations, while financial inclusion contributes by improving access to financial resources and financial flexibility.

The findings extend the Resource-Based View by indicating that MSME performance is associated not only with knowledge-based resources but also with the ability to access and effectively utilize financial and technological resources. The Technology Acceptance Model provides a complementary perspective for understanding the utilization of financial technology, although its core constructs were not tested separately in this study. The findings also suggest that strengthening MSME performance requires financial literacy to be accompanied by practical financial-management capabilities, productive use of formal financial services, and effective adoption of digital financial technology. Since this study is limited to 100 culinary MSMEs in Medan City and uses a cross-sectional design, future research should examine broader MSME sectors and regions and incorporate additional factors such as entrepreneurial orientation, innovation capability, digital marketing capability, and institutional support.

SUGGESTION or RECOMMENDATION

Practical Recommendation – The Medan City government, particularly agencies responsible for MSME development, should collaborate with banks, financial institutions, and digital-payment or FinTech providers to establish an applied financial and digital assistance program for culinary MSMEs. The program should prioritize micro and small culinary enterprises and combine practical bookkeeping, cash-flow planning, separation of personal and business finances, access to appropriate formal financing, and hands-on assistance in using digital payment systems such as QRIS and mobile financial services. Assistance should include periodic mentoring to help participants apply these practices in daily business operations. Program success can be evaluated through indicators such as consistent financial record keeping, separation of personal and business accounts, increased productive use of formal financial services, regular utilization of digital payments, and improved ability to monitor business transactions.

Theoretical Recommendation – Future studies should expand the research scope to other MSME sectors and regions, involve larger samples including non-digital MSMEs, and examine additional variables such as innovation, digital marketing, social capital, entrepreneurial orientation, and government support.

ACKNOWLEDGEMENTS

The authors would like to express their sincere appreciation to the owners and managers of culinary MSMEs in Medan City who participated in this study and provided the data required for the research. The authors also thank Universitas Islam Negeri Sumatera Utara for the academic support provided throughout the research and manuscript preparation process.

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Harahap, Harahap & Nurlaila

Financial Literacy, Inclusion, and Technology Effects on Culinary MSME Performance in Medan

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