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# The Influence of Financial Literacy and Financial Inclusion on Financial Behavior with Financial Technology as an Intervening Variable on MSMEs in Solo City

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A B S T R A C T

This research looks at how financial literacy and financial inclusion impact financial behavior, with financial technology acting as a connecting factor among MSMEs in Solo City. Good financial literacy allows MSMEs to understand the management of their business finances more effectively, while financial inclusion provides easy access to formal financial services. Financial technology is developing as a tool that facilitates transactions and financial management more efficiently. The study employs a quantitative methodology that includes path analysis and multiple linear regression. The research sample consisted of 300 MSME actors selected through purposive sampling technique. The data was gathered using questionnaires that were directly distributed to respondents. To analyze the data, regression tests were used to examine the relationship between independent and dependent variables, while path analysis was conducted to assess the role of financial technology as an intervening variable. The study's findings suggest that MSMEs' financial behavior is positively and significantly impacted by financial inclusion and financial literacy. In addition, both variables also affect financial technology, which ultimately contributes to improving the financial behavior of business actors. Thus, financial technology acts as an intervening variable, strengthening the relationship between financial inclusion, financial literacy, and the financial behavior of MSMEs in Solo City

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## INTRODUCTION

MSMEs are an important sector in the Indonesian economy, contributing to job creation and national economic growth (BPS, 2023). However, many MSMEs face obstacles in financial management, including low levels of financial literacy and the availability of official financial services the National Survey of iInclusion and financial literacy claims that (OJK, 2022), Indonesia's financial literacy rate is still relatively low at 49.68%, while financial inclusion has reached 85.10%. This indicates a disparity between people's knowledge of financial matters and their access to financial services.

Data from Bank Indonesia (2023) shows that only 56% of the total MSMEs actively use digital financial services in their operations. This results from a lack of knowledge about the advantages and dangers of utilizing technology-based financial services. Some MSMEs still rely on conventional methods in financial transactions, such as manual recording and cash use, which often leads to ineffectiveness in financial management.

The development of financial technology has created new opportunities for MSMEs to improve their financial efficiency. However, the adoption of financial technology is still uneven among business actors. A study conducted by Saputra (2022) shows that trust in technology and limitations in digital literacy are the main obstacles to the use of fintech by MSMEs. Thus, it's critical to comprehend how financial technology can improve the connection between financial inclusion and financial literacy and how it affects MSMEs' financial behavior.

Prior research has examined the impact of financial inclusion and financial literacy on financial behavior. A study conducted by Lusardi & Mitchell (2014) showed that higher financial literacy contributes to better financial decision-making. Meanwhile, a study conducted by Pinem & Mardiatmi (2021) highlighted the importance of financial inclusion in improving the economic welfare of MSMEs. However, research on the role of financial technology as a link between financial literacy, financial inclusion, and financial behavior is still limited. Several previous studies (Anisyah et al., 2021; Hijir, 2022) showed that financial technology can be a factor that strengthens the impact of financial literacy and inclusion on financial behavior, but this research is still limited to the context of MSMEs in certain areas.

Therefore, this study seeks to address this gap by exploring the role of financial technology in enhancing the connection between financial literacy, financial inclusion, and the financial behavior of MSMEs in Solo City.

## LITERATURE REVIEW

### Theory of Planned Behavior (TPB)

Theory of Planned Behavior (TPB) by Ajzen (1980) explained that individual Attitudes toward behavior, subjective norms, and perceived behavioral control all have an impact on behavior. (Fatimah et al., 2023). In this study, TPB is used to understand how financial literacy and inclusion affect MSME financial behavior through these three factors (Asmin et al., 2021).

### Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) describes the factors that affect the adoption of technology. In this context, financial literacy and financial inclusion influence how MSMEs perceive the convenience and benefits of financial technology. When MSMEs have a good understanding of financial concepts and access to financial services, they are more likely to adopt and use financial technology to enhance their financial management and decision-making (Wijianto & Lathifah, 2023).

**Usaha Mikro, Kecil dan Menengah (UMKM)**

MSMEs in Indonesia are classified based on business capital and annual sales results according to Government Regulation No. 7 of 2021, but nevertheless have to deal with issues including inadequate funding, poor administration, and restricted access to official financial services. Increasing financial literacy and inclusion, supported by the use of financial technology (fintech), can help MSMEs access capital, manage finances, and improve their operational efficiency (Naufalin, 2020).

**Behavioral Finance**

Financial behavior refers to how individuals or organizations handle their finances, including planning, budgeting, managing, and controlling money. This behavior is influenced by psychological aspects, financial systems, and social interactions. Good financial habits—such as effective money management, responsible spending, consistent saving, and avoiding waste—are essential for improving financial stability. For MSMEs, maintaining good financial behavior helps manage cash flow efficiently and supports long-term business sustainability (Fadilah & Purwanto, 2022).

**Financial Literacy**

The knowledge, abilities, and convictions that enable people to comprehend financial ideas and dangers in order to make better financial decisions that enhance their well-being and enable them to run their enterprises efficiently are known as financial literacy. Lack of financial literacy can cause MSMEs to have difficulty in managing funds and making managerial decisions, which risks hampering business growth (Hartina et al., 2023).

**Financial Inclusion**

Financial inclusion is the ease of public access to financial services and products provided by financial institutions without high cost barriers, so that all levels of society can use it to improve welfare. For business actors, financial inclusion allows access to financing that can be used to increase capital, innovation, and business competitiveness (Nindy, 2021).

**Financial Technology**

Financial technology (fintech) is a financial sector innovation that utilizes modern technology to offer services like payments, investments, loans, and financial management. Its presence can influence monetary stability and improve the efficiency of payment systems. Fintech is a key factor in advancing financial inclusion in Indonesia, providing easier access to funding for MSMEs, and supporting national economic growth (Noviyanti & Erawati, 2021).

**Hypothesis Development**

Good financial literacy helps individuals, especially MSMEs, to manage business finances more wisely, including in budget management, investment, and financial risk. Financial behavior is positively and significantly impacted by financial literacy, according to research (Andriyani & Sulistyowati, 2021).

MSMEs are better equipped to handle their money when they have broad access to formal financial services like credit, insurance, and savings accounts. Research indicates that better access to financial services positively and significantly impacts how people manage their finances (Budiasni & Ferayani, 2023).

Individuals with high levels of knowledge of finance are more likely to understand and utilize financial technology (fintech) services for their financial transactions. Research results confirm that financial literacy has a significant effect on the use of fintech (Saleh & Sari, 2020)

High financial inclusion provides wider access for individuals and MSMEs to utilize fintech in accessing financial services more efficiently. Studies show that financial inclusion has a positive and significant relationship with the use of fintech (Lasmini & Zulvia, 2021).

Financial technology makes it easier for individuals and business actors to manage their finances, including payments, loans, and investments digitally. According to research, financial technology significantly and favorably influences financial behavior (Saputra, 2022).

Good financial literacy encourages individuals to use fintech to optimize their financial management, thereby strengthening its influence on financial behavior. Research indicates that fintech mediates this association (Hijir, 2022).

Widespread financial literacy fosters the use of fintech in financial transactions and management, which ultimately has an advantageous effect on MSMEs' financial literacy. Fintech can moderate the impact of financial inclusion on financial behavior, according to research (Huda, 2024).

Based on the opinions of experts and previous research, the hypothesis in this study is as follows:

- H1: Financial literacy has a significant positive effect on financial behavior
- H2: Financial inclusion has a significant positive effect on financial behavior
- H3: Financial literacy has a significant positive effect on financial technology
- H4: Financial inclusion has a significant positive effect on financial technology
- H5: Financial technology has a significant positive effect on financial behavior
- H6: The effect of financial literacy on financial behavior is mediated by financial technology
- H7: The effect of financial inclusion on financial behavior is mediated by financial technology.

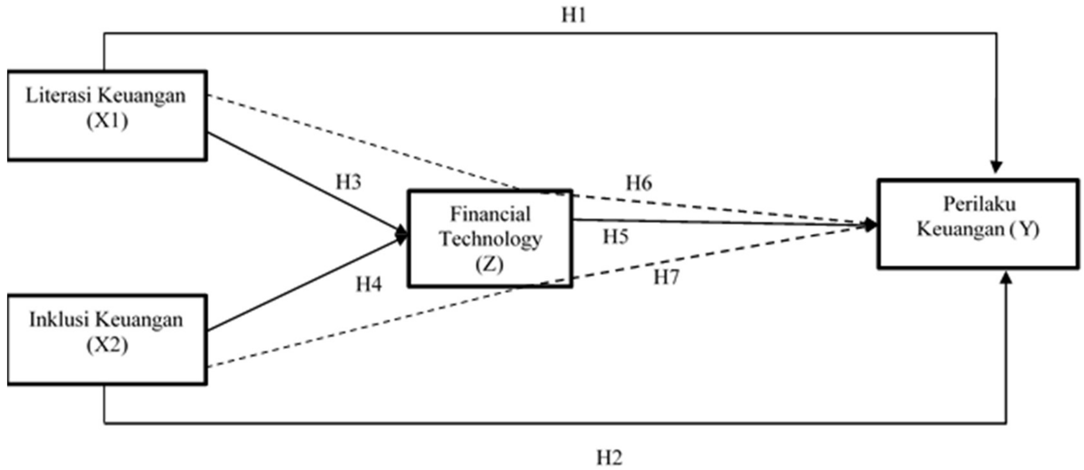


Figure 1. Conceptual Framework

**METHODOLOGY**

This research applies a quantitative approach using a survey method. The study focuses on culinary MSMEs in Solo City, with 300 respondents chosen through random sampling. Data were gathered using a structured questionnaire covering topics related to financial literacy, financial inclusion, financial technology, and financial behavior.

In this study, financial literacy and financial inclusion serve as independent variables, while financial behavior is the dependent variable, with financial technology acting as an intervening variable. Examining the connections among these variables, multiple linear regression and path analysis were used to examine both direct and indirect effects. Additionally, validity and reliability tests were conducted to ensure the research instruments were accurate and consistent, while classical assumption tests were performed to confirm that the regression model met the necessary statistical requirements.

**RESULTS**

**Respondent Description**

The respondents in this study mostly came from the food and beverage sector, with snack shops as the largest category (51%), followed by food stalls (34%), coffee shops/wedang (10%), and catering (5%).

In terms of age, the largest age group was 30–39 years (35%), followed by 20–29 years (30%), and 40–49 years (20%). The age group of 50 years and above had a smaller percentage, indicating that MSME actors in this study were dominated by individuals of productive age.

In the use of financial technology (fintech), the majority of respondents (60%) use fintech every day, indicating a high adoption rate. As many as 25% use it once a week, 10% once a month, and only 5% rarely use fintech.

Table 1. Respondent Description

| **Category** | **Information** | **Total Respondents** | **Percentag e** |
|---|---|---|---|
| Type of business | | | |
| Food stalls | Food stalls | 103 | 34% |
| Snack Shop | Snack Shop | 153 | 51% |
| Coffee Shop/Wedangan | Coffee Shop/Wedangan | 29 | 10% |
| Catering | Catering | 15 | 5% |
| Respondent's Age | | | |
| 20 – 29 Years | 20 – 29 Years | 90 | 30% |
| 30 – 39 Years | 30 – 39 Years | 105 | 35% |
| 40 – 49 Years | 40 – 49 Years | 60 | 20% |
| 50 – 59 Years | 50 – 59 Years | 30 | 10% |
| > 60 Years | > 60 Years | 15 | 5% |
| Frequency of Fintech Use | | | |
| Every day | Every day | 180 | 60% |
| Once a week | Once a week | 75 | 25% |
| Once a Month | Once a Month | 30 | 10% |
| Seldom | Seldom | 15 | 5% |

**Test of Validity, Reliability and Classical Assumptions**

Validity test shows that all research items have sig value <0.05, which means all variables in this study are valid. Meanwhile, the results of reliability test with Cronbach's Alpha show that all variables have values above 0.70, indicating the research instrument has good internal consistency.

The normality test indicates that the residuals follow a normal distribution. Meanwhile, the multicollinearity test reveals that there is no multicollinearity relationship between the independent variables, with a VIF value <10. In addition, the heteroscedasticity test shows that the DW value is between -2 and 2, indicating that homoscedasticity is met.

Table 2. Path Analysis Results

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 24.089 | 3.382 | | 7.123 | .000 |
| | Financial Literacy | .057 | .052 | .063 | 1.091 | .001 |
| | Financial Inclusion | .179 | .063 | .164 | 2.850 | .004 |
| | Financial technology | .035 | .078 | .026 | .458 | .002 |

a. Dependent Variable: Financial Behavior

Based on the table data above, the path analysis equation is as follows:

$$Y = 24{,}089 + 0{,}057X1 + 0{,}179X2 + 0{,}035Z + e2$$

Based on the equation above, it shows that Financial Literacy (X1), Financial Inclusion (X2), and Financial Technology (Z) have an effect on Financial Behavior (Y). From the regression results, the direct effect of Financial Literacy on Financial Behavior is 0.057, Financial Inclusion on Financial Behavior is 0.179, and Financial Technology on Financial Behavior is 0.035. The direct and indirect effects can be seen in the following calculations:

1. Indirect Effect of Financial Literacy on Financial Behavior through Financial Technology: 0.048 × 0.035 = 0.00168
2. Indirect Effect of Financial Inclusion on Financial Behavior through Financial Technology: 0.037 × 0.035 = 0.001295
3. Total effect of each variable on Financial Behavior on Financial Literacy (X1): 0.057 + 0.00168 = 0.05868
4. Total effect of each variable on Financial Behavior Financial Inclusion (X2): 0.179 + 0.001295 = 0.180295
5. Total effect of each variable on Financial Behavior Financial Technology Inclusion (Z): 0.035 (direct effect)

Based on the results of the path analysis, it was found that Financial Literacy (X1) and Financial Inclusion (X2) have a direct and indirect influence on Financial Behavior (Y) through Financial Technology (Z). Financial Literacy and Financial Inclusion not only have a direct influence on Financial Behavior, but also have an indirect influence through Financial Technology as a mediating variable. In addition, Financial Technology itself has a direct influence on Financial Behavior. Thus, it can be concluded that the three variables are interrelated in forming Financial Behavior, both through direct relationships and through the role of Financial Technology as an intermediary variable.

## DISCUSSION

### The Effect of Financial Literacy on Financial Behavior

The findings of the regression demonstrate that financial behavior is positively impacted by financial literacy ($\beta = 0.057$, $p = 0.001$). This shows that the higher the level of financial literacy of MSMEs, the better their financial behavior. This finding is consistent with the Theory of Planned Behavior (TPB) and the research of Andriyani and Sulistyowati (2021) which found that financial literacy influences financial decision making.

### The Effect of Financial Inclusion on Financial Behavior

Financial inclusion also has a positive effect on financial behavior ($\beta = 0.179$, $p = 0.004$). The availability of access to formal financial services increases efficiency in managing business funds. These results support the research of Pinem and Mardiatmi (2021) which found that access to financial services improves the financial management of MSMEs.

### The Effect of Financial Literacy on Financial Technology

Financial literacy has a positive influence on the use of financial technology ($\beta = 0.048$, $p = 0.002$). MSMEs with better financial understanding are more likely to use fintech services in their business. This finding is in line with the

Technology Acceptance Model (TAM) and the research of Saleh and Fatimah (2020).

**The Effect of Financial Inclusion on Financial Technology**

The regression results show that financial inclusion has a positive effect on the use of fintech (β = 0.037, p = 0.001). The easier it is for MSMEs to access formal financial services, the more likely they are to adopt fintech. This result is supported by research by Lasmini and Zulvia (2021).

**The Effect of Financial Technology as an Intervening Variable**

Financial technology acts as an intervening variable in the relationship between financial literacy and financial inclusion on financial behavior. This shows that although financial literacy and inclusion have a direct influence on financial behavior, the existence of fintech strengthens the relationship by providing broader and more efficient financial access for MSMEs.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the research results, financial literacy and financial inclusion have been proven to have a positive and significant effect on the financial behavior of MSMEs in Solo City, with financial technology as an intervening variable that strengthens the relationship. The higher the level of financial literacy and inclusion, the better the financial behavior of MSME actors, especially with the support of financial technology that facilitates access to financial services. Therefore, MSME actors are advised to improve their financial understanding through training and education so that they can manage their finances better and utilize fintech optimally. The government and financial institutions are also expected to provide more inclusive programs and easily accessible digital facilities to support MSMEs. Further research can expand the scope of areas and business sectors, and consider other external factors that influence the financial behavior of MSMEs.

## FURTHER STUDY

This study still has limitations in terms of the scope of the region and business sectors studied, so the results cannot be generalized to all MSMEs in Indonesia. Therefore, further research is recommended to expand the research object by considering other external factors, such as government policies, macroeconomic conditions, and the influence of digitalization on the financial behavior of MSMEs. In addition, the use of qualitative or mixed-method methods can be considered to gain a deeper understanding of the factors that influence the financial behavior of MSMEs.

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