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Building Resilient Entrepreneurship: How Financial Literacy and Digital Inclusion Drive Performance in SMEs?

Membangun Kewirausahaan yang Tangguh: Bagaimana Literasi Keuangan dan Inklusi Digital Mendorong Kinerja UKM?

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ABSTRACT

Financial literacy and digital financial inclusion play an important role in SME performance, with financial resilience as a moderating variable. This study aims to evaluate the effect of financial literacy and financial inclusion on entrepreneurial performance. Using a quantitative approach, primary data were collected from 203 SME owners in Sidoarjo and Surabaya through questionnaires. The results of this study indicate that financial literacy has a significant positive impact on digital financial inclusion. Furthermore, digital financial inclusion is proven to significantly influence the improvement of SME entrepreneurial performance. Interestingly, although financial resilience was initially hypothesized to strengthen the relationship between digital financial inclusion and SME performance, the results of the path test showed that its role as a moderating variable was not statistically significant on entrepreneurial performance. This finding emphasizes the importance of efforts to improve financial literacy and expand access to digital financial services in supporting sustainable SME business growth and performance. However, this study also highlights the urgency to continue strengthening SME financial resilience so that they are better able to face various economic challenges and achieve long-term stability The practical implications of this research are recommendations to help SMEs face economic challenges and achieve sustainable growth.

***Keywords**: Digital financial inclusion, entrepreneurial performance, financial literacy, financial resilience, SMEs.*

ABSTRAK

Literasi keuangan dan inklusi keuangan digital memiliki peran penting terhadap kinerja UKM, dengan ketahanan keuangan sebagai variabel moderasi. Penelitian ini betujuan untuk mengevaluasi pengaruh literasi keuangan dan inklusi keuangan terhadap kinerja kewirausahaan. Dengan menggunakan pendekatan kuantitatif, data primer dikumpulkan dari 203 pemilik UKM di Sidoarjo dan Surabaya melalui kuesioner. Hasil penelitian ini menunjukkan bahwa literasi keuangan memiliki dampak positif yang signifikan terhadap inklusi keuangan digital. Lebih lanjut, inklusi keuangan digital terbukti secara signifikan memengaruhi peningkatan kinerja kewirausahaan UKM. Menariknya, meskipun ketahanan keuangan pada awalnya dihipotesiskan akan memperkuat hubungan antara inklusi keuangan digital dan kinerja UKM, hasil uji jalur menunjukkan bahwa perannya sebagai variabel moderasi tidak signifikan secara statistik terhadap kinerja kewirausahaan. Temuan ini menegaskan pentingnya upaya peningkatan literasi keuangan dan perluasan akses terhadap layanan keuangan digital dalam mendukung pertumbuhan dan kinerja bisnis UKM yang berkelanjutan. Meskipun demikian, penelitian ini juga menyoroti urgensi untuk terus memperkuat ketahanan keuangan UKM agar mereka lebih mampu menghadapi berbagai tantangan ekonomi dan mencapai stabilitas jangka panjang. Implikasi praktis dari penelitian ini adalah rekomendasi untuk bisa membantu ukm menghadapi tantangan perekonomian dan mencapai pertumbuhan berkelanjutan.

Kata kunci: Inklusi keuangan digital, ketahanan keuangan, kinerja kewirausahaan, literasi keuangan, UKM.

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INTRODUCTION

Building resilient entrepreneurship in small and medium-sized enterprises (SMEs) requires a strong foundation in financial literacy and digital financial inclusion (Alzamel *et al.,* 2024). Financial literacy equips entrepreneurs with the knowledge to effectively manage resources, make informed decisions, and secure funding, all of which are essential for sustainability (Lusardi & Mitchell *et al.*, 2020). Meanwhile, digital inclusion ensures that entrepreneurs have access to the tools and networks necessary to compete in an increasingly digitalized marketplace (Satalkina & Steiner *et al.*, 2020). Both factors drive improved SME performance by reducing risks and opening up new business opportunities (Yu & keying *et al.*, 2023). As an illustration, studies in Indonesia report that the integration of financial literacy programs and digital inclusion initiatives has had a significant impact on SME performance. One example is the government-backed national financial literacy strategy (SNLKI) 2021-2025, which aims to improve financial knowledge and access among SMEs, especially in cities such as Yogyakarta and Surabaya (Sari *et al.*, 2021). Collaboration between financial literacy and digital inclusion initiatives plays an important role in improving the performance of SMEs in Indonesia, especially through initiatives such as e-commerce platforms and financial education (Diptyana *et al.*, 2022).

Many studies explain the relationship between SME performance and other variables. Paliwal *et al.* (2024) shows that financial literacy equips SMEs with the knowledge to manage resources, reduce risks, and face challenges in the market, which ultimately improves business results. In contrast to Buchdadi *et al.* (2020) that financial literacy alone may not always overcome these challenges, especially in resource-constrained environments or during economic instability. Whereas Thathsarani and Jianguo *et al.* (2022) show that digital finance, particularly mobile services, is transforming SMEs by giving them greater access to financial services that the conventional banking system often fails to offer. This, in contrast to research conducted by Agur and Peria *et al.* (2020) shows that although digital platforms provide greater convenience and lower costs for consumers and businesses, there are limitations in their adoption and effectiveness. Meanwhile, research conducted by Seraj *et al.* (2022) emphasizes the role of financial resilience as moderation in the relationship between financial literacy and entrepreneurial performance, providing a significant perspective, especially in the context of facing financial challenges or uncertainty.

Previous studies have suggested that broader systemic issues, such as limited access to affordable finance and restrictive policies, may exacerbate the challenges.

Borrowing the perspective of Allen and Santomero *et al.* (2001) the role of financial institutions is not only limited to reducing transaction costs and information asymmetry, but also includes risk management, reducing participation costs, and asset transformation. Atkinson and Messy *et al.* (2012); Mtula *et al.* (2024) highlighted that financial literacy plays an important role in helping SME owners make wise financial decisions, reduce the risk of business failure, and increase profitability. Kaiser & Lusardi *et al.* (2024) involved the ability to understand basic financial concepts such as budget planning, working capital management, and risk mitigation. On the other hand, digital inclusion has been a driver of SME business transformation, especially in the last decade. Riggins and Wamba *et al.* (2015); Sari *et al.* (2023) state that the adoption of digital technology helps SMEs access a wider market through e-commerce and utilize data for better decision-making. Therefore, this research complements previous research by adding financial resilience as a mediator. This study empirically tests two main factors, namely financial literacy and digital inclusion, with the performance of small and medium enterprises (SMEs).

To answer the research objectives, this study examines the influence of financial literacy and digital inclusion on SME performance, with a specific focus on SMEs. First, this study formulated hypotheses based on theoretical frameworks and relevant previous studies, contextualizing them within SMEs. Next, a structured questionnaire was administered to business owners to collect primary data. Finally, the study provides a comprehensive discussion, integrating the findings with existing literature, outlining theoretical contributions, and practical implications, and identifying limitations, while offering directions for future research efforts.

This study offers several contributions. First, this study contributes to financial intermediation theory by considering the role of financial literacy, digital financial inclusion and SME performance. Many studies that assess SME performance focus on specific sectors or business types. Meanwhile, SME performance is strongly influenced by the size and scale of the business, as well as focusing on the industrial sector. A more comprehensive study covering a wide range of business sizes and sectors is needed to identify a more universal pattern of the relationship between financial literacy, digital inclusion, and SME performance (Thathsarani & Jianguo *et al.,* 2022). This study responds to previous research related to the relationship between financial literacy, digital inclusion, and SME performance conducted by (Lusardi & Mitchell *et al.,* 2014). This study also develops financial intermediation theory Simionescu and Nicula *et al.,* (2024) by emphasizing financial literacy and digital financial inclusion can strengthen the role of financial intermediaries in supporting SME entrepreneurial resilience. By providing better financial access to utilize financial products more effectively, digital inclusion intermediaries can drive improved SME business performance and resilience.

Literature Review

<u>Financial Intermediation Theory</u>

Simionescu & Nicula *et al.* (2024) explain that financial intermediaries help reduce asymmetric information problems (adverse selection and moral hazard) between lenders and borrowers. Rashid *et al.* (2018) explain the principal-agent relationship in the financial context, where financial intermediaries help align the interests of the principal (investor) and agent (borrower). Highlights the main functions of financial institutions, including resource allocation, risk management, maturity transformation, and payment facilitation (Yildirhim *et al.,* 2024). Yadav *et al.* (2019), this study analyzes the relationship between financial sector development, including financial

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intermediation, and economic growth. Research by Kulmi *et al.,* (2022); Kunt., (2009) shows the importance of financial access in reducing economic inequality. Caprio *et al.,* (2002); Naveed *et al.,* (2023) on how regulatory balance can support stability while expanding financial inclusion.

Financial Literacy

Financial literacy is an important skill that enables individuals and businesses to make informed and effective financial decisions (Kulathunga *et al.,* 2019). Financial literacy includes an understanding of key financial concepts such as budgeting, investing, saving, borrowing, and debt management (Lusardi, 2024). Various studies have shown that financial literacy has a significant impact on economic behaviour, with financially literacy individuals and businesses making more informed decisions that lead to better financial outcomes (Messy *et al.,* 2023). Research by Aydemir *et al.,* (2014); Mulindwa *et al.,* (2024) highlights that financial literacy improves financial decision-making, leading to higher savings rates and better debt management. In addition, financial education has been shown to facilitate greater access to digital financial services, which is important in the modern business landscape Lusardi. However, a lack of financial literacy can prevent SMEs from accessing important financial resources, thus making them more vulnerable to economic instability (Buchdadi *et al*., 2020).

Digital financial inclusion

According to Levine *et al.* (2023), digital financial inclusion has become an important driver of economic development, particularly in developing regions, as it provides previously unbanked populations with the tools to manage their finances more efficiently. Suri *et al.* (2019) also highlighted how mobile money services have had a transformative impact in improving financial access. However, challenges such as low digital literacy and security concerns remain barriers to wider adoption (Dupas, 2009). The integration of financial services with mobile technology continues to be a major factor in bridging the gap for financial inclusion (Syamer *et al.,* 2023). On the regulatory side Pupung Darmawan *et al.* (2023) highlighted the need for a strong framework that protects users while encouraging innovation in the digital finance sector. Inoue *et al.,* (2024); Pais *et al.* (2011) argue that improving digital infrastructure and reducing the digital divide is critical to fostering an inclusive financial ecosystem.

Financial resilience

Financial resilience refers to the ability of an individual, business, or economy to withstand and recover from financial shocks or stressors, such as economic crises, unexpected expenses, or market fluctuations (O'Neill *et al.,* 2022). Financial resilience includes the capacity to manage financial risks, adapt to change, and maintain stability over the long term (Widagdo *et al.,* 2024). For SMEs, financial resilience is critical to navigate volatile market conditions, ensure sustainable cash flow, and maintain business operations during economic downturns. Studies all emphasize the role of strong financial management, risk diversification, and strategic planning in enhancing resilience. Acosta *et al.* (2024) Found that personal financial resilience is built on habits such as budgeting, controlling debt, and having access to financial resources during a crisis. Financially resilient SMEs are also more likely to implement strong cash flow management strategies, which help sustain operations even during economic recessions (Bahiroh *et al.,* 2024). This resilience can be further enhanced through sound economic policies and regulations that promote financial inclusion (Schmidt *et al.,* 2024).

Entrepreneurial performance

Entrepreneurial performance refers to the entrepreneur's ability to achieve desired business outcomes, such as profitability, growth, and sustainability (Kanatli *et al.,* 2024; Dess *et al.,* 1996). It is influenced by various factors, including individual traits, strategic decisions, financial management, and external conditions (Frese *et al.,* 2000; Zauch, 2024). Research Al-jahwari *et al.* (2023); Shepherd *et al.* (2003) highlights that entrepreneurial performance is closely related to entrepreneurs' competencies, such as innovation, risk-taking, and adaptability. In addition, access to resources, including financial capital, networks, and technological tools, plays an important role in improving business performance (Samuel *et al.,* 2023). According to Tot entrepreneurial orientation (eo) and business, skills are significant predictors of performance, while Culebra- martínez found that financial literacy and the ability to manage business finances are also important. In addition, external factors such as market conditions and support systems, including mentorship and access to digital technologies, can facilitate or hinder entrepreneurial success. Overall, improving entrepreneurial performance requires a holistic approach that integrates internal competencies and external opportunities (Honig *et al.,* 2003; Honig *et al.,* 2023).

Hipotesis Development

<u>Financial literacy has a positive impact on digital financial inclusion</u>

Studies on financial literacy and digital inclusion show that higher levels of financial literacy enable individuals and small businesses to better understand and navigate digital financial tools. This leads to more effective use of digital banking, payments and financial planning services. SMEs with higher financial literacy and access to digital financial tools are in a better position to make strategic decisions that can increase profitability, reduce financial risk and adapt to economic shocks. Pasolo *et al.* (2023) Argues that digital inclusion provides access to financial services, and financial literacy helps individuals and businesses to use them effectively, leading to better financial management and improved business performance. Ferdi *et al.* (2022) highlight that individuals who have good financial literacy and have access to digital financial instruments are more financially resilient. The above explanations show that high financial literacy enables MSMEs to understand and utilize various digital financial platforms such as online payments, electronic banking, and financial planning services. This leads to more effective and efficient use of digital services which in turn can improve their business performance (Pasolo *et al.,* 2023). By combining better Financial Literacy and access to digital services, SMEs can make more informed decisions, make optimal use of existing resources, and adapt to market challenges. This leads to increased profitability and business sustainability. From this explanation, the hypothesis is proposed as follows:

H1: Financial Literacy has a positive influence on Digital Financial Inclusion.

<u>Digital Financial Inclusion has a positive influence on Entrepreneur Performance</u>

Studies show Inoue *et al.* (2024) Digital Financial Inclusion increases entrepreneurs' access to capital, such as loans, equity investments, and crowd funding. This easier access supports business expansion, innovation, and operational efficiency, which in turn improves entrepreneurial performance. Ariana *et al.* (2024) Digital financial inclusion improves entrepreneurial decision-making by providing tools for budgeting, forecasting and cash flow management. It helps entrepreneurs monitor finances, reduce risk, and improve operational efficiency, allowing them to focus on product development and market expansion, ultimately improving business performance. The above explanation shows that Digital Financial Inclusion can have a significant impact on the performance of SMEs, especially those in Sidoarjo and Surabaya. Entrepreneurs in these regions who have access to digital financial services can more easily access capital through various digital platforms, such as loans, investments, and crowd funding. This is very important to encourage business expansion, innovation, and more efficient operations, which ultimately improve their performance. From this explanation, the hypothesis is proposed as follows:

H2: Digital Financial Inclusion has a positive influence on Entrepreneur Performance.

Financial Resilience strengthens the effect of Digital Financial Inclusion on Entrepreneur Performance

The moderating role of Financial Resilience helps strengthen or weaken the impact of digital financial inclusion and financial literacy on business performance, depending on how strong the financial resilience of the SME (Ummah *et al.*, 2019). SMEs that understand financial concepts and utilize digital tools effectively tend to be more successful in facing economic challenges, leading to sustainable growth and profitability (Seraj *et al.*, 2022).The concept of Financial Resilience has been studied in relation to SMEs, with research highlighting its important role in supporting business continuity and performance (Yasmin, 2023). These factors contribute directly to better risk management, adaptability, and operational efficiency, ultimately improving business performance. Therefore, SMEs with solid Financial Resilience are better able to manage risks, adapt to market changes, and utilize digital services such as online banking, digital payments, and effective financial planning. The hypothesis developed regarding the role of Financial Resilience as a moderator in the relationship between digital financial inclusion, Financial Literacy, and SME performance suggests that Financial Resilience plays a moderating role.

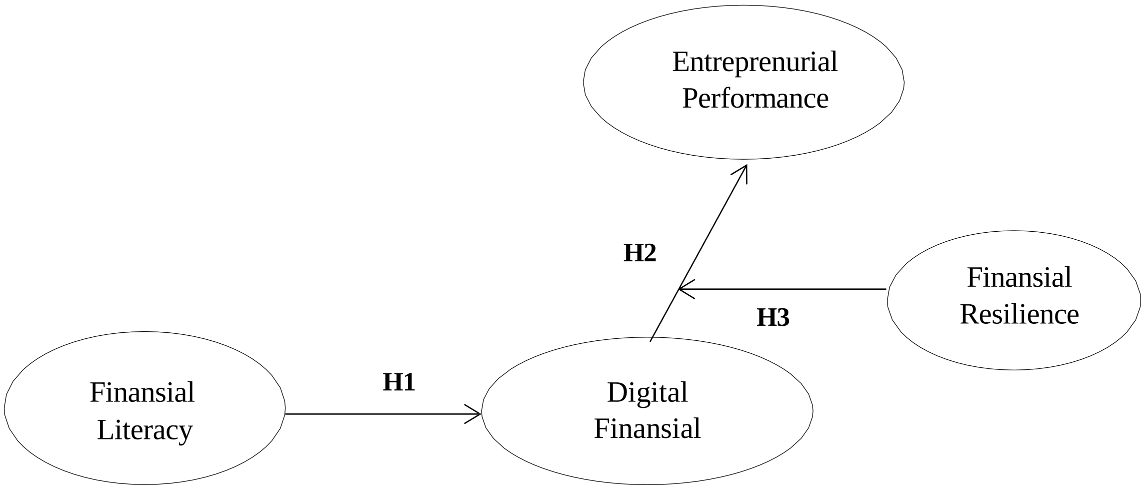

Figure 1. Research Model

RESEARCH METHODS

This study uses a quantitative approach to determine the effect of financial literacy (independent variable), digital financial inclusion (mediating variable), financial resilience (moderating variable), and entrepreneurial performance (dependent variable). Data was collected from small and medium enterprises (SMEs) in East Java engaged in food, beverages, fashion, furniture, textiles, electronics, and beauty. The data collection technique used in this study was a questionnaire distributed to respondents relevant to the research topic. This questionnaire was designed to collect information about financial literacy, digital financial inclusion, financial resilience, and entrepreneurial performance. In the first stage, researchers developed the research constructs. In the second stage, the researcher developed questionnaires tailored to the existing research constructs, and the researcher compiled a questionnaire on a Google form containing questions by using language that is easily understood by business people and can then be read by SMEs. As explained by Taherdoost *et al.* (2022) is used to ensure that the questionnaire questions presented are clear, simple, and understood by respondents so that respondents can provide accurate and relevant answers. In the third stage, researchers distributed questionnaires to SMEs in East Java. Minimum sample size Hair *et al.* (2019) It was found that 203 respondents (50.75 percent) of the 400 respondents who successfully responded to the questionnaire were distributed.

The data analysis technique used in this study is to analyze data with SmartPLS (Hair *et al.*, 2020). The analysis begins with a data validity and reliability test to ensure the instrument used in the questionnaire. Furthermore, to test the research hypothesis, researchers used mediation and moderation path analysis. The mediation model is used to see whether digital financial inclusion can influence the relationship between financial literacy and financial resilience, while the moderation model explores how external factors or certain conditions can strengthen or weaken the influence. SmartPLS software was used to obtain more accurate results and provide a deeper understanding of the dynamics between financial literacy, digital financial inclusion, financial resilience, and entrepreneurial performance.

RESULTS AND DISCUSSION

Based on the results of the questionnaire distribution presented in Table 1, it can be seen that the descriptive profile of respondents consists of 203 SME owners located in the Sidoarjo and Surabaya areas. the majority of respondents came from Sidoarjo with a percentage of 62 percent followed by respondents from Surabaya at 27 percent. This data shows that respondents in the study are dominated by Generation Y and early Generation X, which represent productive age groups with relatively good levels of experience in managing businesses.

Table 1. Distribution of Respondents

Category	Details	Percentage
	Food and Beverage	36%
	Fashion	24%
	Furniture	12%
Business Type Textile 12%	Technology	10%
	Beauty	11%
	Building	4%
	Agriculture	2%
	<Rp. 50.000.000	1.7%
Annual Income	Rp. 50.000.000 – Rp. 500.000.000	9.5%
	Rp. 500.000.000 - Rp.10.000.000.000	88.9%
	Less than 3 years	7%
Length of Establishment	More than 3 years	75%
	More than 10 years	17%

Category	Details	Percentage
Gender	Male	32.6%
	Female	67.4%
	25 to 30 years	17%
	30 to 35 years	44%
	35 to 40 years	37%
Age Range	0 to 5 years	34.3%
	Tenure 5 to 10 years	60.3%
	10 to 15 years	4.5%
	15 to 20 years	0.4%

Source: Research construction 2025

Validity and reliability test

The validity test is a measure that states the validity of the research instrument to test the extent to which the instrument is tested. The higher the validity of the instrument, the more accurate the research measurement tool. Considered valid if the other loadings value is > 0.7 and the AVE value is said to be good if the value is > 0.5 stating that the indicators used adequately replace the construct being measured (Hair *et al.*, 2019). The reliability test is used to test the extent to which the research instrument is consistent and reliable. It is said to be reliable if the Cronbach alpha value is > 0.06 (Hair *et al.*, 2019).

Table 2. Other loading, Cronbach alpha, composite reliability, and AVE

Item Measurement	Other Loading	Cronbach Alpha	Composite Reliability	AVE
Financial Literary		0.867	0.877	0.560
I understand the basic concepts of financial statements, such as balance sheets and income statements.	0.752			
I feel confident in making a budget for my company.	0.579			
I regularly evaluate my company's financial performance.	0.761			
I know how to manage my debt wisely.	0.690			
I can distinguish between risky and safe investments.	0.511			
I use financial tools or applications to manage company finances.	0.695			
I often look for information about the latest financial products.	0.727			
I understand how taxes affect a company's financial decisions.	0.595			
I feel comfortable when making large financial transactions.	0.662			
I actively follow financial policy developments that affect business.	0.763			
Digital Financial Inclusion		0.899	0.902	0.527
My company actively uses digital banking services.	0.661			
I feel that digital financial services help improve business efficiency.	0.797			
I can easily access information about digital financial services.	0.684			
I feel safe when using digital financial services.	0.799			

Item Measurement	Other Loading	Cronbach Alpha	Composite Reliability	AVE
I regularly use financial apps for business transactions.	0.802			
Digital financial services help me manage my company's cash flow.	0.636			
I have experienced improvements in access to capital thanks to digital services.	0.762			
I interact with customers through digital platforms for financial services.	0.678			
I feel that digital financial services improve my ability to compete in the market.	0.690			
I have sufficient knowledge about existing digital financial products.	0.725			
Financial resilience		0.936	0.934	0.650
My company has a reserve fund to deal with the crisis.	0.882			
I have a clear strategy for dealing with financial emergencies.	0.586			
My company can adapt quickly to changing market conditions. My company can adapt quickly to changing market conditions.	0.889			
I can predict and respond to financial risks that may occur.	0.900			
My company has access to alternative sources of funding when facing difficulties.	0.909			
I consider it important to invest in insurance to protect my business.	0.889			
I evaluate and update my financial plan regularly to cope with uncertainties.	0.647			
My company can minimize losses during a crisis.	0.908			
I use risk analysis to plan the financial future of the company.	0.673			
I believe that financially resilient companies are more likely to survive in the long run.	0.679			
Entreprenurial Performance		0.886	0.891	0.559
My company has experienced significant revenue growth in the past year.	0.592			
I am satisfied with the current profitability of my company.	0.753			
My company has a stable market share in our industry.	0.698			
New product innovation has improved my company's competitive position.	0.665			
I receive positive feedback from customers regarding our products or services.	0.762			
My company can adapt to changing market needs.	0.645			
My employees show a high level of satisfaction	0.758			

Item Measurement	Other Loading	Cronbach Alpha	Composite Reliability	AVE
in their work.				
My company has a clear long-term development plan.	0.677			
We implemented new technologies to improve operational efficiency.	0.720			
My company is constantly looking for ways to improve our products and services.	0.745			

Source: Research construction 2025

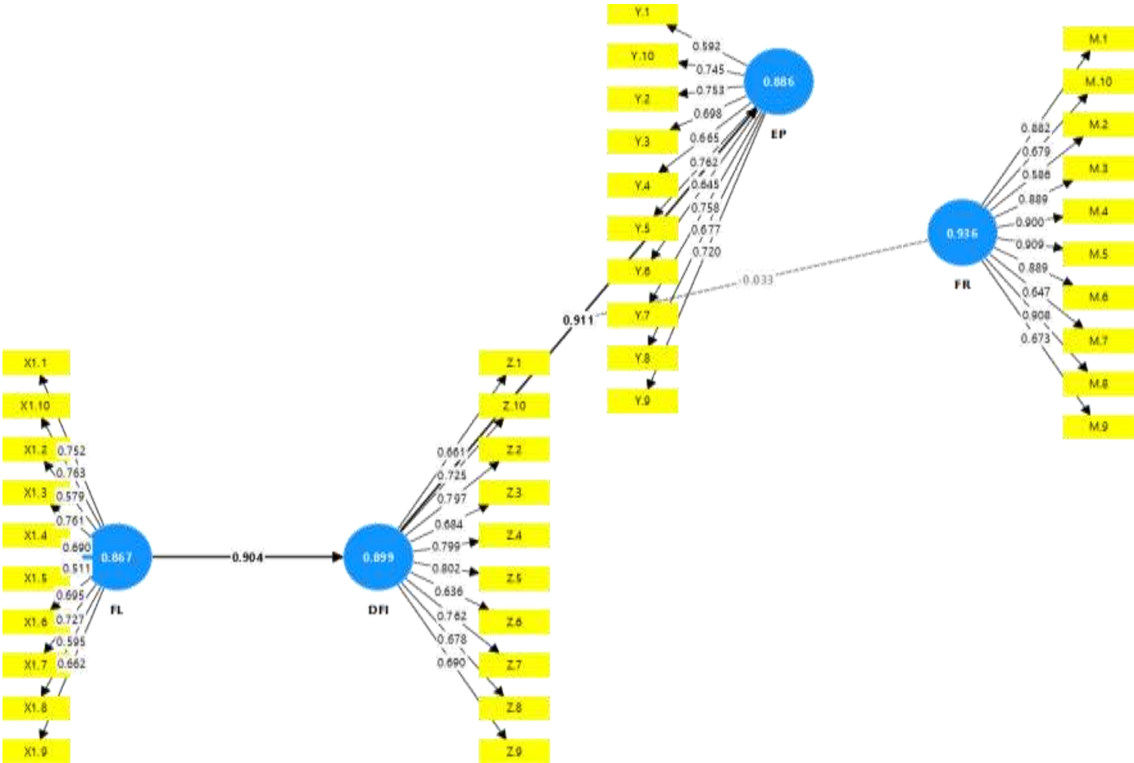

Figure 2. Outher loading result

Based on Figure 2 above, all indicators in each variable show a loading value that is mostly above 0.70. which indicates that these indicators have a strong contribution to the measured construct. The financial literacy variable has an outer loading ranging from 0.511 to 0.763. The digital financial inclusion variable shows good reliability consistency with outer loading ranging from 0.661 to 0.802. Meanwhile, the entrepreneurial performance variable has a fairly diverse outer loading value between 0.592 to 0.758, still within acceptable limits. The financial resilience variable shows the strongest performance, with all indicators having an outer loading above 0.6 and even the majority close to or above 0.9, indicating that the indicators strongly represent the construct validity (Hair *et al.*, 2019).

In testing the model using Structural Equation Modeling (SEM) in Table 2, evaluation of reliability and construct validity is a crucial stage to ensure the quality of measurement instruments. Based on the guidelines of Hair *et al.* (2019), the ideal Cronbach's Alpha and Composite Reliability values are at least 0.70 to show adequate internal consistency, while the Average Variance Extracted (AVE) is at least 0.50 to confirm convergent validity, namely the ability of the construct to explain the variance of its indicators by more than 50 percent. In this study, all tested constructs, namely financial literacy, digital financial inclusion, financial resilience, and entrepreneurial performance, meet these criteria with Cronbach's Alpha values above 0.86 each, Composite Reliability exceeding 0.87, and AVE ranging from 0.527 to 0.650. These results indicate that the measurement instruments have high reliability and good convergent validity (Hair *et al.*, 2019).

Table 3. HTMT Ratio

	M	X	Y	Z	M x Z
M	0.430	1.190	1.058	0.896	0.38528
X	0.947	0.408	1.030	0.864	0.818208
Y	0.930	1.029	0.408	0.868	0.80724
Z	0.932	1.015	1.091	0.379	0.353228
M x Z	0.616	0.639	0.684	0.656	0.404096

Note: M= Financial Resilience, X= Financial literacy, Y= Entrepreneurial performance, Z= Digital financial inclusion, MxZ= Financial Resilience x Digital financial inclusion
Source: Research construction 2025

Table 3 HTMT (Heterotrait-Monotrait) above shows the values that measure the level of discrimination between constructs in the model. The values in this table illustrate the relationship between the constructs M, X, Y, Z, and M x Z. The HTMT value between M and X is 0.947, which indicates a very high relationship. Meanwhile, the HTMT value between M and Z is 0.932, which also indicates a strong relationship between the two constructs. The HTMT values between M x Z and the other constructs range from 0.616 to 0.684, which indicates a moderate correlation. Overall, this table helps to evaluate whether the constructs in the model have good enough discrimination, where HTMT values lower than 0.85 or 0.90 generally indicate good discrimination between constructs.

In the context of model testing using Structural Equation Modeling (SEM), the correlation matrix involving variables M, X, Y, Z, and the M x Z interaction provides an initial description of the relationship between variables to be further analyzed. Referring to Hair et al., the correlation between constructs should not be too high (not exceeding 0.90) to avoid multicollinearity problems that can affect parameter estimates. From the matrix, the correlation values between variables are in a reasonable range, with the highest value of 0.947 between M and X, which is still acceptable in the context of SEM. In addition, diagonal values in the matrix close to 1 indicate adequate variance of each construct. The interaction variable M x Z also shows moderate correlations with other variables, indicating sufficient variance to support the analysis of moderation effects. Overall, this correlation matrix meets the basic requirements in SEM and supports the feasibility of the model for parameter estimation and hypothesis testing according to the standards of (Hair *et al.*, 2019).

R Square

R Square values greater than 0.25 are categorised as weak, greater than 0.50 as moderate, and greater than 0.75 as substantial. The following are the R-Square results that have been carried out by researchers:

Table 4. R Square

	R-Square	R-Square Adjusted
Entrepreneurial Performance (Y)	0.959	0.958
Digital Financial Inclusion (Z)	0.817	0.816

Source: Research construction 2025

Based on Table 4 above, the R-Square value of entrepreneurial performance is 0.959 or 95.9 percent and the R-Square value of digital financial inclusion is 0.817 or 81.7 percent. So that from the results of testing the model structure model, the R-squared value of the entrepreneurial performance and digital financial inclusion variables is included in the strong category.

In model testing using Structural Equation Modeling (SEM), the R-Square (R^2) and Adjusted R-Square values are important indicators to assess the extent to which the independent variables explain the variance of the dependent variable in the model. Referring to Hair et al., a high R^2 value indicates that the model has strong predictive ability and the exogenous variables successfully explain a large proportion of the variance of the endogenous variables. In the results of this analysis, the Entrepreneurial Performance variable shows an R^2 value of 0.959 with an Adjusted R-Square of 0.958, which means that almost 96 percent of the variance in entrepreneurial performance can be explained by the constructs in the model. As for the Digital Financial Inclusion variable, the R^2 value of 0.817 and Adjusted R^2 of 0.816 indicate that about 82 percent of the variance in the variable is successfully explained by the factors in the model. These values indicate that the SEM model tested has a very good level of fit and strong predictive ability.

Patch Coefficient Test

Hypothesis testing uses a criterion of 1.96, declared influential if it obtains a T-Statistic value of more than 1.96 (Rogahang *et al.,* 2022). The following table shows the partial test results of this study.

Table 5. Patch Coefficient (mean, STDEV, T-Values, p values)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistic (O/STDEV)	P Values	Information
Financial literacy (X) -> Digital financial inclusion (Z)	0.904	0.905	0.017	52.925	0.000	Accepted
Digital financial inclusion (Z) -> Entrepreneurial performance (Y)	0.911	0.912	0.035	26.363	0.000	Accepted
Financial Resilience (M) x Digital financial inclusion (Z)-> Entrepreneurial performance (Y)	-0.033	-0.030	0.014	2.283	0.022	Rejected

Hypothesis testing:

1) The financial literacy variable on digital financial inclusion gets a t-statistic value: of 59.925 >1.96 and a p-value: 0.000. This means that financial literacy has a positive and significant effect on digital financial inclusion.
2) The digital financial inclusion variable on entrepreneurial performance gets a t-statistic value: 26.363 > 1.96 and p-value: 0.000. This means that Digital financial inclusion has a positive and significant effect on entrepreneurial performance.
3) Financial resilience and digital financial inclusion variables on entrepreneurial performance get a t-statistic value: 2.283 < 1.96 and p-value: 0.022. This means that burnout has an insignificant effect and is weakened by the entrepreneurial performance variable.

In testing the model using Structural Equation Modeling (SEM), the path coefficients, t statistics, and p values are used to test the significance of the relationship between variables according to the guidelines of Hair *et al.* (2010). The results of the analysis show that the effect of Financial Literacy on Digital Financial Inclusion is highly significant with a coefficient of 0.904 and a t value of 52.925 (p < 0.001), and the effect of Digital Financial Inclusion on Entrepreneurial Performance is also significant with a coefficient of 0.911 and a t value of 26.363 (p < 0.001). However, the interaction between Financial Resilience and Digital Financial Inclusion on Entrepreneurial Performance showed a negative coefficient of -0.033 with a t of 2.283 and p = 0.022. Although the t-value exceeds 1.96, the p-value of more than 0.01 indicates that this moderating effect is not significant at the 1 percent significance level, thus the moderation hypothesis is rejected. Thus, the model shows a significant direct relationship between the main variables, but the moderating effect of financial security on the effect of digital inclusion on entrepreneurial performance is not statistically supported (Hair *et al.*, 2019).

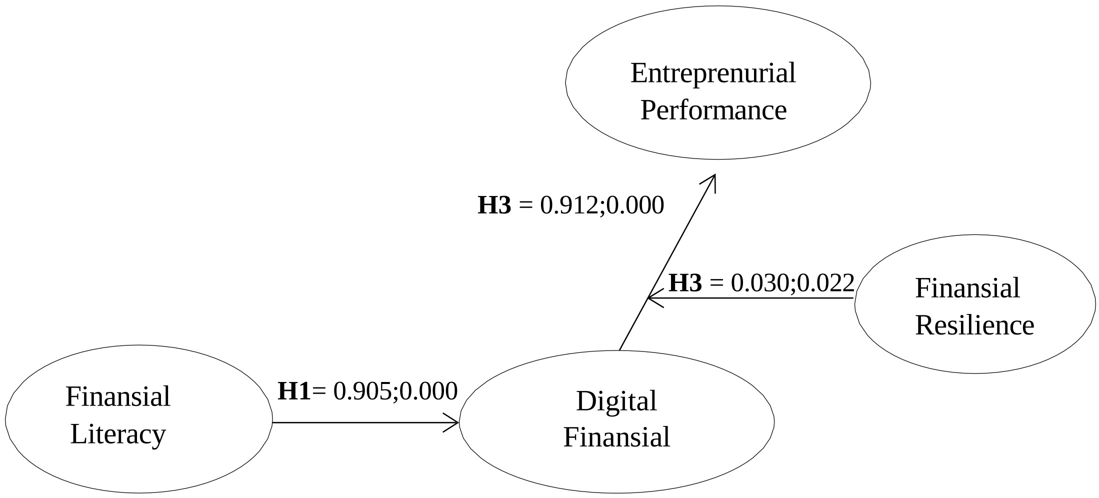

Figure 3: Research model and analysis results

Table 6. Upsilon V test

Hipotesis	Statistik Upsilion (V)	Mediation Description
Digital Financial Inclucion→ Entreprenurial Performance	0,912 X -0,030 0,831744 X 0,0009 = 0,00074856	Not mediate

Based on the upsilon test for indirect effects in the mediation test, the upsilon statistical formula is used, namely v = β2mx β2ym.x with criteria, namely (0.175) high mediation, (0.075) medium mediation, and (0.01) low mediation. The upsilon test is used to determine whether the mediating variable affects the relationship between the independent variable and the dependent variable or not. Table 6 above shows that the upsilon results of the digital financial inclusion variable do not contribute to driving entrepreneurial performance.

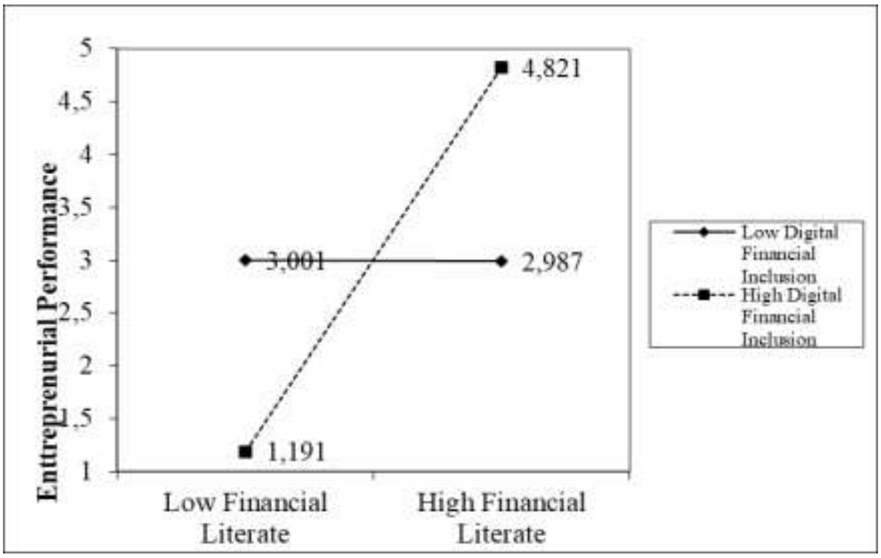

Figure 4. Moderation effect

Figure 4 shows that when digital financial inclusion (DF) is low, low financial literacy (FL) results in higher entrepreneurial performance (EP) (X=3.001). However, when FL is high and DF remains low, EP becomes low (X=2.987). Conversely, when DF is high, low FL will result in lower EP (X=1.191), but when FL is high, EP increases significantly (X=4.821). This suggests a moderating effect of DF on the relationship between FL and EP. The results confirm that when DF is low, an increase in FL has no significant impact on EP. However, when DF is high, the effect of FL on EP becomes much stronger. In other words, DF strengthens the relationship between FL and EP. This means that financial literacy will be more effective in improving entrepreneurial performance when supported by a high level of digital financial inclusion. This indicates a significant positive moderating effect of DF in strengthening the relationship between FL and EP, which supports the interaction hypothesis in the PLS-SEM model.

Based on the first hypothesis in the study which states that SME owners in Sidoarjo and Surabaya must have good financial literacy to increase digital financial inclusion. Research conducted shows that increasing financial literacy can encourage the adoption of digital financial inclusion, which is important for SMEs in accessing financing and other financial services. The findings show that higher financial literacy is associated with higher levels of digital financial inclusion, which is important for SMEs growth. These findings suggest that financial literacy is an important foundation in supporting the growth of SMEs in both regions. This not only improves their digital financial inclusion but also has a positive impact on business sustainability and growth. Therefore, focused financial literacy training programs are needed to help SMEs understand and use digital financial inclusion services more effectively. In the financial intermediation theory Nicula *et al.* (2024), financial literacy serves as a factor that enhances an individual's ability to understand and use various financial services effectively. This then drives digital financial inclusion, where financially literacy individuals are better able to access and utilize digital financial technologies, such as e-payments, app-based lending or online investment. In other words, better financial literacy increases individuals' awareness and understanding of digital financial solutions, which in turn expands their access and participation in a more inclusive digital financial system.

The effect of digital financial inclusion on entrepreneurial performance is proven to be significant based on the results of this study. Digital financial inclusion, which includes the accessibility, availability, and use of digital technology-based financial services, plays an important role in supporting SMEs business performance (Larassaty *et al.,* 2023). In the context of SMEs, especially in areas such as Sidoarjo and Surabaya, the use of digital financial services can have a significant positive impact on entrepreneurial performance (Majid et al., 2024). This is because digital financial inclusion allows SMEs owners to access financial resources, improve cash flow management, and simplify payment transactions and financial records (Firmanto *et al.,* 2024). With services such as e-wallets, digital financing platforms, and financial management applications, entrepreneurs can improve operational efficiency and reduce dependence on traditional financial systems (Pujianto, 2023). This indicates that digital financial inclusion has a positive and significant influence on entrepreneurial performance (Pujianto *et al.,* 2023). In other words, the better the access and utilization of digital financial services by SMEs owners, the greater the performance improvement that can be achieved. Overall, digital financial inclusion acts as an enabler that encourages the growth of SMEs through the optimization of financial technology. This finding is in line with the research of Vernia *et al.* (2024) in which digital financial literacy is key in improving the ability of entrepreneurs to utilize modern financial services.

This research also shows that improving digital financial inclusion capability can provide greater benefits for vulnerable populations, especially in rural or less developed areas (Supriyadi, 2023). Fauzi (2024) examined the impact of digital financial inclusion on entrepreneurial performance. The results show that digital financial inclusion, enhanced by financial technology (fintech), can reduce the risks faced by entrepreneurs. In the financial intermediation theory of Nicula (2024) digital financial inclusion can improve entrepreneurial performance by providing wider and more efficient access to digital financial inclusion and wider access to digital financial services allows entrepreneurs to obtain capital, manage cash flow, and utilize technology to improve efficiency and expand markets, which ultimately supports the growth and success of their business.

This study is in line with Gultom (2022) shows that the relationship between digital financial inclusion and entrepreneurial performance is not strengthened by financial resilience. Digital financial inclusion moderated by financial resilience cannot significantly improve entrepreneurial performance. Entrepreneurial performance with digital financial inclusion shows no relationship to financial resilience. Financial resilience refers to the ability of a company to deal with unexpected economic pressures, such as financial crises, market changes, or operational challenges Pasolo *et al.* (2023). Integrating digital financial inclusion through financial resilience cannot reduce financial risk and does not affect entrepreneurial performance (Puspita *et al.,* 2022). The insignificant correlation between digital financial inclusion and entrepreneurial performance through financial resilience will disrupt the role of leaders who seek to harmonize business regulations. As a result, businesses that fail to overcome the problem will risk losing competitiveness amid increasingly fierce competition. Interior financial intermediation Nicula *et al.* (2024) reveals that financial resilience does not strengthen the relationship between digital financial inclusion and entrepreneurial performance if its application is not tailored to the needs or characteristics of the business (Al-shami *et al.*, 2024). Thus, financial resilience acts as a moderating variable that does not strengthen the relationship between digital financial inclusion and entrepreneurial performance when prioritizing businesses to deal with risks quickly, but paying less attention to the depth of business knowledge which results in decreased business performance.

CONCLUSION

This study aims to evaluate the influence of financial literacy and digital financial inclusion on the entrepreneurial performance of SMEs actors in the Sidoarjo and Surabaya areas, considering the role of financial resilience as a moderating variable. The main objective of this study is to determine the extent to which SMEs actors' understanding and ability to manage finances and access digital financial services can improve their business performance. The results of the study indicate that financial literacy has a positive and significant influence on digital financial inclusion. Additionally, digital financial inclusion has been proven to play an important role in improving entrepreneurial performance. However, the role of financial resilience as a moderating variable was not found to be significant in strengthening the relationship between digital financial inclusion and entrepreneurial performance. Thus, the objective of this study was achieved, namely to provide empirical understanding that improving financial literacy and expanding access to digital financial services are very important in supporting the growth and performance of SMEs. This study also aims to provide recommendations for policymakers to develop strategies for empowering SMEs through improving their financial and digital capabilities.

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