

Enhancing the Financial Resilience of MSMEs: The Role of Financial Literacy, Financial Inclusion, and Financial Behavior

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Abstract

Introduction: Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in Indonesia's economy, contributing significantly to GDP and employment. However, financial resilience remains a major challenge due to low financial literacy, limited financial inclusion, and ineffective financial behavior. Addressing these issues is essential to ensuring MSME sustainability.

Objectives: This study aims to analyze the impact of financial literacy, financial inclusion, and financial behavior on the financial resilience of MSMEs in Batu City, East Java.

Methods: A quantitative approach was employed using the Structural Equation Modeling-Partial Least Squares (SEM-PLS) method. The study involved 40 MSME owners engaged in fruit and vegetable chips production, selected through purposive sampling. Data collection was conducted through surveys using Likert-scale questionnaires.

Results: The findings indicate that financial literacy has a significant positive impact on financial resilience, as a higher understanding of financial management enables MSME owners to make informed financial decisions. Financial inclusion also contributes to resilience by providing access to financial services such as credit and savings. Additionally, responsible financial behavior, including effective financial management and saving habits, strengthens MSMEs' ability to withstand financial challenges.

Conclusions: Enhancing financial literacy, expanding access to financial services, and promoting responsible financial behavior are key to improving MSME financial resilience. These efforts can help MSMEs adapt to economic uncertainties, sustain business operations, and support regional economic growth.

Keywords: Financial Inclusion, Financial Literacy, Financial Behavior, Financial Resilience, MSMEs.



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Introduction

In Indonesia's economy, Micro, Small, and Medium Enterprises (MSMEs) play a crucial role as a key pillar contributing to the Gross Domestic Product (GDP). According to data from the Ministry of Cooperatives and SMEs (2021), there are approximately 64.2 million MSMEs, accounting for 57% of the total GDP and absorbing 97% of the workforce in Indonesia. Despite their significant contribution, MSMEs continue to face various challenges, particularly in financial management, which often receives insufficient attention from business owners. Financial management encompasses an understanding of financial literacy, financial inclusion, and financial performance.

Based on the Financial [Services Authority report](#) (2022), the financial literacy index of the Indonesian people was recorded at 49.68%, while the financial inclusion index reached 85.10%. The low level of financial literacy and not yet optimal financial inclusion is caused by limited information and educational background that affects the understanding of MSME actors. Selain itu, [Rembulan et al.](#) (2023) emphasized the importance of financial resilience for MSMEs to be able to maintain business operations with stable financial conditions. Lack of understanding of financial management can have an impact on difficulties in making financial decisions, limited business growth, and increased risk of bankruptcy ([Laksmiana et al., 2024](#)). However, awareness of the importance of financial management is still relatively low, so this problem continues to occur in the Indonesian MSME sector. Therefore, strategic steps are needed to improve the financial literacy of MSME owners in order to strengthen financial resilience, encourage business expansion, and ensure business sustainability. This effort also includes improving understanding of access to financial services and institutions.

Batu City, located in East Java Province, has a beautiful natural attraction and diverse cultural wealth. The city has great economic potential, especially in the plantation sector, which has become one of the leading business fields for local MSME players. One of the processed plantation products that are widely marketed is fruit and vegetable chips. The abundant availability of raw materials creates opportunities for the development of this industry. However, amid the existing potential, MSME players in Batu City still face challenges in managing their business finances. Many of them experience difficulties in implementing effective financial management, which is caused by several factors, including a lack of understanding of basic financial concepts, limited access to financial resources and education, and inadequate financial infrastructure.

One of the main obstacles faced by MSMEs in Batu city is a lack of understanding of the basics of financial management.

Most business owners do not have a formal education background in finance or adequate access to training and financial education resources. As a result, they lack skills in budgeting, managing cash flow, and analyzing the financial condition of their businesses. In addition, limited access to financial services and financing sources is also an obstacle for MSME players in establishing a good financial management system. Many of them experience difficulties in obtaining the funding needed for business expansion or do not have sufficient access to formal financial services.

This poor financial management can have a negative impact on the growth and sustainability of MSME businesses in Batu city. Therefore, empowering MSME actors in Batu City is a strategic step that needs to be taken to improve their understanding and skills in managing business finances. The service activities carried out in Batu City aim to increase the awareness of MSME actors regarding the importance of understanding financial management. In addition, this program is also designed to provide training on the application of financial performance in MSME businesses to help business actors make more informed financial decisions. With an increased understanding of financial management, it is hoped that MSMEs in Batu City can develop better and contribute to regional economic growth.

Method

This study applies a quantitative approach to analyze the relationship between exogenous latent variables, namely financial literacy and financial inclusion, to endogenous latent variables, namely financial resilience. The research location was determined purposively, namely in Batu City, East Java, with the implementation period from May to July 2024.

Sample determination using non-probability sampling method with purposive sampling technique. The respondents selected were chip MSME players who have been operating for at least 2 years. Because the total population of MSMEs with these criteria is not known with certainty, the sample size is determined based on the recommendations of [Hair et al.](#) (2022) using the Minimum R-Squared method. With a significance level of 5%, a minimum R-Squared value of 0.50, and three structural paths, the minimum sample size required is 38 respondents. However, in this study, the sample size was rounded up to 40 respondents.

The data in this study comes from primary data collected through observation, documentation, and distributing questionnaires to respondents. The questionnaire instrument was measured using a Likert Scale. This study includes two endogenous variables, namely financial literacy measured through indicators of understanding of financial planning, spending and income, assets and money, as well as interest rates and credit; and financial inclusion measured based on

access/availability of finance, utilization of financial services, and quality of financial services. Meanwhile, the exogenous variable studied is financial resilience, which is assessed through indicators of financial control, expenditure management, the existence of emergency funds, and the ability to deal with financial pressures.

Data analysis was conducted using the Structural Equation Modeling-Partial Least Square (SEM-PLS) method, which is a multivariate analysis technique for estimating complex relationships simultaneously between several dependent and independent variables. This method includes two stages of testing, namely the structural model (inner model) and measurement model (outer model), as described by [Hair et al. \(2022\)](#).

Results and Discussion

Evaluation of the measurement model (Outer Model)

Outer model is a measurement model that explains the relationship between latent constructs and indicators ([Hair et al.](#)

[al., 2022](#)). The outer model is also made to ensure that the measurements used are suitable for use as valid and reliable measurements.

Convergent Validity

Convergent Validity testing aims to ensure that the variables used in the study have sufficient validity. This validity measures the extent to which an indicator is positively correlated with other indicators that measure the same construct. This evaluation is carried out on reflective construct indicators. A construct is said to fulfill Convergent Validity if the Average Variance Extracted (AVE) value reaches 0.50 or more. AVE is calculated as the average of the sum of the squares of the indicator loads associated with the construct. An AVE value of 0.50 or more indicates that more than half of the indicator variance can be explained by the measured construct, so convergent validity can be said to be fulfilled ([Hair et al., 2022](#)).

Table 1. The results of the Average Variance Extracted (AVE) value.

Latent Variable	Nilai AVE
Financial Literacy (LK)	0.690
Financial Inclusion (IK)	0.776
Financial Behavior (PK)	0.701
Financial Resilience (RK)	0.668

Source: Primary data processed, 2024.

Based on Table 1, it is known that the average Average Variance Extracted (AVE) value of each variable exceeds 0.5. This indicates that all indicators used in this study have good convergent validity and are able to represent latent variables optimally.

Discriminant validity

Discriminant validity refers to the extent to which a construct is truly distinct from other constructs. This validity

indicates that each construct in the model is unique and able to capture phenomena that are not covered by other constructs. In this study, discriminant validity is evaluated using cross loading, where the loading value of indicators on related constructs is compared with the loading value on other constructs. An indicator is considered to fulfill discriminant validity if the cross loading value on the measured construct is greater than the cross loading value on other constructs ([Hair et al., 2022](#)).

Table 2. Cross loading value.

Latent Variable	LK	IK	PK	RK
LK1	(0.809)	0.030	0.028	-0.184
LK2	(0.853)	-0.128	0.105	0.064
LK3	(0.885)	0.020	-0.197	0.255
LK4	(0.772)	0.087	0.081	-0.170
IK1	-0.004	(0.817)	-0.168	0.407
IK2	0.138	(0.927)	0.026	-0.240
IK3	-0.139	(0.895)	0.126	-0.123
PK1	-0.303	0.030	(0.829)	0.249
PK2	-0.070	-0.292	(0.898)	0.176
PK3	0.402	0.304	(0.781)	-0.466
RK1	0.386	0.142	0.153	(0.706)
RK2	-0.132	0.161	0.056	(0.859)
RK3	-0.008	0.130	-0.019	(0.878)

RK4	-0.186	-0.433	-0.172	(0.815)
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Source: Primary data processed, 2024.

Based on Table 2, it shows that the cross loading value of indicators on related constructs is greater than the cross loading value of indicators on other constructs. This shows that the data in this study have good discriminant validity.

Reliability Tests

Further reliability testing is carried out by looking at the Composite Reliability and Cronbach Alpha values. If the Composite Reliability and Cronbach Alpha values are greater than 0.70, the construct is said to be good, and all items have the same construct value consistently (Hair *et al.*, 2022). The following are the results of the reliability test in this study, which can be seen in the following table.

Table 3. Composite reliability and cronbach alpha values.

Latent Variable	Composite Reliability	Cronbach Alpha
Financial Literacy (LK)	0.899	0.849
Financial Inclusion (IK)	0.912	0.854
Financial Behavior (PK)	0.875	0.785
Financial Resilience (RK)	0.889	0.832

Source: Primary data processed, 2024.

Based on Table 3, it shows that the composite reliability and Cronbach alpha values in this study are > 0.70. This means that all latent variables in this study meet the reliability test.

Evaluation of structural models (Inner Model)

Inner model test is a structural model test that connects latent constructs (Hair *et al.*, 2022). The inner model is also evaluated using several measurements such as R-Squared, Path Coefficient, and Goodness of Fit.

Path coefficients

The path coefficient is used to measure the causal relationship between latent variables in the structural model, which reflects changes in values on endogenous and exogenous constructs. The path coefficient value ranges from -1 to +1 (Hair *et al.*, 2022). The closer to +1, the stronger and more positive the relationship between variables, while the closer to -1, the stronger and more negative the relationship.

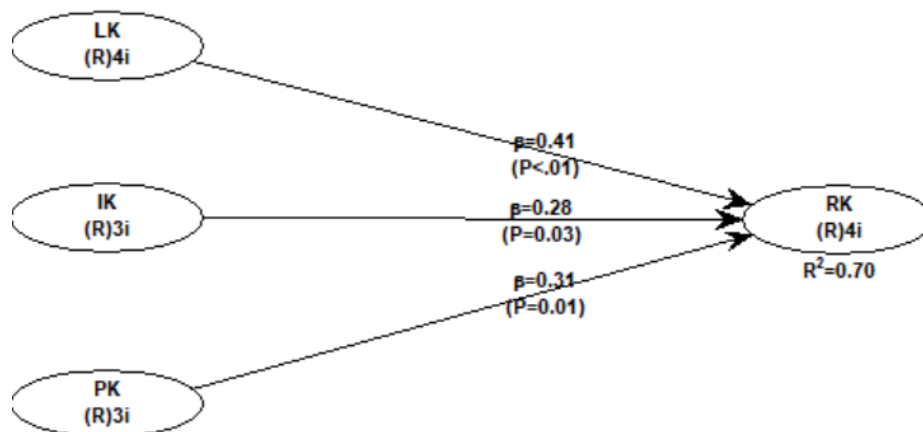


Figure 1. Path coefficient model structural

Based on Figure 1, the path coefficient value for each latent construct is represented by the symbol β . Overall, the β value in this study tends to be close to 1. This indicates that all variables in the model have a positive and significant relationship.

R-squared value

R-Squared is a method used to measure the extent to which the variance of endogenous constructs can be explained by their exogenous variables. In other words, each exogenous variable in the model is expected to be able to explain and predict endogenous variables (Hair *et al.*, 2022). The R-Squared assessment criteria are categorized as follows: values above 0.19 are considered weak, above 0.33 are considered moderate, and above 0.67 are considered strong.

Table 4. R-Squared values.

Latent Variable	R-Squared
Financial Resilience (RK)	0.699

Sumber: Data primer diolah, 2024.

Table 4 displays the R-Squared value for each latent variable. The results show that the financial resilience variable has an R-Squared value of 0.699. This means that 69.9% of the variance in financial resilience can be explained by financial literacy, financial inclusion, and financial behavior. While the remaining 30.1% is influenced by other factors not included in this research model.

Goodness of fit

Goodness of Fit testing is used to evaluate the difference between the observed value and the predicted value in a statistical model. This test determines the extent to which the model used is in accordance with the data obtained from observation (Maryam *et al.*, 2022). In the context of PLS, the Goodness of Fit Model functions as a global validation index that helps overcome various problems in the research model.

Table 5. Result of model fit and quality indices.

Model Fit and Quality Indices	Criteria	Result	Description
Average Path Coefficient (APC)	P < 0,05	0.333 P=0.005	Accepted
Average R-Squared (ARS)	P < 0,05	0.699 P<0.001	Accepted
Average Adjusted R-Squared (AARS)	P < 0,05	0.674 P<0.001	Accepted
Average Block VIF (AVIF)	Acceptable if ≤ 5 and ideal ≤ 3.3	1.784	Ideal
Average Full Collinearity VIF (AFVIF)	Acceptable if ≤ 5 and ideal ≤ 3.3	2.164	Accepted
Tenenhaus GoF (GoF)	Small > 0.1, Medium > 0.25, Large > 0.36	0.704	Large
Sympson's Paradox Ratio (SPR)	Acceptable if $\geq 0,7$ and ideal =1	1.000	Ideal
R-Squared Contribution Ratio (RSCR)	Acceptable if $\geq 0,9$ and ideal =1	1.000	Ideal
Statistical Suppression Ratio (SSR)	Acceptable if $\geq 0,7$	1.000	Accepted
Nonlinear Bivariate Causality Direction Ratio (NLBCDR)	Acceptable if $\geq 0,7$	1.000	Accepted

Source: Primary data processed, 2024.

Table 5 presents the ten indicators used as a rule of thumb, which is not absolute. The APC, ARS, and AARS indicators show a p value of <0.001, which means they are acceptable because they meet the significance criteria of <0.05. Meanwhile, the AVIF, SPR, and RSCR indicators fall into the ideal category, as they have values ≤ 3.3 . The AFVIF indicator is also declared acceptable with a value of ≤ 5 , which indicates that the higher the VIF value, the greater the level of collinearity in the model (Hair *et al.*, 2022). Furthermore, the GoF value obtained of 0.821 is categorized in the large criteria, which indicates that this model is able to describe the real phenomenon. Meanwhile, the SSR and NLBCDR indicators

obtained a value of 1.000, which means they meet the acceptance criteria. Therefore, the causal relationship in the tested model is supported by the bivariate nonlinear association coefficients.

Hypothesis testing

Hypothesis testing is carried out with reference to the significance value. In general, significance levels are categorized as follows: <0.10 (weak), <0.05 (moderate), and <0.01 (strong or highly significant) (Solimun *et al.*, 2017). In this study, hypothesis testing was carried out using the WarpPLS 8.0 application.

Table 6. Hypothesis testing.

	Hypothesis			Path Coefficient	P-Value	Result
H1	LK	>	RK	0.410	0.002	<i>Highly Significant</i>
H2	IK	>	RK	0.275	0.029	<i>Moderate Significant</i>
H3	PK	>	RK	0.313	0.015	<i>Moderate Significant</i>

Source: Primary data processed, 2024.

Based on Table 6, it is found that financial literacy has a high significant effect on financial resilience, with a p-value of 0.002. Then, financial inclusion shows a moderate significant effect on financial resilience, with a p-value of 0.029. Meanwhile, financial behavior shows a moderate significant effect on financial resilience, with a p-value of 0.015. In addition, the path coefficient of financial literacy, financial inclusion, and financial behavior has a value close to 1, which indicates that both have a positive relationship to financial resilience. Therefore, it can be concluded that all hypotheses are accepted based on the test results.

Based on the results of the analysis obtained, it shows that there are factors that can influence consumers in buying instant food. the following is an overall explanation of the hypothesis of this study:

The effect of financial literacy on financial resilience

Hypothesis testing results reveal that financial resilience is positively and significantly influenced by financial literacy. The higher the level of understanding of financial aspects of MSME owners, the stronger the financial resilience of their MSMEs. By improving insights in managing finances, business owners can make wiser decisions, ultimately strengthening their financial resilience.

These results are consistent with research conducted by [Agatha et al. \(2023\)](#), [Setyawan & Wulandari \(2020\)](#), [Safitri et al. \(2023\)](#), and [Rukmiyati et al. \(2023\)](#), which emphasize that improving financial literacy is critical to the sustainability of MSMEs, especially in the face of economic uncertainty. With good financial literacy, MSME owners can manage working capital, debt and investment more effectively. The higher their financial literacy, the more careful they are in conducting financial analysis, evaluating investment opportunities, managing risks, and adjusting to market dynamics. This in turn supports MSMEs to be more resilient, adaptive and able to survive in the long run.

Effect of financial inclusion on financial resilience

Hypothesis testing results show that financial inclusion has a positive and significant influence on financial resilience. Greater access to formal financial services significantly helps MSMEs to increase their resilience to economic shocks. Services such as credit, savings, and insurance enable MSMEs to better manage risks, maintain stable cash flows, and

mitigate negative impacts during a crisis. With adequate financial inclusion, MSMEs can be more responsive to unexpected economic changes, thereby improving their financial stability and resilience.

This study is in line with the findings presented by [Swamy \(2018\)](#) [Pomeroy et al. \(2020\)](#) [Ozili \(2020\)](#), and [Manurung & Widodo \(2022\)](#), which show that financial inclusion plays an important role in strengthening financial resilience, especially for MSMEs. Access to formal financial services such as credit facilities, savings, and digital payments helps MSMEs to maintain cash flow continuity, develop better financial plans, and better cope with economic uncertainty.

Effect of financial behavior on financial resilience

The results of this study indicate that financial inclusion has a positive and significant influence on financial resilience. The wiser and more responsible the financial behavior of MSME owners, the greater their level of financial resilience. MSME owners who adopt good financial habits, such as effective money management, regular savings and wise investment decision-making, will be better equipped to deal with financial pressures, manage risks and respond to unexpected financial challenges. As such, positive financial behaviors can improve overall financial resilience.

The results of this study are in line with the findings presented by [Agatha et al. \(2023\)](#), [Tarihoran et al. \(2023\)](#), and [Pandian et al. \(2021\)](#), which confirmed that good financial behavior plays a crucial role in strengthening the financial resilience of MSMEs. Positive habits such as setting aside emergency funds regularly, controlling spending, and making measured investment decisions help business owners maintain their financial stability. With improved financial behaviors, MSME owners are better able to cope with financial difficulties, protect their businesses from economic pressures, and ensure long-term business viability. Therefore, building healthy financial habits can help MSMEs survive and thrive in a dynamic business environment.

Conclusion

Based on the research results, it can be concluded that financial literacy, financial inclusion, and financial behavior have a positive and significant influence on the financial resilience of MSMEs. Higher financial literacy allows MSME owners to understand financial aspects more deeply, so they

can make wiser financial decisions. With good financial management, MSMEs become more resilient in the face of economic challenges and have a greater chance of surviving in the long run. In addition, financial inclusion also plays an important role in improving the financial resilience of MSMEs. Greater access to financial services, such as credit, savings and insurance, helps MSMEs to maintain cash flow stability and better manage financial risks. With access to formal financial services, MSMEs can be better prepared for uncertain economic conditions and reduce the negative impact of financial uncertainty.

Furthermore, responsible financial behavior is also a contributing factor to the financial resilience of MSMEs. Savings habits, effective expense management, and careful investment decision-making help business owners to maintain a stable financial condition. By having good financial behaviors, MSMEs are better prepared to face financial pressures, manage business risks, and maintain business operations in the long term. This study has four limitations. First, the latent variables analyzed are limited to financial literacy, financial inclusion, financial behavior, and financial resilience. Second, the sample size consists of only 40 MSME owners. Third, this study specifically focuses on MSMEs that produce chips and does not cover all types of MSMEs. Finally, the scope of this study is limited to the Batu City area.

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