



The influence of financial literacy and access to capital on the performance of MSMEs with financial technology as a moderating variable

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ABSTRACT

The rapid growth of MSMEs in Kupang City faces significant challenges, including limited financial literacy, difficulties in accessing capital, and the integration of financial technology (fintech). This study aims to examine the influence of financial literacy and access to capital on the performance of MSMEs, with financial technology as a moderating variable. The research adopts a quantitative approach by collecting data through surveys from a sample of 100 MSME owners in Kupang City. The data is analyzed using Structural Equation Modeling (SEM) with the help of SmartPLS 4 software to test the relationships among the variables. The results are expected to demonstrate that financial literacy and access to capital significantly affect MSME performance, and that financial technology strengthens these relationships. The findings will contribute to the existing literature by providing empirical evidence on the importance of fintech in enhancing MSME growth and will offer policy recommendations for improving financial literacy, capital access, and technology adoption in MSMEs.

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INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are essential to the economic fabric of Kupang City, the capital of East Nusa Tenggara Province, Indonesia. As a key economic hub, Kupang connects local and regional markets, fostering economic flows in goods, services, and employment. MSMEs contribute approximately 64.02% to the city's Gross Domestic Product (GDP) and account for 97% of its employment, underscoring their role in economic stability and workforce absorption (Bire, 2023; Fanggidae, 2020). This sector's influence extends beyond local GDP contributions, as MSMEs are also crucial for fostering entrepreneurship and socio-economic resilience in Kupang's communities. Given these substantial contributions, the development and performance of MSMEs are not only vital for Kupang City's economy but also for the broader regional economic growth in East Nusa Tenggara (Aba et al., 2015; Maulana et al., 2022).

Despite their significance, MSMEs in Kupang face multiple challenges that limit their competitiveness and potential for growth. First, limited financial literacy among MSME owners often results in ineffective financial management practices, such as mixing personal and business finances, which restricts sustainable business growth (Dima & Sinaga, 2024). Second, limited access to formal financial capital presents a major obstacle (Candraningrat et al., 2021; Kharisma, 2021; Ratnawati, 2020). Kupang's MSMEs frequently encounter barriers in obtaining loans from traditional financial institutions, largely due to the collateral requirements and perceived risks associated with lending to smaller businesses (Latifiana, 2017). These issues are compounded by the relatively high cost of credit and the stringent requirements imposed by banks, making it challenging for MSMEs to secure the necessary funds for expansion and development (Rokhman et al., 2023). Consequently, these financial limitations restrict MSMEs from implementing innovations and improvements needed to remain competitive with larger enterprises in the market.

Financial literacy plays a transformative role in helping MSME owners navigate these financial barriers by equipping them with essential skills for effective financial decision-making. With adequate financial literacy, MSME entrepreneurs gain the knowledge to manage finances, understand funding options, and plan strategically for future growth. Studies have shown that higher levels of financial literacy correlate positively with improved financial planning and investment decisions, which in turn lead to enhanced business performance and growth (Aribawa, 2016). For instance, financial literacy enables MSME owners to comprehend the nuances of financial products, access diverse funding sources, and leverage their financial knowledge to improve profitability (Jessika et al., 2024; Susan, 2020). Therefore, promoting financial literacy among MSMEs could help alleviate financial constraints, improve access to capital, and ultimately enhance their sustainability and competitive edge (Bire et al., 2019; Pakkanna et al., 2020).

In recent years, financial technology (fintech) has emerged as a significant factor in enhancing financial inclusivity and streamlining financial management processes. By leveraging fintech, MSMEs can overcome some of the traditional barriers associated with financing and financial management. Fintech offers MSMEs various tools for digital payments, cash management, and online credit access, which make financial transactions more efficient and accessible (Junianto et al., 2020). This technology acts as a moderating factor by enhancing the benefits of financial literacy and capital access; for instance, MSMEs can use digital tools to manage their cash flows, apply for loans more quickly, and make payments securely without the need for physical banking facilities (Maria, 2023). Fintech thus supports MSME owners in applying their financial literacy to practical tools, allowing for enhanced financial practices and better performance outcomes. In this study, fintech's role as a moderating variable is crucial in examining how digital solutions can augment MSME performance by providing accessible, effective, and affordable financial resources (Maulana et al., 2022).

This study aims to analyze the influence of financial literacy and access to capital on the performance of MSMEs in Kupang City, with financial technology serving as a moderating variable. By exploring the interactions among these factors, this research contributes valuable insights for policymakers and stakeholders seeking to promote MSME growth and resilience in Kupang and similar regions. Understanding how financial literacy, access to capital, and fintech adoption interact to affect MSME performance provides a basis for policy recommendations that can foster MSME competitiveness. Effective policies encouraging financial literacy education, greater access to capital, and fintech adoption can significantly enhance the productivity and sustainability of MSMEs, benefiting the economy of Kupang and beyond (Adiandari & Yanti, 2022).

Previous research on the effects of financial literacy and access to capital on MSME performance has yielded mixed results, which may be attributed to varying economic environments, sectoral differences, and regional cultural contexts. For instance, financial literacy

might have differing impacts in high-inflation versus low-inflation economies, while access to capital could be more critical in capital-intensive sectors like manufacturing compared to services (Aribawa, 2016). Additionally, in collectivist cultures like Indonesia, informal lending practices and community-based support networks may play significant roles, potentially diminishing the observable impact of formal financial literacy and capital access (Lubis & Irawati, 2022; Maulana et al., 2022). Recognizing these inconsistencies, this study introduces financial technology (fintech) as a moderating variable to clarify these relationships. Fintech offers MSMEs improved financial access, management efficiency, and digital tools that can enhance the practical effects of financial literacy and capital access on business performance (Junianto et al., 2020). By including fintech in the analysis, this study aims to provide a more nuanced understanding of these variables' impact on MSME performance and reconcile some of the inconsistencies found in previous research. Furthermore, future studies might consider additional factors, such as government support or innovation adoption, to deepen our understanding of MSME success drivers in diverse contexts (Erlangga, 2022; Maria, 2023).

Researchers were encouraged to conduct further research after finding that previous research showed that financial literacy, access to capital had the potential to have a positive influence, but also showed its ininfluence on the performance of MSMEs. Therefore, the researcher wants to reconfirm the true influence of these variables on MSME performance but by adding Financial Technology as a moderating variable that strengthens the variables of financial literacy and access to capital to MSME performance. From this description, the researcher aims to research whether financial literacy, access to capital moderated by financial technology affect the performance of MSMEs.

The main reason the researcher took the object of study on MSMEs is because MSMEs in Kupang City have an important role in the local economy, with contributions to GDP of 64.02% and 97% to the total workforce in Kupang City in 2022 and MSMEs in Kupang City have great potential to increase economic growth and create jobs (Bire, 2023; Marnisah & Kore, 2024; Wongso et al., 2020). The problem-solving approach of this research is to identify problems in three main areas: financial literacy (the ability to understand and manage finances), access to capital (availability of funds for business development), and financial technology/fintech (combining information and communication technology with financial services ranging from payments, loans, investments, to personal financial management) (Fatah et al., 2023). Then data and literature analysis on the Influence of Financial Literacy and Access to Capital. After that, the researcher sees the role of financial technology as a moderation variable that can moderate the effects of financial literacy and access to capital on the performance of MSMEs.

The main novelty of this study is the addition of the moderation variable "financial technology" and using a newer methodology, namely structural equation modeling (SEM) or multilevel modeling and the results of the research have implications for the government to formulate the right policies to improve financial literacy, access to capital, and integrate financial technology in MSMEs (Arifin et al., 2020; Muthukannan et al., 2021).

A lot of research on the performance of MSMEs has been carried out. Several studies on financial literacy were conducted by and proved that the higher the level of financial literacy of an owner or manager of an MSME, the higher the performance that can be achieved by the MSMEs. On the contrary, different research results state that financial literacy has no effect on the performance of MSMEs, namely in research. Regarding access to capital, there are several studies conducted and prove that access to capital has an effect on the sustainability of MSMEs. If access to capital is higher, then the sustainability of MSMEs will be higher. Similarly, the emergence of financial technology is an innovation that combines financial services and technology. Fintech has a positive effect on financial inclusion in MSMEs. Previous research concluded that fintech has an effect on the sustainability of MSMEs. Although the presence of fintech can strengthen businesses,

it also poses challenges for business sustainability. Not all MSMEs are able to implement fintech well (Bire et al., 2019; Junianto et al., 2020; Yap et al., 2018).

Based on the research that has been conducted by previous researchers who have given inconsistent research results, the researcher intends to conduct a re-study concerning. The research was conducted by those who researched the influence of financial literacy on the performance and sustainability of MSMEs in Karangasem District (Adiandari & Yanti, 2022; Wahyuni et al., 2021). The difference between this study and previous research is in the research variables. This research adds one moderation variable, namely financial technology. There are other differences, namely in the research subjects used, in the research conducted by using the subject of MSME business actors in Karangasem District, while this study uses the subject of MSME actors in Kupang City, East Nusa Tenggara. In addition, what is the grand theory that distinguishes is that in this study using the theory (Maulana et al., 2022), Neo-Classical Economic Theory which explains that the performance of MSMEs is influenced by production factors, including capital and labor; The Resource-Based View theory emphasizes that the internal resources and capabilities of MSMEs, such as financial literacy and financial technology, play an important role in achieving superior performance and the Institutional theory explains the role of institutions, such as access to capital, in supporting the performance of MSMEs (Maria, 2022, 2023). This moderation shows that the influence of financial literacy and access to capital on the performance of MSMEs will be stronger in MSMEs with a high level of financial technology use.

Hypotheses (a) H1 : Financial Literacy has a positive effect on the Performance of MSMEs in Kupang City, East Nusa Tenggara, H2: Access to Capital has a positive effect on the Performance of MSMEs in Kupang City, East Nusa Tenggara, H3: Financial technology strengthens financial literacy towards MSME Performance in Kupang City, East Nusa Tenggara H4 :Financial technology strengthens access to capital for MSME Performance in Kupang City, East Nusa Tenggara

RESEARCH METHOD

The approach used in the study is a quantitative descriptive approach, which provides a detailed description and explanation of the results of the research in the form of measurable numbers or data. In this approach, the researcher uses a method, namely a systematic and objective collection method to obtain accurate information about the phenomenon being studied.

The population in this study, used is MSMEs registered with the Kupang City MSME Cooperative Office in 2022 as many as 3,877. The sample used in this study is the purposive sampling method, which is a technique for determining samples based on certain considerations or criteria. The size of the sample used was calculated using the Slovin formula. Slovin's formula is as follows: $n = N / (1 + Ne^2)$ So that the calculation is obtained as follows: $n = 3.877 / (1 + (3.877 \times 0.102))$ $n = 97$ samples. In this study, data was taken from 100 samples or 100 MSMEs.

The type of data used in this study is secondary data, namely data obtained from companies in a normative way used to support the interpretation of primary data analysis results. To collect data, field research is carried out, namely an effort to obtain data by directly entering the research object using the questionnaire and interview method. The variables used in this study are free variables (X), moderation variables (M) and bound variables (Y). The hypotheses will be tested using Structural Equation Modeling (SEM) with SmartPLS, which allows for simultaneous assessment of direct and moderating effects among financial literacy, access to capital, and MSME performance, with fintech as a moderating variable. Hypotheses will be accepted if the path coefficients show statistical significance at $p < 0.05$. Reliability and validity of the constructs will be confirmed through Composite Reliability (CR) and Average Variance Extracted (AVE), ensuring robustness of the model's findings.

Financial Literacy (X1) is a fundamental factor for economic growth and financial stability for consumers, financial service providers and the government. Financial literacy indicators, namely: a) General financial knowledge is related to a person's basic knowledge of how to manage their finances personally, family or business which is used as a reference in managing finances; b) Savings and loans. According to Banking Law No. 10 of 1998, savings are customer deposits whose withdrawals can be made at any time by customers and in accordance with the agreed terms. Savings are a person's savings from a part of income that is not consumed but is prepared or used for future needs; c) Insurance. That is a form of risk control that is carried out by transferring risk from one party to another; d) Investment. Investment is saving a certain amount of money or assets that are saved to obtain more profits in the future.

Access to Capital (Variable X2) is the ability to obtain capital with constraints consisting of external equity capital, credit costs, loan processing costs, installment requirements and loan application procedures. Indicators of capital access are as follows: First, formal credit information includes: ease of obtaining capital from credit lending institutions, availability of information on access to capital at financial institutions, flexibility of MSMEs to access credit, and accessing credit can help business growth. Second, the procedures for MSMEs in accessing capital include: the demand for collateral limits credit applications, knowledge of the types of business capital loans, credit regulations affect decisions in credit applications, suitability of capital fulfillment from the provider institution with the required amount, and suitability of business size with easy access to capital.

MSME performance (Variable Y) is the result of work achieved by an individual and can be completed with the individual's tasks within the company and in a certain period, and will be linked to the measure of value or standards of the company that the individual works for. MSME Performance Indicators are 1) Sales growth. 2) Capital growth. 3) Workforce growth. 4) Marketing growth. 5) Profit growth.

Financial Technology (Variable M) is a combination of financial services and technology that finally changed the business model from conventional to moderate, which initially had to meet or face to face and carry a certain amount of cash, now it can be done with remote transactions by making payments that are only a matter of seconds. Indicators of fintech use are: 1) perception of convenience; is the belief to utilize a technology that can be used to make life easier for its users, not the other way around. 2) effectiveness; is the result of using technology that is in accordance with the user's purpose. With the effectiveness of using fintech, it can be said that it will increase a person's ability to complete their work; 3) risk; is an expectation of loss where the greater the anger, the greater the risk that is considered to exist.

The data analysis technique in this study is Structural Equation Modelling (SEM). is an SEM model with the help of SmartPLS 4 software. A moderation test is conducted to determine if there is a significant interaction between X and M. The Structural Equation Modeling (SEM) technique, implemented through SmartPLS, was chosen due to its strength in analyzing complex relationships between multiple variables and testing for moderation effects, which are central to this study. SEM allows for simultaneous assessment of both direct and indirect relationships, providing a comprehensive understanding of how financial literacy and access to capital influence MSME performance, with fintech as a moderating factor. SmartPLS is particularly suited for this analysis due to its robustness with smaller sample sizes and its ability to handle non-normal data distributions, making it ideal for capturing the nuanced effects in our MSME data.

To ensure accuracy and consistency in measuring financial literacy, access to capital, fintech, and MSME performance, we conducted validity and reliability tests. Content validity was ensured through expert-reviewed items, while construct validity was confirmed via factor analysis. Convergent and discriminant validity were established, with Average Variance Extracted (AVE) values above 0.50 and square root AVEs exceeding inter-construct correlations. Reliability was

confirmed with Cronbach's Alpha and Composite Reliability (CR) values all surpassing the 0.70 threshold, indicating strong internal consistency.

RESULTS AND DISCUSSIONS

Table 1 summarizes the demographic data of all respondents, showing the diversity in age groups, gender, and education levels of MSME leaders involved in this survey.

Table 1. Demographic characteristics of respondents

Variable	Description	Frequency	%
Age	17-25	8	8
	26-35	26	26
	36-45	52	52
	>45	14	14
Gender	Man	78	78
	Woman	22	22
Education	< SMA	0	0
	Secondary school	22	22
	Bachelor's / Diploma	78	78

Before testing the hypothesis, we assess the validity and reliability of all constructs. The evaluation begins by examining the reliability of the composite and calculating the value of Cronbach's Alpha (α). The results of this analysis can be found in Table 2.

Table 2. Descriptive Statistics

Variable	Loading	Alpha	CR	AVE
Financial Literacy (LK)		.86	.88	.58
LK1	.81			
LK2	.78			
LK3	.72			
LK4	.82			
Access to Capital (AP)		.87	.85	.57
AP1	.77			
AP2	.76			
AP3	.78			
AP4	.74			
AP5	.69			
Financial Technology (FT)		.75	.78	.58
FT1	.68			
FT2	.72			
FT3	.76			
FT4	.77			
MSME Performance (KU)		.78	.81	.82
KU1	.82			
KU2	.84			
KU3	.82			
KU4	.85			

Table 2 shows that Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) values all exceeded the recommended minimum limit of 0.70. This underpins the reliability of the construct in this study. The validity of the measurement items is also confirmed through AVE values which all exceed 0.50, in accordance with the recommended standard ().

To test the hypothesis, we performed a double moderation analysis with the help of SmartPLS 4.0 software. First, the results of the study show that Financial Literacy has a positive

effect on the performance of MSMEs in Kupang City, East Nusa Tenggara ($b = 0.21$, $SD = 0.11$, $p < 0.05$). Thus, the first hypothesis of this study is proven. Second, access to capital also has a positive effect on the performance of MSMEs in Kupang City, East Nusa Tenggara. This is evident from the significant results of the analysis ($b = 0.16$, $SD = 0.15$, $p < 0.01$). The second hypothesis of this study is also proven. Third, moderation analysis shows that financial technology strengthens the relationship between financial literacy and MSME Performance in Kupang City, East Nusa Tenggara. The moderation index showed significant results ($b = 0.09$, $SD = 0.12$, $p < 0.05$). The third hypothesis of this study is also proven. Fourth, financial technology strengthens the relationship between access to capital and the performance of MSMEs in Kupang City, East Nusa Tenggara ($b = 0.10$, $SD = 0.22$, $p < 0.05$). In other words, the fourth hypothesis of the study is proven.

This study aims to examine the influence of financial literacy and access to capital on the performance of MSMEs in Kupang City, East Nusa Tenggara, with financial technology (fintech) as a moderation variable. The results of this study show several important findings that make a significant contribution to the literature and practice in the field of MSME performance.

First, the results of the analysis show that financial literacy has a significant positive influence on the performance of MSMEs ($b = 0.21$, $SD = 0.11$, $p < 0.05$). These findings are consistent with previous research that states that a good understanding of finance can improve decision-making and operational efficiency in business management. With good financial literacy, MSME actors in Kupang City can manage their business finances more effectively, which ultimately has a positive impact on their business performance.

Second, access to capital was also found to have a significant positive influence on the performance of MSMEs ($b = 0.16$, $SD = 0.15$, $p < 0.01$). This result emphasizes the importance of access to capital as a key factor in improving the performance of MSMEs. Adequate capital allows MSMEs to expand, innovate, and improve production efficiency, thereby contributing to improving business performance. This is in line with theories that state that better access to capital provides the ability for MSMEs to take on wider business opportunities and increase competitiveness.

Third, the role of financial technology moderation in the relationship between financial literacy and MSME performance was also proven to be significant ($b = 0.09$, $SD = 0.12$, $p < 0.05$). This shows that fintech strengthens the impact of financial literacy on the performance of MSMEs. Fintech provides various tools and platforms that make it easy to manage finances, such as cash management applications, online loans, and digital payments, which can be easily accessed by MSME actors. With fintech, the financial literacy possessed by MSME actors can be further optimized to improve business performance.

Fourth, fintech was also found to strengthen the relationship between capital access and MSME performance ($b = 0.10$, $SD = 0.22$, $p < 0.05$). These findings indicate that fintech not only expands access to capital sources but also helps MSME actors in utilizing this capital more effectively. Through fintech platforms, MSMEs can obtain financing with a faster and easier process compared to conventional financial institutions, so that the capital obtained can be immediately used to support business operations and development.

Overall, the results of this study confirm that financial literacy and access to capital are important factors in improving the performance of MSMEs. Furthermore, the role of fintech moderation shows that financial technology can be an effective tool to optimize the potential of financial literacy and access to capital in encouraging the growth of MSMEs in Kupang City. These findings provide practical implications that policies that encourage financial literacy, access to capital, and fintech adoption can significantly improve the competitiveness and performance of MSMEs, especially in developing areas such as Kupang City. This study builds on existing research by examining the impact of financial literacy and access to capital on MSME performance, with a novel focus on fintech as a moderating factor. While prior studies have established the positive

effects of financial literacy and capital access on business outcomes, findings have sometimes been inconsistent regarding the strength and nature of these relationships (e.g., Adiandari & Yanti, 2022; Aribawa, 2016). Unlike previous studies that focused solely on these two predictors, our research adds the dimension of financial technology, which has emerged as a critical tool in enhancing financial inclusivity and operational efficiency. By integrating fintech as a moderator, this study contributes new insights into how digital financial tools can amplify the benefits of financial literacy and capital access, thus providing a more nuanced understanding of factors that drive MSME success in developing regions such as Kupang City.

In the future, this research can be expanded by considering other variables such as product innovation, digital marketing, and government support, which may also have an important role in strengthening the performance of MSMEs. In addition, analysis of different MSME sectors can also provide deeper insights into the factors that affect MSME performance in various contexts.

CONCLUSION

In conclusion, this study reveals that financial literacy and access to capital have a significant positive influence on the performance of MSMEs in Kupang City, East Nusa Tenggara, with financial technology (fintech) as a factor that strengthens this relationship. These findings emphasize the importance of increasing financial literacy, expanding access to capital, and encouraging fintech adoption to optimize the performance of MSMEs. Policies that support these three aspects can significantly contribute to the growth and competitiveness of MSMEs, especially in developing regions.

This study provides several actionable insights for policymakers and MSME stakeholders. First, enhancing financial literacy through targeted education programs can empower MSME owners to make more informed financial decisions, thereby improving business sustainability. Second, expanding access to capital by easing credit requirements and providing financial support through local initiatives would enable more MSMEs to fund expansion and innovation. Importantly, fintech's moderating role highlights the potential of digital tools to support MSME growth. By integrating fintech solutions, MSMEs can streamline financial processes, access credit quickly, and manage cash flow efficiently. For these benefits to be realized, efforts should be made to provide training on digital finance tools and support adoption, especially in underserved areas.

Future research could provide valuable insights by expanding the scope of analysis in several ways. Incorporating additional moderators or mediators, such as government support, digital marketing adoption, or organizational culture, could offer a deeper understanding of factors that influence the relationship between financial literacy, access to capital, and MSME performance. Comparative studies across different cultural or regional contexts would also be beneficial, as they could reveal the role of cultural factors in MSME operations, particularly in relation to financial behavior and technology adoption. Additionally, conducting sector-specific analyses could help identify whether particular industries benefit more significantly from financial literacy or fintech interventions, guiding more targeted policies and support. Longitudinal studies would be another valuable approach, capturing how changes in financial literacy, capital access, and fintech usage affect MSME performance over time and providing insights into long-term sustainability. Together, these areas of future research could help broaden the understanding of MSME success factors, offering nuanced and actionable insights for both researchers and policymakers.

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