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**THE INFLUENCE OF FINANCIAL TECHNOLOGY AND FINANCIAL LITERACY ON MSME PERFORMANCE IN THE MADURA REGION WITH FINANCIAL INCLUSION AS A MEDIATING VARIABLE**

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**Abstract**

This study investigates the influence of Financial Technology (FinTech) and Financial Literacy on Micro and Small Enterprise (MSE) Performance in Sampang Regency, Madura, with Financial Inclusion as a mediating variable. The research was conducted to address the limited understanding of how FinTech adoption and financial literacy interact to enhance MSME competitiveness in developing regions. Using a quantitative approach and survey method, data were collected from 99 respondents selected through purposive sampling among MSEs actively using digital financial services. Data analysis employed path analysis to examine direct and indirect relationships among Financial Technology (X1), Financial Literacy (X2), Financial Inclusion (Z), and MSME Performance (Y). The results revealed that FinTech does not have a significant positive effect on Financial Inclusion, while Financial Literacy significantly improves it. FinTech positively and significantly affects MSME Performance, whereas Financial Literacy does not. Furthermore, Financial Inclusion significantly influences MSME Performance but only mediates the relationship between Financial Literacy and Performance not between FinTech and Performance. These findings underscore the importance of improving financial literacy and optimizing FinTech utilization to strengthen MSME competitiveness and foster inclusive regional economic development.

**Keywords:** Financial Technology, Financial Literacy, Financial Inclusion, MSME Performance, Sampang Regency



## INTRODUCTION

The current era of economic digitalization marks a fundamental transformation in the global financial landscape, where Financial Technology (FinTech) serves as the primary driver of financial service transformation toward a more efficient, inclusive, and adaptive system that meets modern society's needs. FinTech not only accelerates access to financial services but also functions as a crucial instrument in strengthening financial inclusion for micro, small, and medium enterprises (MSMEs), which have long faced challenges in obtaining conventional financing (Shukri & Hamid, 2025). In Indonesia, MSMEs are the backbone of the national economy, comprising approximately 65.5 million business units that contribute 61.07% to the national Gross Domestic Product (GDP) and absorb up to 97% of the labor force (Kementerian Koordinator Bidang Perekonomian Republik Indonesia, 2022). These figures emphasize that enhancing MSME competitiveness and performance through the adoption of digital financial technology is a strategic agenda for reinforcing national economic resilience, particularly at the regional level (Nurwakhidah et al, 2025).

In the context of East Java Province, the culinary MSME sector stands out as a dominant subsector that contributes significantly to the regional economy. According to data from BPS Provinsi Jawa Timur (2022), approximately 241,215 MSME units operate in the food industry sector (KBLI 10), representing 27.58% of all MSMEs in the province. Sampang Regency alone has around 15,389 MSME units, of which 6,913 operate in the food and beverage sector (Musadad et al., 2025). This indicates that the culinary sector serves as a major pillar of local economic activity. Comparatively, Bangkalan Regency has 20,344 units, Pamekasan records 67,609 units, and Sumenep has 31,691 units (BPS Provinsi Jawa Timur, 2022). Although Sampang's MSME numbers are lower than those of other regencies in Madura, their contribution to employment absorption and poverty reduction at the local level remains highly significant (Aliyah, 2022).

The justification for this study lies in the urgency to identify how far the utilization of Financial Technology and the improvement of financial literacy can drive MSME performance in developing economic regions such as Sampang Regency. Through digital financial innovations, small business owners can tap into unconventional funding channels like online lending networks and collective investment platforms, allowing them to grow their customer base and improve the efficiency of their day-to-day operations. However, the low level of financial literacy among MSME actors often becomes a major obstacle to optimizing the potential benefits of these technologies. This situation creates a gap between the



potential and the actual realization of FinTech's role in improving MSME performance at the local level.

Empirical evidence from previous studies that a small business's growth and performance are influenced by both its grasp of financial knowledge and the accessibility of financial services. Wibowo et al. (2021) revealed that financial inclusion acts as a partial mediator in the relationship between financial literacy and MSME performance, suggesting that higher financial literacy enhances the ability of MSME actors to access and utilize formal financial services for business growth. However, their research did not explicitly incorporate Financial Technology as an exogenous variable that could further strengthen this relationship particularly in regional economic contexts such as Sampang Regency.

A research gap thus arises from the limited number of comprehensive studies that Study how digital finance, money skills, and service access together affect small business success at the local level. Most prior studies have focused on urban areas with high digital adoption rates, while research in regions with limited digital infrastructure such as Sampang remains scarce. Furthermore, disparities in financial literacy and the low utilization of FinTech services among rural MSME actors constitute pressing challenges that have not been sufficiently addressed in the academic literature. Consequently, this study offers novelty through its unique geographical focus, its emphasis on the culinary business sector, and its integration of financial inclusion as a mediating variable.

Based on the foregoing discussion, The study shows that enabling access to financial resources connects business owners' financial skills with digital solutions, driving better outcomes for micro and small enterprises. This approach enriches the literature on mediation models by positioning FinTech as an external factor that interacts with internal factors such as managerial capability. Practically, the study aims to provide policy recommendations for local governments, financial institutions, and FinTech providers in formulating programs for financial capacity-building and digitalization tailored to MSME actors at the local level. The study also contributes to global development targets by emphasizing job creation, economic progress, and the development of innovative systems and infrastructure. Inclusive FinTech utilization is expected to not only improve MSME efficiency but also expand access to finance for low-income groups traditionally excluded from formal systems. Therefore, this research contributes both conceptually and practically to fostering inclusive,



adaptive, and sustainable regional economic development, particularly in Sampang Regency.

## **LITERATURE REVIEW**

### **RBV (Resource-Based View)**

The Resource-Based View (RBV) theory emphasizes that sustainable competitive advantage can be achieved through the utilization of a company's internal resources, both tangible assets and intangible ones such as knowledge and technology (Lubis, 2022). RBV explains how financial technology and literacy act as strategic resources enhancing MSME performance in Madura through financial inclusion, emphasizing unique resource management for long-term advantage.

### **Financial Technology**

Financial technology is a technological innovation applied to the financial sector to simplify business processes and improve the efficiency of financial services (Jamal et al., 2023). Fintech enables fast, efficient access to financial services anytime, expanding inclusion while offering quality services and new income opportunities for businesses (Iskandar, 2019).

### **Financial Literacy**

Financial literacy is an individual's ability to understand, manage, and use financial information effectively in making financial decisions (Sanistasya et al., 2019). Financial literacy, involving knowledge of financial concepts, products, and risks, enables wise financial management and supports economic welfare and stability (Sanistasya et al., 2019).

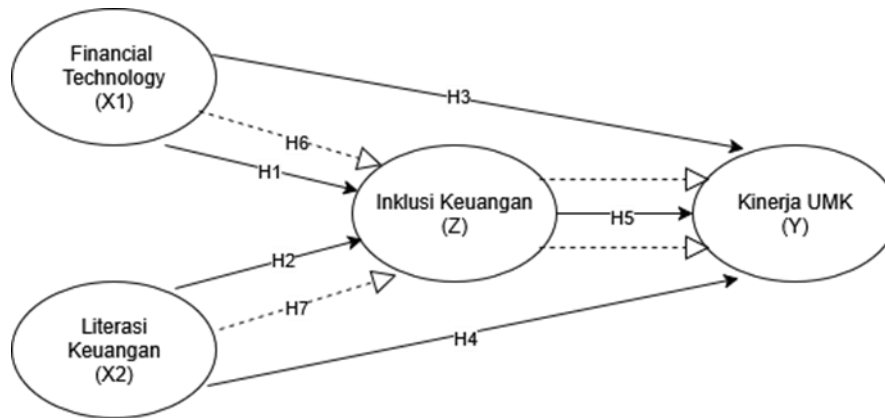
### **Financial Inclusion**

Financial inclusion describes a condition in which all segments of society have access to financial products and services that align with their needs and capabilities (Ferdinand et al., 2022). Financial inclusion reduces barriers to using financial services, especially via fintech, enabling broader participation in the formal financial system and economic benefits (Betari et al., 2023).

### **MSME Performance**

MSME performance reflects the outcomes achieved by Micro, Small, and Medium Enterprises in carrying out their operational and strategic activities over a certain period (Mirdiyantika et al., 2023). MSME performance indicates effectiveness in achieving growth, profitability, and sustainability, with resource optimization enhancing competitiveness and outcomes (Farhan et al., 2022).

### Conceptual Framework



**Figure 1.**  
**Conceptual Framework**

### Research Hypotheses

This section presents the hypotheses formulated to examine the relationships among financial technology, financial literacy, financial inclusion, and the performance of micro and small enterprises:

H1: Financial Technology has a direct effect on Financial Inclusion

H2: Financial Literacy has a direct effect on Financial Inclusion

H3: Financial Technology has a direct effect on MSME Performance

H4: Financial Literacy has a direct effect on MSME Performance

H5: Financial Inclusion has a direct effect on MSME Performance

H6: Financial Technology has an indirect effect on MSME Performance through Financial Inclusion

H7: Financial Literacy has an indirect effect on MSME Performance through Financial Inclusion

### RESEARCH METHOD

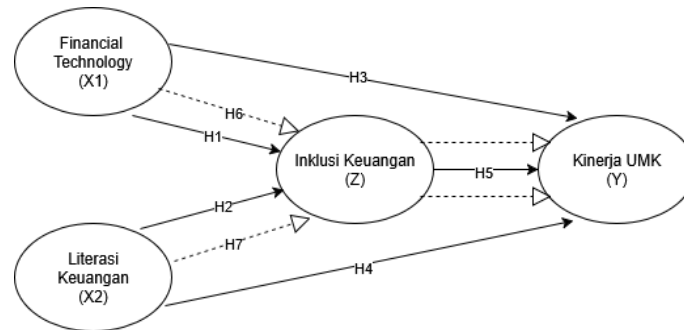
This study uses a quantitative survey to examine the effects of Financial Technology and Financial Literacy on MSME Performance, with Financial Inclusion as a mediator, focusing on MSEs in Sampang Regency, Madura. From a population of 15,389 registered MSEs, 99 respondents were selected via purposive sampling, targeting MSME actors active in digital financial services with financial management experience. Primary data were collected through questionnaires, and secondary data from official sources like BPS and the Sampang Department of Cooperatives and MSMEs. Data were analyzed using

path analysis to assess direct and indirect effects among Financial Technology (X1), Financial Literacy (X2), Financial Inclusion (Z), and MSME Performance (Y).

## RESULTS AND DISCUSSION

### Statistical Data Analysis

This study employed Smart Partial Least Square (SmartPLS) to analyze relationships among latent variables in complex data structures (Purwianti & Chan, 2024). A total of 30 manifest and 4 latent variables were used: Financial Literacy (X1), Financial Technology (X2), Financial Inclusion (Z), and MSME Performance (Y). Data analysis was conducted using SmartPLS 3 software for variance-based structural equation modeling, with the structural model shown in the figure below.

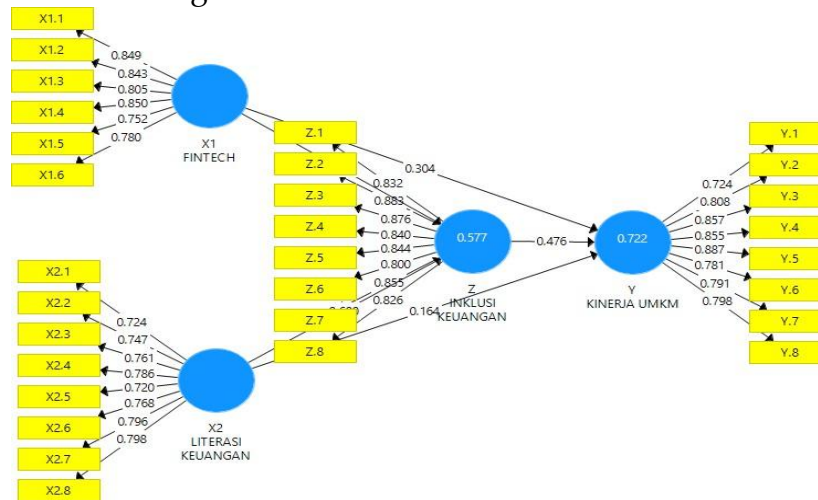


**Figure 2.**  
**Structural Model**

Latent constructs refer to indicators, indicating that the study uses reflective indicators, which are relatively effective in measuring perceptions. The arrows between the structures represent the hypotheses being tested.

### Measurement Model/Outer Model Test

The outer model testing assesses convergent validity, discriminant validity, and reliability between latent and manifest variables (Izzah & Abidin, 2023), as shown in the figure below.



**Figure 3.**  
**Outer Model Results**

*Source: Processed Data, 2025*

### Convergent Validity

Discriminant validity is determined by a loading factor  $> 0.7$  and an AVE square root exceeding the correlation between latent constructs (Ardyan, 2023).



Table 1. Outer Loading Results

	Financial Technology (X1)	Financial Literacy (X2)	MSME Performance (Y)	Financial Inclusion (Z)
X1.1	0.849			
X1.2	0.843			
X1.3	0.805			
X1.4	0.850			
X1.5	0.752			
X1.6	0.780			
X2.1		0.724		
X2.2		0.747		
X2.3		0.761		
X2.4		0.786		
X2.5		0.720		
X2.6		0.768		
X2.7		0.796		
X2.8		0.798		
Y.1			0.724	
Y.2			0.808	
Y.3			0.857	
Y.4			0.855	
Y.5			0.887	
Y.6			0.781	
Y.7			0.791	
Y.8			0.798	
Z.1				0.832
Z.2				0.883
Z.3				0.876
Z.4				0.840
Z.5				0.844
Z.6				0.800
Z.7				0.855
Z.8				0.826

Source: Processed Data, 2025

The outer loading results indicate that most indicators of Financial Technology (X1), Financial Literacy (X2), MSME Performance (Y), and Financial Inclusion (Z) have values above 0.70, showing strong validity in measuring their constructs. Indicators with outer loading > 0.70 are thus considered highly valid and reliable in representing the research variables (Yarsasi et al., 2025).

**Discriminant Validity**

Table 2. Validity Test Results Based on AVE Values

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Financial Technology (X1)	0.898	0.899	0.922	0.663
Financial Literacy (X2)	0.898	0.905	0.918	0.582
MSME Performance (Y)	0.927	0.927	0.940	0.663
Financial Inclusion (Z)	0.943	0.943	0.952	0.714

Source: Processed Data, 2025



Convergent validity is met when the AVE value exceeds 0.5, indicating valid indicators (Purnamasari, 2023). The results show all variables have AVE values above 0.5, confirming validity.

**Table 3.**  
**AVE Root Values Test (Fornell-Larcker Criterion)**

	<b>Financial Technology (X1)</b>	<b>Financial Literacy (X2)</b>	<b>MSME Performance (Y)</b>	<b>Financial Inclusion (Z)</b>
<b>Financial Technology (X1)</b>	0.814			
<b>Financial Literacy (X2)</b>	0.732	0.763		
<b>MSME Performance (Y)</b>	0.729	0.743	0.814	
<b>Financial Inclusion (Z)</b>	0.640	0.747	0.794	0.845

Source: Processed Data, 2025

The discriminant validity test confirms that their internal variance measure surpasses the degree of association with other variables, indicating all variables meet the Fornell-Larcker validity criteria.

**Model Collinearity Test**

**Table 4.**  
**Model Collinearity Test (VIF)**

	<b>VIF</b>	<b>VIF</b>	<b>VIF</b>
<b>X1.1</b>	2.768	<b>Y.1</b>	1.833
<b>X1.2</b>	2.627	<b>Y.2</b>	2.922
<b>X1.3</b>	2.318	<b>Y.3</b>	3.830
<b>X1.4</b>	2.898	<b>Y.4</b>	3.439
<b>X1.5</b>	1.779	<b>Y.5</b>	4.247
<b>X1.6</b>	2.262	<b>Y.6</b>	2.280
<b>X2.1</b>	1.829	<b>Y.7</b>	2.672
<b>X2.2</b>	2.560	<b>Y.8</b>	2.654
<b>X2.3</b>	2.978	<b>Z.1</b>	2.863
<b>X2.4</b>	2.575	<b>Z.2</b>	3.582
<b>X2.5</b>	2.012	<b>Z.3</b>	3.385
<b>X2.6</b>	2.165	<b>Z.4</b>	2.993
<b>X2.7</b>	2.407	<b>Z.5</b>	3.009
<b>X2.8</b>	2.469	<b>Z.6</b>	2.386

Source: Processed Data, 2025



From the table above, it can be seen that all VIF values of the variable indicators are below the threshold of 5, indicating no collinearity among the tested variable indicators.

**Reliability Test**

**Table 5.**  
**Reliability Test**

	<b>Cronbach's Alpha</b>	<b>rho_A</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted (AVE)</b>
<b>Financial Technology (X1)</b>	0.898	0.899	0.922	0.663
<b>Financial Literacy (X2)</b>	0.898	0.905	0.918	0.582
<b>MSME Performance (Y)</b>	0.927	0.927	0.940	0.663
<b>Financial Inclusion (Z)</b>	0.943	0.943	0.952	0.714

Source: Processed Data, 2025

The measures indicate that every construct demonstrates a high level of reliability, comfortably surpassing the standard minimum of 0.7, confirming that all constructs are reliable.

**Structural Model/Inner Model Test**

**R-Square**

**Table 6.**  
**R-Square Test Results**

	<b>R-Square</b>	<b>R-Square Adjusted</b>
<b>MSME Performance (Y)</b>	0.722	0.713
<b>Financial Inclusion (Z)</b>	0.577	0.568

Source: Processed Data, 2025

The R-Square results show that MSME performance (Y) is explained by 72.2% and financial inclusion (Z) by 57.7% of the model, indicating strong and moderate influences, respectively, with consistent adjusted R-Square values confirming the model's reliability.



F-Square

Table 7. F-Square Test Results

	F-Square	Conclusion
Fintech (X1) → Financial Inclusion (Z)	0.045	Small
Financial Literacy (X2) → Financial Inclusion (Z)	0.395	Large
Fintech (X1) → MSME Performance (Y)	0.148	Medium
Financial Literacy (X2) → MSME Performance (Y)	0.032	Small
Financial Inclusion (Z) → MSME Performance (Y)	0.345	Large

Source: Processed Data, 2025

The F-Square results show medium effects of FinTech on MSME performance, small effects on financial inclusion, and strong effects of financial literacy and financial inclusion on MSME performance, highlighting financial inclusion’s key role.

Hypothesis Test

Table 8. Hypothesis Test Results

Hypothesis	Relationship	T Table	T Statistics	P Value	Conclusion
1	Financial Technology → Financial Inclusion	0.202	1.760	0.079	Rejected
2	Financial Literacy → Financial Inclusion	0.600	5.648	0.000	Accepted
3	Financial Technology → MSME Performance	0.304	3.053	0.002	Accepted
4	Financial Literacy → MSME Performance	0.164	1.433	0.152	Rejected
5	Financial Inclusion → MSME Performance	0.476	4.932	0.000	Accepted
6	Financial Technology → Financial Inclusion → MSME Performance	0.096	1.819	0.070	Rejected
7	Financial Literacy → Financial Inclusion → MSME Performance	0.285	3.236	0.001	Accepted

Source: Processed Data, 2025

The Effect of Financial Technology on Financial Inclusion (H1)

The results of hypothesis testing (H1) show that Financial Technology has no significant direct effect on Financial Inclusion, with a p-value of 0.079 (>0.05) and a t-statistic of 1.760 (<1.96), thus H1 is rejected. Although fintech can expand access to financial services, its presence alone does not automatically increase financial inclusion without adequate support such as financial literacy and



proper regulations. Ainiyah & Yuliana (2022) found that fintech positively affects financial inclusion, while Wardanu et al. (2025) confirmed its significant role in making financial services more accessible. Therefore, even though the direct effect is insignificant, fintech remains vital in facilitating broader and more affordable access to financial services.

### **The Effect of Financial Literacy on Financial Inclusion (H2)**

Hypothesis testing results (H2) indicate that Financial Literacy significantly affects Financial Inclusion, with a p-value of 0.000 ( $\leq 0.05$ ) and a t-statistic of 5.648 ( $> 1.96$ ), so H2 is accepted. Higher financial literacy enhances individuals' understanding and ability to utilize financial services, thereby improving inclusion and business sustainability. Jaena (2025) also found that entrepreneurs with better financial knowledge are more likely to access and optimize formal financial services such as savings and loans.

### **The Effect of Financial Technology on MSME Performance (H3)**

The hypothesis testing results (H3) reveal that Financial Technology significantly influences MSME performance, with a p-value of 0.002 ( $\leq 0.05$ ) and a t-statistic of 3.053 ( $> 1.96$ ), thus H3 is accepted. Fintech improves MSME performance by enabling easier access to capital, digital payments, and efficient financial management. These findings align with Ranti & Sartika (2024) and Astini et al. (2024), who confirm fintech's positive impact on MSME performance by reducing operational costs and expanding market reach.

### **The Effect of Financial Literacy on MSME Performance (H4)**

The results of hypothesis testing (H4) indicate that Financial Literacy does not have a significant direct effect on MSME performance, with a p-value of 0.152 ( $> 0.05$ ) and a t-statistic of 1.433 ( $< 1.96$ ), meaning H4 is rejected. Despite its importance, financial literacy alone cannot significantly enhance MSME performance without practical experience or financial inclusion. Sanistasya et al. (2019) found that financial literacy improves business outcomes when combined with entrepreneurship education and training, underscoring its indirect yet essential role in business success.

### **The Effect of Financial Inclusion on MSME Performance (H5)**

Hypothesis testing results (H5) show that Financial Inclusion significantly affects MSME performance, with a p-value of 0.000 ( $\leq 0.05$ ) and a t-statistic of 4.932 ( $> 1.96$ ), thus H5 is accepted. Broader financial access enables MSMEs to obtain credit, manage capital, and invest effectively to boost performance. Supporting this, Joko et al. (2022) found that MSMEs with better financial access experience improved performance, confirming that inclusion strengthens



MSME growth and sustainability.

### **The Mediating Role of Financial Inclusion in the Effect of Financial Technology on MSME Performance (H6)**

The hypothesis testing results (H6) indicate that Financial Inclusion does not significantly mediate the relationship between Financial Technology and MSME performance, with a p-value of 0.076 ( $>0.05$ ) and a t-statistic of 1.819 ( $<1.96$ ), so H6 is rejected. Although fintech directly influences MSME performance, its effect is not mediated by financial inclusion. Consistent with Astohar et al. (2024), this shows that fintech's contribution to performance occurs directly, emphasizing the need for financial access and literacy to complement technological adoption.

### **The Mediating Role of Financial Inclusion in the Effect of Financial Literacy on MSME Performance (H7)**

The results of hypothesis testing (H7) indicate that Financial Inclusion significantly mediates the relationship between Financial Literacy and MSME performance, with a p-value of 0.001 ( $<0.05$ ) and a t-statistic of 3.236 ( $>1.96$ ), thus H7 is accepted. This means that financial literacy influences MSME performance through financial inclusion, not directly. Hermawan et al. (2025) support this finding, confirming that financial literacy must be translated into access and utilization of financial services to improve performance, highlighting the essential mediating role of financial inclusion.

## **CONCLUSION**

Based on the research results, Financial Technology does not have a positive and significant effect on Financial Inclusion, whereas Financial Literacy positively and significantly improves Financial Inclusion among MSMEs in Madura. Financial Technology significantly affects MSME Performance, while Financial Literacy does not. Financial Inclusion significantly influences MSME Performance but cannot mediate the effect of Financial Technology; however, it mediates the effect of Financial Literacy on MSME Performance. Therefore, MSMEs should enhance Financial Literacy and utilize Financial Technology effectively, while local governments and financial institutions need to strengthen training programs and supportive policies for MSME development in the digital era.

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