



# Financial Literacy and MSME Performance: Mediation and Moderation Analysis

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## ABSTRACT

This research examines the mediating role of access to finance, financial risk management, and competitive advantage in the relationship between financial literacy and Micro, Small, and Medium Enterprises (MSME) performance. This research also tests demographic factors such as the owner's gender, company size, company age, and number of employees in moderating the influence of the variables studied. The sample for this research is MSMEs in Jakarta Province, Indonesia. Five hundred and fifty MSMEs participated in the study using a web-based self-administered questionnaire. The data was analyzed using Partial Least Square Structural Equation Modeling (PLS-SEM). The research results show that financial literacy positively affects access to finance, financial risk management, competitive advantage, and MSME performance. Access to finance, financial risk management, and competitive advantage positively affect MSME performance and can mediate the relationship between financial literacy and MSME performance. The research also uncovers the moderating role of demographic factors, suggesting that the strength of the connections between financial literacy, access to finance, financial risk attitude, competitive advantage, and MSME performance may vary based on these factors. These findings carry significant implications for owners, managers, and governmental stakeholders, emphasizing the importance of enhancing financial literacy among MSMEs to enhance their performance.

**Keyword:** MSME Performance, Financial Literacy, Demographic Factor

## 1. Introduction

There is a growing consciousness regarding the pivotal significance of financial literacy in fostering the growth and efficacy of micro, small, and medium enterprises (MSMEs). The significance of financial literacy as a fundamental prerequisite for enhancing the performance of MSMEs, with tangible advantages such as increased profitability, heightened competitiveness, and sustained growth, has been highlighted in some studies ([Anshika & Singla, 2022](#); [Fikri & Nahda, 2023](#); [Saksonova & Papiashvili, 2021](#)). Small business owner-managers dealing with complex financial decisions must possess essential financial literacy skills ([M. M. Hossain et al., 2023](#)). The absence of sufficient financial literacy has emerged as a formidable hindrance, constituting one of the principal barriers to the enduring and sustainable advancement of MSMEs ([J. Ye & Kulathunga, 2019](#)).

While research on the impact of financial literacy on MSME performance is on the rise, there remains a notable gap in understanding the moderating role of demographic factors in this context. Existing literature attests to the variability of financial literacy levels based on demographic considerations ([Baker et al., 2019](#); [Dewi, 2022](#)), emphasizing the significance of individual characteristics in this domain ([Cupák et al., 2021](#)). Hence, it becomes crucial to examine how demographic factors moderate the relationship between financial literacy and MSME performance, as this research will provide valuable insights into the nuanced impact of financial literacy based on the demographic characteristics of both MSME owners or employees and the company itself.

This research focuses on MSMEs in one of the developing countries, Indonesia. MSMEs are crucial in advancing the Indonesian economy and forming its economic cornerstone ([Susanti et al., 2023](#)). MSMEs play a vital role in promoting sustainable development in developing nations by significantly contributing to job creation, economic empowerment, and social welfare for most individuals who lack access to formal sector employment primarily provided by the public sector ([Agyei, 2018](#)). However, despite their notable contributions, MSMEs grapple with fundamental challenges ([Susan, 2020](#)). These challenges include limited access to capital, technology, and markets ([Sugangga et al., 2023](#)). Considering these challenges, this research will also examine the role of financial literacy in improving access to finance, financial risk attitude, and competitive advantage of MSMEs in Indonesia.

This research actively contributes in several ways. First, it offers valuable theoretical insights into the influence of financial literacy on MSME performance, access to finance, financial risk attitudes, and competitive advantage. Second, it examines the variations in the impact of financial literacy based on demographic factors, facilitating the development of tailored government programs to enhance financial literacy among MSMEs. Additionally, it addresses a notable research gap by investigating the role of financial literacy in strengthening the competitive advantage of MSMEs. This aspect has received limited attention in existing literature ([Sugangga et al., 2023](#)). Finally, the study provides practical implications and a robust framework that MSMEs in developing countries, particularly Indonesia, can actively employ to bolster and enhance their performance.

## **2. Method**

### *2.1 Research Model*

Financial literacy encompasses a person's financial decisions, requiring adequate knowledge and self-assurance to make informed choices impacting their short and long-term financial well-being ([Asaad, 2015](#)). Mandell ([2008](#)) defines financial literacy as the capability to assess complex financial instruments that make informed choices in their selection and utilization, focusing on long-term profitability. Enhancing the financial literacy of MSME owners and managers is a crucial step towards fostering the growth of these enterprises in developing nations ([Susan, 2020](#)). This multifaceted skill set serves as a powerful tool in diminishing information gaps and collateral deficiencies, particularly when evaluating loan applications, which are integral to the financial health of MSMEs ([Hussain et al., 2018](#)). The absence of financial literacy and financial management acumen frequently constrains the ability of MSMEs to conduct thorough business analysis or make well-informed decisions, often leading to financial challenges and even business insolvency ([Anshika & Singla, 2022](#); [Kulathunga et al., 2020](#)). Therefore, instilling financial literacy is essential for these enterprises' sustained success and expansion in the challenging economic landscape of developing countries.

According to Kefela ([2010](#)), the significance of financial literacy lies in its capacity to promote greater access to financial resources by fostering a favorable environment and incentives for responsible financial practices, including savings, budgeting, and judicious credit utilization. Numerous studies have affirmed the link between financial literacy and improved access to finance ([Fikri & Nahda, 2023](#); [Frimpong et al., 2022](#); [Saksonova & Papiashvili, 2021](#)). Notably, businesses that possess a higher level of financial literacy are more likely to be able to obtain loans from financial markets ([Siddik et al., 2023](#)).

Korkmaz et al. ([2021](#)) underscore that financial literacy can bridge the gap between one's risk inclination and actual risk behavior, fostering a more risk-embracing approach. As a result, MSMEs with greater financial literacy are more likely to take advantage of highly profitable business opportunities and demonstrate a willingness to undertake riskier endeavors ([J. Ye & Kulathunga, 2019](#)). In the context of developing countries, good risk management is essential for the survival of MSMEs. As a result, managers with a high level of financial literacy who are aware of this important aspect are likely to adopt strong risk financial management practices ([Buchdadi et al., 2020](#)). The relationship between financial literacy and financial risk attitudes is confirmed by findings from various researchers ([Fikri & Nahda, 2023](#); [Madinga et al., 2022](#); [L. Nguyen et al., 2019](#)).

Knowledge resources in the literature are recognized as a source of competitive advantage ([Karia, 2018](#)). In their research, Hussain et al. ([2018](#)) suggest that understanding financial statements, budgets, and ratios helps overcome information asymmetry, leading to increased competitive advantage and economic efficiency. Several researchers have also proven that financial literacy influences competitive advantage ([Graña-Alvarez et al., 2022](#); [Resmi et al., 2019](#); [Widodo, 2023](#)). Knowing how to handle finances, investments, and risks can help small and medium-sized enterprises (MSMEs) deal with financial challenges and stay competitive in a

changing market ([Widodo, 2023](#)). This finding shows that financial knowledge is key to long-term success and staying strong in the market ([Sugangga et al., 2023](#)).

Several previous researchers have confirmed the positive influence of financial literacy on MSME performance ([M. M. Hossain et al., 2023](#); [Siddik et al., 2023](#); [J. Ye & Kulathunga, 2019](#)). Participation in financial education programs equips MSME operators with advanced financial management knowledge, directly enhancing performance ([Fikri & Nahda, 2023](#)). In the highly competitive MSME environment, the presence of skilled and financially literate managers is significant because they are better equipped to identify and exploit opportunities ([Anwar et al., 2020](#)). Financial literacy empowers managers to make sound financial decisions and enables MSMEs to navigate economic shifts adeptly, ultimately fortifying their overall performance ([Kulathunga et al., 2020](#)).

Access to financial resources is an important element in ensuring the sustainability and success of MSMEs ([J. Ye & Kulathunga, 2019](#)), where the scarcity of funding poses a major threat to business resilience and growth potential ([Rahaman, 2011](#)). A common theme in existing research underscores that MSMEs continually grapple with limited external funding, a topic of great concern to academics and policymakers worldwide ([Hussain et al., 2018](#)). Access to savings, insurance, and loan products can greatly influence the financial future of a business and tend to represent a higher share of income and thus significantly impact well-being ([Kefela, 2010](#)). Prior studies have also underscored the substantial influence of access to finance on MSME performance ([Alharbi et al., 2022](#); [Siddik et al., 2023](#); [J. Ye & Kulathunga, 2019](#)). Those with improved access to funding are better positioned to sustain their performance and thrive within the contemporary competitive business landscape ([J. Ye & Kulathunga, 2019](#)). Furthermore, access to finance has also been proven by several researchers to mediate the relationship between financial literacy and MSME performance ([Frimpong et al., 2022](#); [J. Ye & Kulathunga, 2019](#)). Financial literacy enhances a company's ability to secure loans channeled toward enhancing environmental and economic sustainability ([Siddik et al., 2023](#)).

Financial risk attitude can be defined as the extent to which a firm is willing to pursue risky financial resource opportunities in ventures with unknown outcomes ([J. Ye & Kulathunga, 2019](#)). Several previous researchers found that financial risk attitude significantly affected MSME performance ([Fikri & Nahda, 2023](#); [Nicolini et al., 2017](#); [J. Ye & Kulathunga, 2019](#)). When cross-tabulating financial literacy and risk attitudes, individuals with lower financial literacy exhibit a more pessimistic outlook on investment risks than those with greater financial literacy ([Nicolini et al., 2017](#)). Previous researchers also found that financial risk attitude can mediate the relationship between financial literacy and MSME performance ([Fikri & Nahda, 2023](#); [J. Ye & Kulathunga, 2019](#)).

According to Hill et al. (2014), a company achieves a competitive advantage when its profitability surpasses the industry average, which hinges on a distinct and unique aspect that sets the company apart. The foundation of competitive advantage lies in this uniqueness, and long-term success in the market is contingent upon the company's capacity to establish and maintain this competitive edge ([M. S. Hossain et al., 2022](#)). These unique attributes enable a company to outperform its competitors and capture a larger market share, and therefore, some previous researchers found that competitive advantage influences organizational performance ([Susanti et al., 2023](#); [Yang et al., 2018](#)). While prior research has not explored the potential mediating role of competitive advantage in linking financial literacy to MSME performance, examining the associations between financial literacy and competitive advantage, as well as competitive advantage and firm performance, raises the possibility of such mediation. Additionally, prior studies have established the mediating role of competitive advantage in various contexts, including the relationship between factors like digital transformation and management practices with performance ([Susanti et al., 2023](#); [Yang et al., 2018](#)).

A substantial body of research demonstrates the influence of demographic factors on financial literacy ([Baker et al., 2019](#); [Dewi, 2022](#)). Van Nguyen et al. (2022) identify age, gender, and income as primary drivers of financial literacy, highlighting that younger individuals, men, and those with doctoral degrees tend to exhibit higher financial literacy levels ([Agarwal et al., 2015](#)). Additionally, Sriyono and Rif'ah (2022) research reveals that gender can serve as a moderator for financial literacy and MSME financial behavior, stemming from sociocultural structures that contribute to gender-based disparities in societal roles and responsibilities, often resulting in the marginalization of women and their financial literacy. Consequently, it is conceivable, based on the collective findings of past researchers, that the influence of financial literacy on access to finance, financial risk attitude, competitive advantage, and MSME performance may differ based on the gender of the

MSME owner.

Previous findings also highlight a gender disparity in women's access to finance ([Roy & Patro, 2022](#)), indicating that women are less inclined to approach banks for loans due to greater risk aversion than men ([Goswami et al., 2017](#)). Men were found to be more risk-tolerant than women ([L. Nguyen et al., 2019](#)). In the context of competitive advantage, the study of Susanti et al. ([2023](#)) finds that MSMEs owned by women tend to possess a strong competitive edge, characterized by continually updated products to align with current trends, differentiation from competitors, easy recognition, and innovative marketing strategies.

In addition to owner demographic factors, company age represents a significant determinant of company performance ([Coad, 2018](#)). On average, small businesses are relatively younger than their larger counterparts, and this lack of industry experience compared to larger firms can account for the fluctuations in their growth trajectory and the increased risk of failure in the industry ([Rahaman, 2011](#)). Furthermore, it is worth noting that companies with more experience tend to exhibit higher levels of financial literacy (Cupák et al., 2021), as experience plays a pivotal role in enhancing financial knowledge and proficiency, in addition to managerial expertise in various areas ([Karadag, 2017](#)). Karadag's ([2017](#)) research underscores the impact of SME age on financial management performance, revealing a substantial difference between two SME age groups, namely those operating for under five years and those with more than five years of experience, where older SMEs outperform their younger counterparts. Additionally, older firms are better positioned to secure medium- and long-term debt with fewer borrowing constraints and are more likely to access bank financing ([Ezeoha & Botha, 2012](#); [Oke et al., 2019](#)).

Demographic factors such as the number of employees and company size also come into play. In their research, Kottala and Herbert ([2019](#)) deduced that there is a potential for significant moderation between employee size and organizational performance. Yusoff et al. ([2018](#)) findings support the notion that performance tends to increase with the number of years a company has been established and as the number of employees grows. Additionally, Çetinkaya et al. ([2019](#)) emphasize that practitioners should consider the organization's size, particularly the number of employees, to gain a competitive advantage. Moreover, smaller and younger MSMEs frequently encounter challenges accessing external funding ([Oke et al., 2019](#)). The research of Salehi et al. ([2022](#)) indicates that as a company's size increases, its risk tolerance tends to decrease. The size of a business is a critical factor in determining competitive advantage, as larger organizations often benefit from economies of scale, which confer cost advantages compared to smaller counterparts.

Drawing upon the existing literature and previous research, we posit the existence of a connection between financial literacy, access to finance, financial risk attitudes, competitive advantage, and MSME performance. Additionally, we hypothesize that demographic factors like the owner's gender, company size, number of employees, and company age may exert a moderating influence on these relationships, leading to the formulation of the research model depicted in Figure 1 and the following hypotheses:

H1: Financial literacy influences access to finance

H2: Financial literacy influences financial risk attitudes

H3: Financial literacy influences competitive advantage

H4: Financial literacy influences MSME performance

H5: Access to finance influences MSME performance

H6: Financial risk attitudes influence MSME performance

H7: Competitive advantage influences MSME performance

H8: Financial literacy has an indirect effect on MSME performance through the mediation of access to finance

H9: Financial literacy has an indirect effect on MSME performance through mediation of financial risk attitudes



H10: Financial literacy has an indirect effect on MSME performance through the mediation of competitive advantage

H11a-g: Demographic factors moderate the relationship between financial literacy, access to finance, financial risk attitudes, competitive advantage, and MSME performance

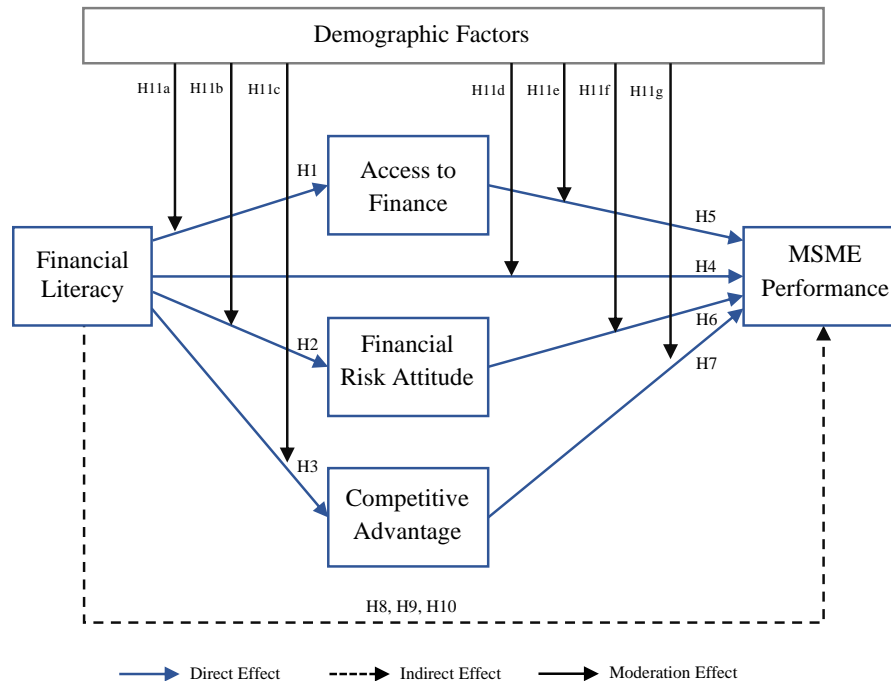


Figure 1. Research Model

## 2.2. Methodological Approach

This study employed quantitative research methods to investigate the financial literacy's impact on micro, small, and medium enterprises (MSMEs) in DKI Jakarta Province, Indonesia. The research sample consisted of 550 MSMEs operating in the DKI Jakarta Province. Data collection was conducted through the distribution of questionnaires among the selected MSMEs. The questionnaire employed a 5-point Likert scale, allowing respondents to express their agreement or disagreement with various statements, facilitating a structured and systematic approach to gathering valuable insights and data for the research analysis.

All research variables use measurements developed and validated by previous researchers. The financial literacy variable was measured using ten items adapted from Buchdadi et al. (2020). The access to finance variable uses seven measurement items adapted from Buchdadi et al. (2020). The financial risk attitude variable was measured using eight items adapted from Buchdadi et al. (2020). The competitive advantage variable was measured using eight items adapted from Yang et al. (2018). Furthermore, the MSME performance variable uses eight measurement items adapted from Buchdadi et al. (2020).

The collected research data gathered through the administered questionnaire, underwent thorough analysis utilizing Structural Equation Modeling with Partial Least Squares (SEM-PLS) methodology, facilitated by the SmartPLS 3 software. This analysis encompassed two distinct phases of assessment: the outer model evaluation, which scrutinized the measurement model's reliability and validity, and the inner model evaluation, which explored the structural relationships between variables. Additionally, to investigate the moderation hypothesis, the researchers conducted a multigroup analysis (MGA) to discern potential variations in the influence of variables based on demographic factors. This comprehensive approach to data analysis ensures a robust and insightful examination of the research findings.

## 3. Result and Discussion

Descriptive analysis was employed to profile the demographic characteristics of MSMEs. As illustrated in Table 1, a predominant 63.09% of MSMEs are owned by men, while the distribution across business categories

shows 35.45% in the micro-business category, 27.64% in small businesses, and 36.91% in medium-sized enterprises. A substantial 76.36% of MSMEs have been operating for over 5 years. In terms of the number of employees, MSMEs with 1-5 employees constitute 36.55%, those with 6-10 employees account for 23.64%, MSMEs with 11-15 employees represent 27.64%, and those with more than 15 employees make up 12.18%. The findings from this descriptive analysis underscore the diverse demographic factors characterizing MSMEs in Jakarta.

Table 1. Demographic Characteristics

Characteristics	Frequency	Percentage (%)
Gender (Owner)		
Male	347	63.09
Female	203	36.91
Business Category/Size		
Micro	195	35.45
Small	152	27.64
Medium	203	36.91
Business Age		
≤5 years	130	23.64
≥5 years	140	76.36
Number of Employees		
1-5 employees	201	36.55
6-10 employees	130	23.64
11-15 employees	152	27.64
>15 employees	67	12.18

In the SEM-PLS analysis, the initial phase involves evaluating the outer model, which encompasses convergent validity, internal consistency reliability, and discriminant validity assessments. Referring to Table 3, excluding seven items from the model was necessary due to their low factor loading values. All variables demonstrate convergent solid validity, as evidenced by an Average Variance Extracted (AVE) value exceeding 0.5. Furthermore, the internal consistency reliability, indicated by the Composite Reliability (CR) and Cronbach's Alpha (CA) values, also yields favorable outcomes, with all values surpassing 0.7, affirming the reliability of all variables. The results of the discriminant validity assessment using the heterotrait-monotrait ratio (HTMT) prove satisfactory, as all values fall below the 0.9 threshold, indicating robust discriminant validity.

Table 3. Factor Loading and Reliability Coefficients

Variable and Item		Loading	AVE	CR	CA
Financial Literacy			0.728	0.941	0.926
FL1	Always record and make monthly income reports or financial reports on my business financial activities	0.858			
FL2	Participate in bookkeeping training both from the government and outside training for business needs.	Not valid			
FL3	Businesses have complete documents for loan requirements either at banks or other financial institutions.	Not valid			
FL4	I have basic knowledge of accounting for my business needs	0.849			
FL5	Find out the costs that must be paid for the loan capital the business requires.	Not valid			
FL6	Find out the benefits of getting credit loans for business purposes	0.860			
FL7	Know and understand well the interest rates and loan payments provided by banks or other financial institutions for business purposes.	Not valid			
FL8	Have the ability to minimize losses and bad credit for business	0.868			
FL9	Have the ability to analyze business finances	0.859			
FL10	Have the ability to analyze future business prospects to be able to survive and progress	0.827			
Access to Finance			0.509	0.876	0.831
AF1	Loan products offered to my business by banks or other financial institutions according to the needs of my business	0.767			
AF2	The terms and conditions of loans offered to my business by banks or other financial institutions follow the provisions of the financial supervisory institution or OJK.	0.815			
AF3	The loan products offered and provided are very safe for the continuity of my business	0.710			
AF4	Many financial services offer loan products for my business, especially MSMEs	0.743			
AF5	The bank or other financial institution provides insurance facilities to guarantee my business	0.816			

	Variable and Item	Loading	AVE	CR	CA
AF6	Loan costs offered by banks or other financial institutions are very affordable	0.535			
AF7	I prefer the bank as a loan facility provider for my business because it is better than other financial institutions	0.549			
Financial Risk Attitude			0.612	0.886	0.837
FR1	I have a high desire to try to develop my business	0.700			
FR2	I always try hard to improve my business, such as improving the quality of service and looking for the best loan capital	0.868			
FR3	I always set aside business profits as capital to develop my business in the future	0.708			
FR4	I also always set aside business profits for emergency needs as a risk impact on my business.	Not valid			
FR5	I registered my business with insurance to ensure the continuity of my business during an emergency.	Not valid			
FR6	I am ready to use emergency funds when my business needs emergency funds to survive	0.907			
FR7	I use my business funds to innovate to improve my business even though I know that if it fails, it will be a high-risk	0.703			
FR8	Apart from innovation, I use my business funds to develop other businesses for investment needs	Not valid			
Competitive Advantage			0.543	0.905	0.880
CA1	My business has its own uniqueness that attracts consumers	0.751			
CA2	Apart from the place, the products offered in my business have their own uniqueness, such as the way they are presented and how they are purchased	0.758			
CA3	The business I opened uses a concept that does not exist anywhere else	0.742			
CA4	The business I run is rarely found in East Jakarta, even in the capital, Jakarta	0.713			
CA5	The business I run is still relatively rare so there are rarely similar businesses	0.739			
CA6	The business that I run is very difficult for other MSME entrepreneurs to imitate	0.760			
CA7	The price of the products offered in my business is under the customer's capabilities and even cheaper without reducing quality	0.737			
CA8	The product price set can compete with similar businesses/competitors	0.693			
MSME Performance			0.546	0.905	0.878
MP1	My business has reached BEP or return on investment.	0.818			
MP2	My business has been able to reduce operational costs well every day	0.774			
MP3	My business has experienced an increase in customer satisfaction with the increasing number of orders coming in	0.595			
MP4	My business is always to quickly confirm orders from customers in order to improve service quality	0.581			
MP5	I have employees who are very comfortable working in the business that I run	0.813			
MP6	The employees who work in my business have the same vision and mission to improve the prospects of my business	0.747			
MP7	I always try to respond quickly to market demand to advance my business	0.816			
MP8	My employees and I always carry out research and innovation on the business I run to increase profits	0.724			

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	Access to Finance	Competitive Advantage	Financial Literacy	Financial Risk Attitude	MSME Performance
Access to Finance	0.713				
Competitive Advantage	0.621	0.737			
Financial Literacy	0.514	0.610	0.853		
Financial Risk Attitude	0.491	0.663	0.515	0.782	
MSME Performance	0.576	0.680	0.600	0.581	0.739

Table 5. Coefficient of Determination Value and Predictive Relevance

	R-Square	R-Square Adjusted	Q-Square
MSME Performance	0.554	0.550	0.294
Access to Finance	0.264	0.263	0.124
Financial Risk Attitude	0.265	0.264	0.161
Competitive Advantage	0.264	0.263	0.196

Next, the inner model is assessed by examining the coefficient of determination (R-Square), predictive relevance (Q-Square), and the outcomes of hypothesis testing. According to Table 5, the R-Square value for

MSME performance stands at 0.554, indicating that financial literacy, access to finance, financial risk attitude, and competitive advantage jointly account for 55.4% of the variance in MSME performance. Furthermore, financial literacy demonstrates the capacity to elucidate 26.4% of the variance in access to finance, 26.5% in financial risk attitude, and 26.4% in competitive advantage. The results of predictive relevance testing reveal that all Q-Square values surpass 0, affirming the predictive relevance of the research model.

Table 6. Results of the Direct and Indirect Effect Hypothesis Test

	Hypothesis	Path Coeff.	T- statistic	P- values	Decision
H1	Financial Literacy → Access to Finance	0.514	14.221	0.000	Supported
H2	Financial literacy → Financial Risk Attitude	0.515	16.007	0.000	Supported
H3	Financial literacy → Competitive Advantage	0.610	25.264	0.000	Supported
H4	Financial literacy → MSME Performance	0.229	6.047	0.000	Supported
H5	Access to finance → MSME Performance	0.179	3.812	0.000	Supported
H6	Financial Risk Attitude → MSME Performance	0.162	4.746	0.000	Supported
H7	Competitive advantage → MSME Performance	0.322	5.942	0.000	Supported
H8	Financial Literacy → Access to Finance → MSME Performance	0.092	3.390	0.001	Supported
H9	Financial Literacy → Financial Risk Attitude → MSME Performance	0.084	4.444	0.000	Supported
H10	Financial literacy → Competitive Advantage → MSME Performance	0.196	5.975	0.000	Supported

As depicted in Table 6, the results of hypothesis testing validate all direct influence hypotheses (H1-H7) and mediation hypotheses (H8-10), evident from T-statistic values exceeding 1.96 or p-values falling below 0.05. It can be said that financial literacy positively influences access to finance, financial risk attitude, competitive advantage, and MSME performance. These findings align with previous research ([Fikri & Nahda, 2023](#); [Frimpong et al., 2022](#); [Graña-Alvarez et al., 2022](#); [Madinga et al., 2022](#); [Saksonova & Papiashvili, 2021](#); [M. Ye et al., 2019](#)). Internal financial literacy equips owners and managers to optimize the utilization of limited resources through an efficient and effective financial management system (Hussain et al., 2018). An enhanced level of financial literacy empowers MSMEs to generate timely, relevant, and accurate financial reports, a prerequisite for securing financing ([J. Ye & Kulathunga, 2019](#)). This fact, in turn, mitigates the issue of capital scarcity.

Financial literacy mitigates potential losses tied to risk-taking, enabling companies to engage in more comprehensive assessments and rational decision-making ([J. Ye & Kulathunga, 2019](#)). Enhanced financial literacy can fundamentally shift the perception of investment risks ([Amagir et al., 2017](#)), empowering managers with the knowledge and insight necessary to navigate risk regulations and adapt risk management practices to evolving contexts, thus conferring a competitive advantage ([Sugangga et al., 2023](#)). Then, financial literacy results in a deeper comprehension of concepts like compound interest, inflation, and risk diversification, enabling individuals to set more realistic return on investment expectations, ultimately enhancing their financial performance ([Graña-Alvarez et al., 2022](#)).

Access to finance, financial risk attitude, and competitive advantage positively impact MSME performance and can mediate the relationship between financial literacy and MSME performance. These findings align with prior research ([Fikri & Nahda, 2023](#); [Susanti et al., 2023](#); [J. Ye & Kulathunga, 2019](#); [M. Ye et al., 2019](#)). Financial literacy is pivotal in enhancing debt management, consequently fortifying the connection between financial literacy and financial performance ([Graña-Alvarez et al., 2022](#)). To drive innovation and profitability, MSMEs must undertake financial risks in investment, production, and marketing, underscoring the significance of examining their financial risk attitudes ([Goswami et al., 2017](#)). The higher the financial literacy of MSME owners and employees, the more adept they become at enhancing access to finance, financial risk attitudes, and competitive advantage, ultimately resulting in indirect improvements in MSME performance.

The outcomes of the multigroup analysis, as presented in Table 7, highlight significant disparities in the impact of financial literacy on competitive advantage and the influence of access to finance and competitive advantage on MSME performance, contingent on gender. Notably, men demonstrate a more pronounced influence compared to women. These results corroborate the conclusions drawn by Van Nguyen et al. (2022) and Agarwal et al. (2015), who found that men exhibit higher financial literacy, leading to a more substantial competitive advantage than women. Furthermore, these findings align with Roy and Patro (2022), emphasizing



women's challenges in accessing finance. However, it is important to note that these findings do not align with Susanti et al. (2023) research, which suggests that MSMEs owned by women typically possess a stronger competitive advantage than those owned by men.

Then, there are significant differences in the influence of financial literacy, financial risk attitude, and competitive advantage on MSME performance based on company age. Financial literacy and risk attitude influence is higher in companies over five years old. These results support Karadag (2017), who found that older SMEs have better financial management performance. According to Salehi et al. (2022), during the introduction stage of the company life cycle, which means a younger company age, company risk-taking is worse compared to the maturity and growth stages. The influence of competitive advantage on MSME performance is lower when they are older than five years, which supports the findings of Higón (2011) that younger companies are more likely to innovate, thus providing more benefits for competitive advantage.

Based on company age, there are significant differences in the influence of financial literacy on access to finance, financial risk attitude, competitive advantage, and MSME performance. This influence will be higher in larger companies. Furthermore, the influence of financial risk attitude on MSME performance is lower in larger companies. In line with Salehi et al. (2022), company risk taking will also decrease as company size increases. The differences in the influence of competitive advantage on MSME performance need to be reviewed further. The influence of competitive advantage is higher in small and medium enterprises. Then, the influence of competitive advantage is higher in medium enterprises compared to micro-enterprises.

Furthermore, based on the number of employees, the influence of financial literacy on access to finance and the influence of competitive advantage on MSME performance is higher in companies with a larger number of employees. These results support Yusoff et al. (2018) and Kottala and Herbert (2019) that the number of employees can moderate company performance, and the level of performance increases with the increase in the year the company was founded and the number of employees increases. These findings support Hypothesis 11(a-g) that demographic factors moderate the relationship between financial literacy, access to finance, financial risk attitudes, competitive advantage, and MSME performance.

Table 7. Multigroup Analysis Results

	Path Coefficient Difference										
	Gender Men vs Women	Age >5 years vs <5 years	Size Medium vs Micro	Size Medium vs Small	Size Small vs Micro	11-15 vs 1-5	11-15 vs 6-10	Number of Employees			
Financial Literacy → Access to Finance	-0.018	0.091	0.284*	0.042	0.243*	0.202*	0.064	0.137	-0.059	-	-0,196
Financial literacy → Financial Risk Attitude	0.124	0.079	0.327**	0.259**	0.069	-0.012	-0.019	0.007	-0.036	-0.025	-0,043
Financial literacy → Competitive Advantage	0.155*	-0.009	0.231**	0.072	0.159*	0.101	0.060	0.041	-0.056	-0.157	-0,097
Financial literacy → MSME Performance	-0.072	0.196*	0.840**	0.578**	0.261*	-0.136	-0.189	0.053	-0.053	0.083	-0,105
Access to finance → MSME Performance	-	-0.138	0.003	-0.095	0.098	-0.139	-0.246	0.107	-0.036	0.103	-0,246
Financial Risk Attitude → MSME Performance	0.062	0.491**	-0.370**	-0.147*	-0.223*	-0.160	-0.083	-0.077	-	-0.144	-0,227
Competitive advantage → MSME Performance	0.305*	-0.327*	0.003**	-0.340*	-0.140	0.490*	0.536*	-0.046	0.523*	0.033	0,569**

Note: \*p < 0.05; \*\*p < 0.001

#### 4. Conclusion

This research proves the important role of financial literacy in improving access to finance, financial risk attitude, competitive advantage, and MSME performance. Apart from that, financial literacy can also indirectly influence MSME performance through the mediation of access to finance, financial risk attitude, and competitive advantage. The demographic factors of gender owner, company age, company size, and number of employees have also been proven to moderate the relationship between financial literacy, access to finance, financial risk attitude, competitive advantage, and MSME performance. This finding shows that demographic

factors play an important role in influencing the strength of financial literacy's direct and indirect influence on MSME performance.

The findings of this research provide important implications for owners, managers, and the government in improving the performance of MSMEs. MSME owners and managers must have good financial literacy to increase company performance access to funding, have a good financial risk attitude, and maintain a competitive advantage. The government can facilitate MSMEs to increase financial literacy by holding workshop programs or special training on financial literacy. The program can be tailored to suit the demographic factors of each MSME. With this program, it is hoped that the performance of MSMEs will increase, ultimately contributing to developing the country's economy and prosperity.

## References

- Acquaah, M., & Agyapong, A. (2015). The Relationship between Competitive Strategy and Firm Performance in Micro and Small Businesses in Ghana: The Moderating Role of Managerial and Marketing Capabilities. *Africa Journal of Management*, 1(2), 172–193. <https://doi.org/10.1080/23322373.2015.1025684>
- Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., & Evanoff, D. D. (2015). Financial literacy and financial planning: Evidence from India. *Journal of Housing Economics*, 27, 4–21. <https://doi.org/10.1016/j.jhe.2015.02.003>
- Agyei, S. K. (2018). Culture, financial literacy, and SME performance in Ghana. *Cogent Economics & Finance*, 6(1), 1463813. <https://doi.org/10.1080/23322039.2018.1463813>
- Alharbi, R. K., Yahya, S., & Ramadani, V. (2022). Financial literacy, access to finance, SMEs performance and Islamic religiosity: evidence from Saudi Arabia. *International Journal of Entrepreneurship and Small Business*, 46(2), 259–285. <https://doi.org/10.1504/IJESB.2022.124456>
- Amagir, A., Groot, W., Maassen van den Brink, H., & Wilschut, A. (2017). A review of financial-literacy education programs for children and adolescents. *Citizenship, Social and Economics Education*, 17(1), 56–80. <https://doi.org/10.1177/2047173417719555>
- Anshika, A., & Singla, A. (2022). Financial literacy of entrepreneurs: a systematic review. *Managerial Finance*, 48(9/10), 1352–1371. <https://doi.org/10.1108/MF-06-2021-0260>
- Anwar, M., Shuangjie, L., & Ullah, R. (2020). Business experience or Financial Literacy? Which one is better for opportunity recognition and superior performance? *Business Strategy & Development*, 3(3), 377–387. <https://doi.org/10.1002/bsd2.103>
- Asaad, C. T. (2015). Financial literacy and financial behavior: Assessing knowledge and confidence. *Financial Services Review*, 24(2), 101–117.
- Baker, H. K., Kumar, S., Goyal, N., & Gaur, V. (2019). How financial literacy and demographic variables relate to behavioral biases. *Managerial Finance*, 45(1), 124–146. <https://doi.org/10.1108/MF-01-2018-0003>
- Buchdadi, A. D., Sholeha, A., & Ahmad, G. N. (2020). The influence of financial literacy on SMEs performance through access to finance and financial risk attitude as mediation variables. *Academy of Accounting and Financial Studies Journal*, 24(5), 1–15.
- Çetinkaya, A. Ş., Niavand, A., & Rashid, M. (2019). Organizational change and competitive advantage: Business size matters. *Business & Management Studies: An International Journal*, 7(3), 40–67.
- Coad, A. (2018). Firm age: a survey. *Journal of Evolutionary Economics*, 28(1), 13–43. <https://doi.org/10.1007/s00191-016-0486-0>
- Cupák, A., Fessler, P., Silgoner, M., & Ulbrich, E. (2021). Exploring Differences in Financial Literacy Across Countries: The Role of Individual Characteristics and Institutions. *Social Indicators Research*, 158(2), 409–438. <https://doi.org/10.1007/s11205-021-02713-8>
- Dewi, V. I. (2022). How do demographic and socioeconomic factors affect financial literacy and its variables? *Cogent Business & Management*, 9(1), 2077640. <https://doi.org/10.1080/23311975.2022.2077640>
- Ezeoha, A., & Botha, F. (2012). Firm age, collateral value, and access to debt financing in an emerging economy : evidence from South Africa. *South African Journal of Economic and Management Sciences*, 15(1), 55–71. <https://doi.org/10.10520/EJC31367>
- Fikri, A. S. K., & Nahda, K. (2023). The Effect of Financial Literacy on MSME Performance Through Financial Access and Financial Risk Attitude as a Mediation Variable. *Jurnal Economic Resource*, 6(2), 238–247.

- Frimpong, S. E., Agyapong, G., & Agyapong, D. (2022). Financial literacy, access to digital finance and performance of SMEs: Evidence From Central region of Ghana. *Cogent Economics & Finance*, 10(1), 2121356. <https://doi.org/10.1080/23322039.2022.2121356>
- Goswami, K., Hazarika, B., & Handique, K. (2017). Determinants of financial risk attitude among the handloom micro-entrepreneurs in North East India. *Asia Pacific Management Review*, 22(4), 168–175. <https://doi.org/10.1016/j.apmr.2017.07.013>
- Graña-Alvarez, R., Lopez-Valeiras, E., Gonzalez-Loureiro, M., & Coronado, F. (2022). Financial literacy in SMEs: A systematic literature review and a framework for further inquiry. *Journal of Small Business Management*, 1–50. <https://doi.org/10.1080/00472778.2022.2051176>
- Hill, C. W., Jones, G. R., & Schilling, M. A. (2014). *Strategic Management: Theory & Cases: an Integrated Approach*. Cengage Learning.
- Hossain, M. M., Ibrahim, Y., & Uddin, M. M. (2023). Finance, financial literacy and small firm financial growth in Bangladesh: the effectiveness of government support. *Journal of Small Business & Entrepreneurship*, 35(3), 336–361. <https://doi.org/10.1080/08276331.2020.1793097>
- Hossain, M. S., Hussain, K., Kannan, S., & Kunju Raman Nair, S. K. (2022). Determinants of sustainable competitive advantage from resource-based view: implications for hotel industry. *Journal of Hospitality and Tourism Insights*, 5(1), 79–98. <https://doi.org/10.1108/JHTI-08-2020-0152>
- Hussain, J., Salia, S., & Karim, A. (2018). Is knowledge that powerful? Financial literacy and access to finance. *Journal of Small Business and Enterprise Development*, 25(6), 985–1003. <https://doi.org/10.1108/JSBED-01-2018-0021>
- Karadag, H. (2017). The impact of industry, firm age and education level on financial management performance in small and medium-sized enterprises (SMEs). *Journal of Entrepreneurship in Emerging Economies*, 9(3), 300–314. <https://doi.org/10.1108/JEEE-09-2016-0037>
- Karia, N. (2018). Knowledge resources, technology resources and competitive advantage of logistics service providers. *Knowledge Management Research & Practice*, 16(4), 451–463. <https://doi.org/10.1080/14778238.2018.1521541>
- Kefela, G. T. (2010). Promoting access to finance by empowering consumers -Financial literacy in developing countries. *Educational Research and Reviews*, 5(5), 205–212. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-77955168923&partnerID=40&md5=32824289961f035dbc24031fc4fa086c>
- Korkmaz, A. G., Yin, Z., Yue, P., & Zhou, H. (2021). Does financial literacy alleviate risk attitude and risk behavior inconsistency? *International Review of Economics & Finance*, 74, 293–310. <https://doi.org/10.1016/j.iref.2021.03.002>
- Kottala, S. Y., & Herbert, K. (2019). An empirical investigation of supply chain operations reference model practices and supply chain performance. *International Journal of Productivity and Performance Management*, 69(9), 1925–1954. <https://doi.org/10.1108/IJPPM-09-2018-0337>
- Kulathunga, K. M. M. C. B., Ye, J., Sharma, S., & Weerathunga, P. R. (2020). How Does Technological and Financial Literacy Influence SME Performance: Mediating Role of ERM Practices. In *Information* (Vol. 11, Issue 6). <https://doi.org/10.3390/info11060297>
- Le, P. B., & Lei, H. (2018). The effects of innovation speed and quality on differentiation and low-cost competitive advantage. *Chinese Management Studies*, 12(2), 305–322. <https://doi.org/10.1108/CMS-10-2016-0195>
- Madinga, N. W., Maziriri, E. T., Chuchu, T., & Magoda, Z. (2022). An Investigation of the Impact of Financial Literacy and Financial Socialization on Financial Satisfaction: Mediating Role of Financial Risk Attitude. *Global Journal of Emerging Market Economies*, 14(1), 60–75. <https://doi.org/10.1177/09749101211070952>
- Mandell, L. (2008). Financial Literacy of High School Students BT. In J. J. Xiao (Ed.), *Handbook of Consumer Finance Research* (pp. 163–183). Springer New York. [https://doi.org/10.1007/978-0-387-75734-6\\_10](https://doi.org/10.1007/978-0-387-75734-6_10)
- Nguyen, L., Gallery, G., & Newton, C. (2019). The joint influence of financial risk perception and risk tolerance on individual investment decision-making. *Accounting & Finance*, 59(S1), 747–771. <https://doi.org/10.1111/acfi.12295>
- Nicolini, G., Gärling, T., Carlander, A., & Hauff, J. C. (2017). Attitude Toward Risk and Financial Literacy in Investment Planning BT - Risk Culture in Banking. In A. Carretta, F. Fiordelisi, & P. Schwizer (Eds.), *Risk Culture in Banking* (pp. 307–320). Springer International Publishing. [https://doi.org/10.1007/978-3-319-57592-6\\_14](https://doi.org/10.1007/978-3-319-57592-6_14)
- Oke, L. A., Sanni, M., & Ijaiya, M. A. (2019). Firm characteristics and access to bank financing: evidence from SMES in north central Nigeria. *Amity Journal of Finance*, 4(2), 70–87.

- Rahaman, M. M. (2011). Access to financing and firm growth. *Journal of Banking & Finance*, 35(3), 709–723. <https://doi.org/10.1016/j.jbankfin.2010.09.005>
- Resmi, S., Pahlevi, R. W., & Sayekti, F. (2019). Determinants creative MSMEs financial literacy in the special region of Yogyakarta and effect of competitive advantage. *Journal of International Conference Proceedings (JICP)*, 2(2), 160–167.
- Roy, P., & Patro, B. (2022). Financial Inclusion of Women and Gender Gap in Access to Finance: A Systematic Literature Review. *Vision*, 26(3), 282–299. <https://doi.org/10.1177/09722629221104205>
- Saksonova, S., & Papiashvili, T. (2021). Micro and Small Businesses Access to Finance and Financial Literacy of their Owners: Evidence from Latvia, Estonia and Georgia BT - Reliability and Statistics in Transportation and Communication. In I. Kabashkin, I. Yatskiv, & O. Prentkovskis (Eds.), *International Conference on Reliability and Statistics in Transportation and Communication* (pp. 667–677). Springer International Publishing. [https://doi.org/10.1007/978-3-030-68476-1\\_62](https://doi.org/10.1007/978-3-030-68476-1_62)
- Salehi, M., Arianpoor, A., & Naghshbandi, N. (2022). The relationship between managerial attributes and firm risk-taking. *The TQM Journal*, 34(4), 728–748. <https://doi.org/10.1108/TQM-10-2020-0246>
- Siddik, A. B., Rahman, M. N., & Yong, L. (2023). Do fintech adoption and financial literacy improve corporate sustainability performance? The mediating role of access to finance. *Journal of Cleaner Production*, 421, 137658. <https://doi.org/10.1016/j.jclepro.2023.137658>
- Sriyono, S., & Rif'ah, N. L. (2022). Can Gender be a Moderating Variable in Micro Small Medium Enterprises Financial Behavior? A Perspective from Financial Financial Literacy, Financial Attitude, and Income. *Jurnal Manajemen Bisnis*, 13(2), 306–323.
- Sugangga, A., Handayati, P., & Zagladi, A. N. (2023). Measuring The Contribution Of Financial Literacy In Building The Competitive Advantage Of MSMEs In Indonesia: Systematic Literature Review (SLR). *Brilliant International Journal Of Management And Tourism*, 3(3), 63–77.
- Susan, M. (2020). Financial Literacy and Growth of Micro, Small, and Medium Enterprises in West Java, Indonesia. In W. A. Barnett & B. S. Sergi (Eds.), *Advanced Issues in the Economics of Emerging Markets* (Vol. 27, pp. 39–48). Emerald Publishing Limited. <https://doi.org/10.1108/S1571-038620200000027004>
- Susanti, E., Mulyanti, R. Y., & Wati, L. N. (2023). MSMEs performance and competitive advantage: Evidence from women's MSMEs in Indonesia. *Cogent Business & Management*, 10(2), 2239423. <https://doi.org/10.1080/23311975.2023.2239423>
- Van Nguyen, H., Ha, G. H., Nguyen, D. N., Doan, A. H., & Phan, H. T. (2022). Understanding financial literacy and associated factors among adult population in a low-middle income country. *Heliyon*, 8(6), e09638. <https://doi.org/10.1016/j.heliyon.2022.e09638>
- Widodo, D. S. (2023). The Nexus of Entrepreneurial Orientation and Knowledge Management on Business Performance of SMEs in West Java: Role of Competitive Advantage. *Journal of Law and Sustainable Development*, 11(7), e1364–e1364.
- Yang, S., Ishtiaq, M., & Anwar, M. (2018). Enterprise Risk Management Practices and Firm Performance, the Mediating Role of Competitive Advantage and the Moderating Role of Financial Literacy. In *Journal of Risk and Financial Management* (Vol. 11, Issue 3, pp. 1–17). <https://doi.org/10.3390/jrfm11030035>
- Ye, J., & Kulathunga, K. (2019). How Does Financial Literacy Promote Sustainability in SMEs? A Developing Country Perspective. In *Sustainability* (Vol. 11, Issue 10). <https://doi.org/10.3390/su11102990>
- Ye, M., Wu, J., Wang, C., & He, X. (2019). Historical and future changes in asset value and GDP in areas exposed to tropical cyclones in China. *Weather, Climate, and Society*, 11(2), 307–319. <https://doi.org/10.1175/WCAS-D-18-0053.1>
- Yusoff, W. A. Y. W., Ali, N. Ben, & Boujelbene, M. (2018). Performance Measurement of Small and Medium Enterprises (SMEs) in Malaysia: Implications for Enhanced Competitive Advantage Toward the Implementation of TQM BT - Proceedings of the Second International Conference on the Future of ASEAN (ICoFA) 2017 – Volu. In R. Saian & M. A. Abbas (Eds.), *Proceedings of the Second International Conference on the Future of ASEAN (ICoFA)* (pp. 787–797). Springer Singapore.