

The Growth of MSE: The Effect of Financial Literacy and Access to Finance with Digital Finance and Usage of Digital Technology as Mediator

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Abstract. *This research was conducted to examine the effect of financial literacy and access to finance on the growth of micro-enterprises in Indonesia, with digital finance and the use of digital technology as mediation. This study uses a quantitative method with Indonesian micro-enterprises as respondents. Sampling obtained a total of 178 respondents, which was carried out by distributing questionnaires to the large community of MSEs: Jakpreneur and BRI Growpreneur. All data that has been collected is processed using the PLS-SEM method. The study results show that financial literacy and access to finance significantly influence the growth of micro-enterprises in Indonesia. The mediating role of digital finance and the usage of digital technology also significantly mediate the relationship between access to finance and micro-enterprise growth.*

Keywords: *Financial literacy, access to finance, business growth, digital financial services, use of digital technology*

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Introduction

The economic growth of a country is supported by micro, small and medium-sized enterprises (SMEs), especially for developing countries, which have a more important role in promoting economic development (Bongomin et al., 2017). A similar situation is also happening with micro-scale enterprise (MSE) in Indonesia. MSE plays a major role in Indonesian economic growth, contributing 60.5% of GDP and 96.9% of the country's labour absorption (Limanseto, 2022). MSE have an important role in driving Indonesia's economy amidst the threat of a recession in 2023 (Rosana, 2022).

Despite its contribution to the development of the country's economy, according to the Ministry of Cooperation and Small and Medium Enterprises (Kemenkop) of the Republic of Indonesia (2019), Indonesia has a high MSE failure rate, where an average of 50%-60% of MSE ceases its business in the first three years. (Rahadi, 2019). Robbani (2022) through the official website of MSE Indonesia (ukmindonesia.id) discussed the factors that caused MSE failure and their tardy growth of specifically in Indonesia, namely lack of motivation to grow, inability to sell products, incapacity to carry out expansion, no product innovation, lack of knowledge and understanding about how to develop a business, a lack of understanding of marketing, and so on. Furthermore, Khan's study (2022) highlights in detail the main factors of MSE's frequent failure, namely the presence of economic constraints, corruption, and the management problems of the MSE itself.

MSE management problems are fundamental factors that hinder business growth, i.e. related to financial management, lack of capital and access to financial services, technological changes, a lack of technological skills, and increased market competition (Yoshino, 2016; Beck et al., 2008). Furthermore, the benefit of MSE is also due to the presence of an suboptimal capital structure due to reluctance

of external financing parties to provide loans or credit due to asymmetric information or low financial literacy of the MSE perpetrator which makes the high risk of failure to pay if credit is given (Hussain, et al., 2018). The lack or limited availability of adequate financial information restricts creditors to adequately assess risk, prompting them to make adverse lending decisions (in order to reduce information asymmetry, creditors often seek favor and set higher charges (Hussain, et al., 2018).

Therefore, to improve the quality of financial information to assist in effective financial decision-making, it is necessary to improve financial literacy so that MSE owners/managers can prepare relevant and timely financial information so that lenders can analyze and make effective financial decisions. A similar point was made by Carbo-Valverde et al. (2016), where MSEs are generally characterized by poor financial and managerial knowledge and that affects their access to external finance. In addition, limited financial skills also have a negative impact on MSE's chances to survive, grow and innovate.

On the other hand, the failure of MSE is also due to low competitiveness and lack of technical skills of the MSE managers due to poor literacy and adaptation of information technology (Chouki et al., 2022). Especially in Indonesia, where currently only 20.5 million out of a total of 65 million MSEs have entered the digital ecosystem. This fact shows that most MSE Indonesia have not fully adopted digital technology to enhance their competitive advantage and business growth (Tarigan, 2023).

As a driver of the country's economy, the growth of each Small and Medium-sized Enterprise (SME) is crucial. Putra's research (2017) suggests that in order to develop SMEs, important steps that need to be taken include improving access to productive assets, especially in terms of capital, management, and technology. The second step is to enhance access to market information.

Furthermore, training on knowledge, skills, and business partnerships is essential. At each stage of development, SMEs require financing, training, and support to ultimately grow and become self-sustainable (De Mel et al., 2012).

Overall, small and medium-sized businesses in Indonesia are considered to have access to formal financial services and are digitally and financially literate. However, 30 million out of 45 million micro-enterprise operators in Indonesia have yet to be reached by formal financial services (Damara, 2022). This is significant because micro-enterprises make up 98.7% of all SMEs in Indonesia and contribute 37.35% to the Gross Domestic Product (GDP) in 2019 (Ministry of Finance of the Republic of Indonesia, 2020). Additionally, micro-enterprises employ 89% of Indonesia's workforce (Katadata, 2019).

In developing countries, access to finances plays as mediating role for upgrading SMEs' growth and success (Manzoor, Wei, & Sahito, 2021). Digital finance supports SMEs' accessibility toward financial services for leveraging their financial capabilities (Sanga & Aziakpono, 2024). SMEs with better financial access contributes more in providing job in Sub Sahara African (Brixiová, et al, 2020). However, lack of financial and digital literacy stand as barriers for SMEs to access the existing financial resources, so it reduces financial inclusion level in most emerging-economic countries and world wide (Klapper and Lusardi, 2020).

Therefore, to reduce the failure rate and optimize the potential of micro-enterprises, there is a need to increase financial access, which positively affects the survival and growth of businesses (Hussain, et al., 2018). This relationship underscores the need to improve financial literacy and adapt the use of technology and digital financial services to minimize barriers in accessing external financing (Thathsarani & Jianguo, 2022).

However, the question is whether increasing financial literacy among SMEs can reduce information asymmetry, allowing financial institutions to make better lending decisions. Furthermore, what is the relationship between financial access, financial literacy, and SME growth? Is there a significant relationship between SMEs' access to financial institutions and SME growth through digital financial services and technology usage in business? These are important policy questions that have not been explored in previous research.

The study examines the impact of financial literacy on the growth of small and medium-sized enterprises (SMEs) in Indonesia. It measures knowledge, skills, attitude, and behavior, accessibility to finance, digital finance, and technology usage. The analysis is conducted from the perspective of micro-business owners or managers with a net worth of no more than Rp50,000,000 and annual sales of no more than Rp300,000,000. The findings are expected to contribute to learning and evaluation for SME operators, financial institutions, policymakers, and academics, particularly in Indonesia.

Literature Review

Access to Finance

Awareness, insight, and individuals' understanding of financial concepts. Financial literacy encompasses financial knowledge and an understanding of resource management. (Shih & Ke, 2013).

Financial Literacy

Financial access is the ability of individuals to obtain and access financial services, such as credit, deposits, payments, insurance, risk management, and other financial products (World Bank, 2017).

Digital Finance

Digital finance refers to financial services provided through mobile phones or computers with internet connectivity or cards linked to a reliable digital payment system (Manyika, et al., 2016). Digital finance encompasses new financial products, financial-

related software, financial businesses, and new forms of customer communication and interaction provided by FinTech companies or digital banks.

Usage of Technology

Usage of digital technology enables micro-business operators to solve problems, communicate with employees and customers, or address other issues more efficiently. Using technology itself requires technological competence or literacy, which involves knowledge of digital data and content searching, filtering, and retrieval; interaction and collaboration related to digital communication and cooperation with other organizational members and external networks; digital content creation, which pertains to the ability to develop and integrate digital content while respecting copyrights and licenses; security skills aimed at safeguarding devices, personal data, privacy, health, well-being, and the environment; and problem-solving skills designed to address technical issues and identify responses to technological challenges and digital competency gaps (Zahoor et al., 2022).

Hypothesis Development

Access to Finance and SME's Growth

Various business research have identified the most crucial factors in determining the sustainability and growth of Small and Medium-sized Enterprises (SMEs). These factors are access to finance and financial management (OECD, 2016). According to Beck and Demircuc-Kunt (2006), SMEs in developing countries like Indonesia have financial access that enables them to invest profitably in expanding their businesses and acquiring the latest technology. This provides opportunities to enhance competitiveness, drive innovation, macroeconomic resilience, and GDP growth. Kevane and Wydick (2001) argue that SMEs can benefit from the provision of credit, which can stimulate economic growth in the informal sector. This credit can be used to increase capital, creating new job opportunities and, in the long run, impacting income growth.

Additionally, according to a study by the World Bank (2013), access to finance significantly contributes to improving the performance and growth of companies in developing countries by facilitating market entry, reducing risks, introducing innovation, and entrepreneurial activities. Based on this argument, a hypothesis is developed:

H1: Access to finance significantly influences the growth of micro-enterprises

Financial Literacy and Access to Finance

Financial literacy can be a crucial determinant of financial access, where low levels of financial literacy can mitigate the availability of more complex financial products (such as insurance) because customers are unlikely to purchase products they do not fully understand (Cole and Fernando, 2008). De Mel et al. (2012) also argue that financial literacy, acquired through business skills, is a significant driver of SME growth and a key determinant of productivity. Financial literacy, defined as the ability to acquire information, manage it relevantly, process what is necessary to make decisions, and be aware of the potential consequences, is vital for SMEs' access to financial services in developing countries. Therefore, researchers can conclude that financial literacy among SME owners and managers is essential to ensure SMEs grow from small and medium enterprises into larger businesses.

H2: Financial literacy significantly affects the access to finance of micro-enterprises.

Financial Literacy and SME's Growth

The study by the World Bank (2013) asserts that financial literacy is an asset for managing financial resources and is a key factor in the growth of SMEs, contributing to poverty reduction. The research suggests that SMEs run by entrepreneurs with high financial literacy tend to be more successful in the future. Another study by Lusardi and Tufano (2009) shows that an understanding of financial literacy is possessed by many managers and business owners. This was also found in the research conducted by Otieno et al. (2013), which states that financial literacy

training conducted for the community in Kenya has a significant impact on the progress of their businesses. Thus, good financial literacy can help improve the advancement of SMEs, promoting their profitability and expansion. Therefore, the following hypothesis is developed:

H3: Financial literacy significantly influences the growth of micro-enterprises.

Digital Finance as Moderators Between Access to Finance and SME's Growth

Similar to SME entrepreneurs, there are several positive impacts of using digital finance on access to finance (Ozili, 2018). Superior digital finance, when applied to low-income populations, including micro-enterprises, can enhance their access to basic financial services, leading to greater growth in SMEs. Ozili (2018) also found that the increasing prominence of digital finance services provided to the public and micro-entrepreneurs can improve access to financing for bank customers in rural areas and impoverished communities. Furthermore, easy-to-use digital finance platforms for business owners to conduct basic financial transactions can help inform their fellow business operators (both in the formal and informal sectors) to utilize the same digital financial services, encouraging more entrepreneurs to use digital finance, resulting in greater access to finance.

H4: Digital finance significantly mediates the relationship between access to finance and the growth of micro-enterprises.

Usage of Technology as Moderators Between Access to Finance and SME's Growth

The role of Information and Communication Technology (ICT) is considered crucial in enhancing the development of SMEs in Indonesia. Indonesia has now entered the era of Industry 4.0 (Lubis & Junaidi, 2016). The utilization of technology-based services or the usage of digital technology by SMEs for business support applications can facilitate their access to financial institutions and other easily accessible financial services (Papadopoulos et al., 2020). The usage of digital technology helps SMEs access external sources of finance, thereby increasing their access to finance (Agyekum et al., 2022). Financial services offer the capital needed for SMEs, and the usage of digital technology drives modernization and transformation of business models. Technology can not only meet business needs but also has inherent benefits for promoting a comprehensive combination of financial institution access and growth (Agyekum et al., 2022).

H5: The usage of digital technology significantly mediates the relationship between access to finance and the growth of micro-enterprises.

Research Methodology

The model in this research is based on a previous journal, specifically the one written by Bongomin et al. (2017) titled "The relationship between access to finance and growth of SMEs in developing economies," with the addition of digital finance and the usage of technology as mediating variables. It is shown in Figure 1.

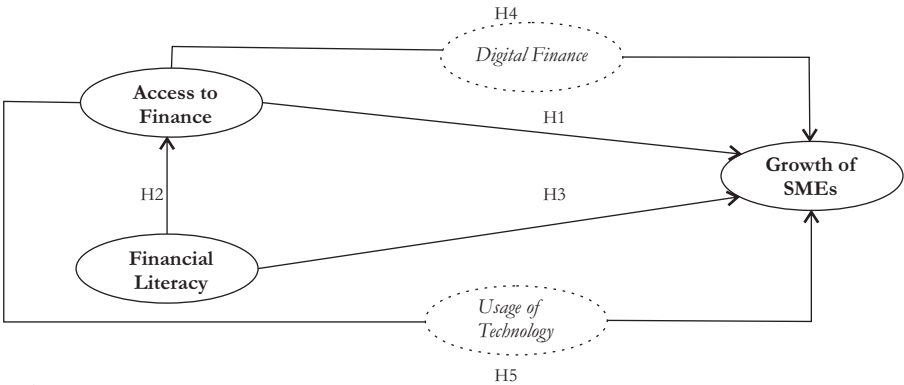


Figure 1.
Research Model

Source: Bongomin et al., (2017), Thatbsarani & Janguo (2022), Zaboor et al., (2022)

This model also takes into account variable specifications inspired by the research of Thathsarani & Janguo (2022) and Zahoor et al. (2022). The research model are illustrated in Figure 1.

Primary data are collected through questionnaire. In this questionnaire, respondents were provided with a range of values on a scale from 1 to 5, where 1 represents "strongly disagree," 2 represents "disagree," 3 represents "somewhat disagree," 4 represents "somewhat agree," and 5 represents "strongly agree.". The items in the questionnaire are depicted in Table 1.

Table 1.
Variables Operationalization

Indicators	Items
FL1	I have the ability to analyze the financial performance over a specific period.
FL2	My business consistently creates financial reports for creditors.
FL3	As a business owner, I have received training on proper bookkeeping.
FL4	I purchase insurance for my business.
FL5	I can calculate/estimate the cost of the loans my business receives.
FL6	My business uses a savings account.
FL7	I can create basic financial records for my business.
FL8	I am aware of the creditor (lender) operations related to my business's financial needs.
FL9	I am conscious of the costs and benefits of accessing credit.
FL10	My business can accurately calculate the interest rates on my loans.
FL11	I have the necessary skills to ensure my business's financial trends.
FL12	I minimize loan defaults to reduce business risks.
FL13	I have basic accounting skills/knowledge.
AF1	Financial services offered by financial institutions improve my 'nutrition'.
AF2	Financial services offered by banks enhance my access to household healthcare services.
AF3	Financial services offered by banks enable me to pay school fees.
AF4	The savings products offered by the bank are safe and suitable for me.
AF5	The loans provided by the bank meet my needs.
AF6	The terms and conditions of using the bank's loans are beneficial for me.
AF7	The financial services provided by the bank are safe for me.
AF8	The terms of using the credit provided by the bank are favorable for me.
AF9	The administrative costs of opening an initial bank account are affordable.
AF10	For me, the cost of traveling to the bank is affordable.
UD1	In my work, I often use digital technology to contact others for my job.
UD2	In my work, I often use digital technology to communicate with my employees.
UD3	I frequently use digital technology in my daily work to ask questions.
UD4	I often use digital technology in my daily work to answer questions.
UD5	I often use digital technology in my daily work to send documents.
UD6	I often use digital technology in my daily work to socialize for work.
DF1	I often make electronic money transactions via mobile phone (HP).
DF2	I frequently use digital cards for payments (transfers).
DF3	I easily adapt to digital financial services.
DF4	I feel assisted and satisfied with digital financial services.
DF5	I am skilled at conducting transactions with digital financial services.
DF6	Transactions with digital financial services are safe and reliable.

Table 1. *Continued*

Indicators	Items
G1	Currently, my business requires a small number of employees.
G2	I intend to increase the number of employees.
G3	The increase in the number of employees has facilitated the growth of m business.
G4	My business has experienced a doubling in sales growth this year.
G5	Over time, my business has created more avenues for buying and selling.
G6	My business's assets have increased this year compared to last year.
G7	My long-term business assets have facilitated the growth of my business.
G8	I intend to acquire (purchase) more assets for my business.
G9	I expect an increase in my business's sales growth this year.
G10	My business's sales increase every month.
<i>Source: Bongomin, et al., (2017), Zabooret al., (2023), Thatsaranidan Jianguo (2022)</i>	

Results and Discussion

Validity and Reliability Analysis

All the variables used in the study have passed the validity and reliability test. For its validity, the KMO score has values > 0.7.

While the Cronbach's Alpha is > 0.6. Table 2a & 2b shows yhe result of the validity and reliability test as follow:

Table 2a.
Reliability Test Results

Variable	Cronbach's Alpha	Summary
<i>Financial Literacy</i>	3.88	<i>Reliable</i>
<i>Access to Finance</i>	3.94	<i>Reliable</i>
Usage of Digital Technology	4.24	<i>Reliable</i>
<i>Digital Finance</i>	4.13	<i>Reliable</i>
<i>Growth</i>	4.13	<i>Reliable</i>

Table 2b.
Validity Test Results

Variable	KMO Score	Summary
<i>Financial Literacy</i>	0.870	<i>Valid</i>
<i>Access to Finance</i>	0.873	<i>Valid</i>
Usage of Digital Technology	0.803	<i>Valid</i>
<i>Digital Finance</i>	0.814	<i>Valid</i>
<i>Growth</i>	0.908	<i>Valid</i>

Respondent Profile

Table 3 demonstrates profile among 178 respondents which is varied from its business type, length of business, geographic location and owner's education level.

Table 3.
Respondent Profile

Profile	Category	
Busines Type	Culinary (62.4%(, Fashion (30.9%), Aiotomotive (3.4%), Agribusiness (3.4%)	
Length of Business	1-5 years (78,7%)	More than 5 years (21.3%)
Location	Jakarta, Bogor, Depok, Tangerang, Bekasi (93.26%) Outside Jakarta, Bogor, Depok, Tangerang, Bekasi (6.74%)	
Owner's education level	Secondary school (4%) High School (32.95%) Diploma (12.5%) Bachelor (44.32%) Master (6.25%)	

Descriptive Analysis

Descriptive analysis involves the presentation of data from questionnaires filled out by 178 respondents. Researcher divides the scores into three categories: low (1.00 - 1.66), moderate (1.67 - 3.33), and high (3.34 - 5.00). The result of the Descriptive Test is found in Table 4, as follow:

Table 4.
Descriptive Test Results

Variable	Mean	Summary
Financial Literacy	3.88	High
Access to Finance	3.94	High
Usage of Digital Technology	4.24	High
Digital Finance	4.13	High
Growth	4.13	High

As shown on table 3, the descriptive test for all the variable yield in high categorical value for all the variable.

Least Square (SEM-PLS) in SMARTPLS software.

Hypothesis Testing

Data was processed using the Structural Equation Modeling method based on Partial

Table 4 shows the hypothesis testing result for the direct effect, while Table 5 shows the indirect effect.

Discussion

Table 5 and 6 resume some findings from this study which investigate Access to Finance (AF) and Growth of SME (G) with another variable as mediator: Financial Literacy (FL), Use of Digital Technology (UD) and Digital Finance (DF). The relationship between the Access to Finance (AF) variable and Growth (G) shows a path coefficient of 0.181 with a t-value of 2.851.

Access to finance has a significant impact on the growth of micro-enterprises. The higher the access to finance that micro-enterprises have, the greater the opportunity for them to expand and innovate. This is in line with the research by Bongomin et al. (2017), which suggests a positive and significant impact of financial literacy on the relationship between access to finance and the growth of SMEs in developing countries

Table 5.
Direct Effect Hypothesis Testing

Path Coefficient	Original Sample (O)	T-Statistics (O/STDEV)	P Values	Summary
AF → G	0.181	2.851	0.005	Significant
FL → AF	0.605	7.905	0.000	Significant
FL → G	0.188	2.980	0.003	Significant

Table 6.
Indirect Effect Hypothesis Testing

Path Coefficient	Original Sample (O)	T-Statistics (O/STDEV)	P Values	Summary
AF → UD → G	0.119	2.254	0.024	Significant
AF → DF → G	0.176	2.815	0.005	Significant

The relationship between the Financial Literacy (FL) variable and Access to Finance (AF) shows a path coefficient of 0.605 with a t-value of 7.905. Financial literacy significantly influences access to finance for micro-enterprises. This aligns with the research by Hussain et al. (2018), which states that financial literacy serves as an interconnection source that mitigates information asymmetry and collateral deficit when evaluating loan applications.

The relationship between the Financial Literacy (FL) variable and growth (G) shows a path coefficient of 0.188 with a t-value of 2.980. Financial literacy significantly affects the growth of micro-enterprises. With financial literacy skills, micro-enterprises better understand the appropriate financial products for their business. This is consistent with the research by Hussain et al. (2018), which demonstrates a strong relationship between financial literacy and business owner and manager decision-making and business growth.

In order to grow the firm size, financial literacy is not the only factor for MSE which some other factors influence it. Access to financial sources determines how fast MSEs can escalate their financial and production capacity (Sutomo, 2024). Access to finance provides micro-entrepreneur s the opportunity to increase working capital and investment allocation for productive assets. Access to finance as a mediating variable could facilitate micro-entrepreneur; financial literacy. as their understanding of financial management, to grow financial and business performance and resilience (Manzoor et al., 2021). Without financial literacy, micro-entrepreneur cannot serve financial records and other supporting requirements for accessing external financial sources and grow to the next level of excellence (Chowdhury, et al., 2022).

The relationship between the Access to Finance (AF) variable and Growth (G) through Digital Finance (DF) shows an indirect path coefficient of 0.176 with a t-value of 2.815. Digital finance significantly mediates the relationship between access to finance and the growth of micro-enterprises. This is in line with the research conducted by Thatsarani and Janguo (2022), which found that financial access, digital finance, and technology significantly impact SME performance. Ozili's (2018) research also supports these findings, showing that the presence of digital financial services has improved micro-enterprises' access to basic financial services, leading to greater growth in micro-enterprises.

The results of the fifth hypothesis test indicate that the relationship between the Access to Finance (AF) variable and Growth (G) through the Usage of Digital Technology (UD) shows an indirect path coefficient of 0.119 with a t-value of 2.254. Usage of digital technology significantly mediates the relationship between access to finance and the growth of micro-enterprises, as technology not only fulfills business needs but also has inherent benefits for driving a comprehensive combination of financial institution access.

This is consistent with the research by Zahoor et al. (2023), which demonstrates that the use of technology or digitalization in SMEs in the United Arab Emirates affects digital transformation, ultimately enhancing SME performance and growth.

According to mediating tole of DU and DF. Some research support these findings. Most micro-entrepreneur have barriers to accessing funding from external parties, including in digital platforms. It is due to some factors like the traditional habits of transactions, and digital illiteracy (Bakashaba, et al., 2019). Digital transformation is supposed to be a solution fit for micro-entrepreneur; to challenges in accessing financial resources (Agu, et al.m., 2022). Digital use in financial services, like mobile banking, mobile transactions, and online loan providers potentially leverages business growth for micro and small enterprises (Frimpong et al., 2022). Thatsarani, et al (2021) suggest that a firm's digital finance plays a role in establishing business financial capabilities as a contributor to a firm's growth, both profit and assets. In addition, digital finance builds creditworthiness by assessing digital financial records, transactions, and other financial activities. In addition, the use of the digital platform and technology advancement interplay as a driver which enhances a firm's practical skill in financial services to provide finance access, so the growth of SMEs is higher (Mohammed (2022).

Conclusion

This research is a modification of the research models presented by Bongomin et al. (2017), Thatsarani & Janguo (2022), and Zahoor et al. (2022), which focus on the influence of financial literacy, access to finance, digital finance, and the usage of digital technology on the growth of micro-category SMEs (MSEs). After collecting, processing, and analyzing data from 178 respondents, it has been determined that there are similarities in the hypothesis testing results with the reference studies by Bongomin et al. (2017), Thatsarani & Janguo (2022), and Zahoor et al. (2022).

From the research problem and objectives, the research findings can be summarized as follows:

1. There is a significant relationship between access to financial institutions and the growth of micro-enterprises. Increasing access to finance by micro-enterprises can enhance their opportunities for expansion and innovation, enabling them to compete and survive in the market. Therefore, micro-enterprise managers should consider recapitalizing their businesses by accessing more financing from existing financial service providers such as banks and other financial institutions.
2. Financial literacy significantly influences access to finance for micro-enterprises. Micro-enterprise managers should consider participating in financial literacy training that allows them to acquire the knowledge and skills needed to make good financial decisions and choices in operating their businesses. Financial literacy is an essential skill before accessing financial services such as loans from banks.
3. Financial literacy has a significant impact on the growth of micro-enterprises. Financial literacy helps micro-enterprises gain the knowledge, skills, and abilities to develop financial strategies for making financial decisions and choices. Financial literacy facilitates the expansion and innovation of micro-enterprises to enhance their profitability, productivity, and competitive advantage.
4. Digital finance significantly mediates the relationship between access to finance and the growth of micro-enterprises. The use of digital financial services is beneficial for accelerating financial services, facilitating easier financial transactions and reporting, reducing the burden of complex documentation processes, and providing micro-enterprises with access to basic financial services to obtain the necessary financing for business development and innovation.
5. The use of digital technology significantly mediates the relationship between access to finance and the growth of micro-

enterprises. The use of digital technology by micro-enterprises can facilitate their access to financial institutions (access to finance). The usage of digital technology helps micro-enterprises access external financial sources, thereby increasing their access to financial institutions. Therefore, the use of digital technology significantly promotes micro-enterprises' access to financial institutions, ultimately supporting their growth.

6. Saved

The model is limited to the variables mentioned above as an integrative model, without considering control variables and other moderating variables. The sample size is also limited with no specific geographical region. Further studies are suggested to examine more sample sizes and take more specific groups for sampling criteria. Another category might also be interesting to explore. Such as medium and small level and start-up enterprises.

Practical Implication

According to the research findings, some practical implications need to be highlighted. First, government and financial institutions urge to build an ecosystem among MSEs regarding financial and digital literacy as an integration mechanism for accelerating MSEs' access to financial resources. The government also has an important role in enhancing policies for improving financial access to MSEs. Second, microfinance and fintech agencies need to push a user-friendly financial platform with a reliable system as a tool to boost digital optimization in responding to technological advancement. Education and training programs must be delivered to gain more users utilized. Third, universities and other communities who are concerned about financial literacy may start to campaign for the ease of digital use in digital finance to MSEs. So they trust and are willing to shift toward digital platforms.

Declarations

Author contribution

All authors contributed equally as the main contributors of this paper. All authors read and approved the final paper.

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Competing interest

The authors declare that they have no conflicts of interest to report regarding the present study

References

- Aghion, P., & Bolton, P. (1997). A theory of trickle-down growth and development. *The Review of Economic Studies*, 64(2), 151. doi: 10.2307/2971707
- Agu, E. E., Idemudia, C., & Obeng, S. (2024). The Revolutionary Role of Digital Transformation in Financing Small and Medium Enterprises (SMEs). *International Journal of Management & Entrepreneurship Research*. doi: 10.51594/ijmer.v6i8.1366
- Agyekum, F. K., Reddy, K., Wallace, D., & Wellalage, N. H. (2022). Does Technological Inclusion promote financial inclusion among smes? evidence from south-East Asian (SEA) countries. *Global Finance Journal*, 53, 100618. doi: 10.1016/j.gfj.2021.100618
- Anshika, A., & Singla, A. (2022). Financial literacy of entrepreneurs: a systematic review. *Managerial Finance*. doi: 10.1108/mf-06-2021-0260
- Bakashaba, R., Musiita, B., & Nabachwa, S. (2024). The Mediating Role of Access to Digital Finance on the Relationship between Financial Literacy and Performance of Uganda SMEs in Mbarara City. *Journal of Economics and Behavioral Studies*. doi: 10.22610/jebs.v16i1(j).3716
- Beck, T., & Demirguc-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30(11), 2931–2943. doi: 10.1016/j.jbankfin.2006.05.009
- Beck, T., Demirguckunt, A., & Maksimovic, V. (2008). Financing patterns around the world: Are small firms different?. *Journal of Financial Economics*, 89(3), 467–487. doi: 10.1016/j.jfineco.2007.10.005
- Brixiová, Z., Kangoye, T., & Yogo, T. (2020). Access to finance among small and medium-sized enterprises and job creation in Africa. *Structural Change and Economic Dynamics*. doi: 10.1016/j.strueco.2020.08.008
- Bushe, B. (2019) 'The causes and impact of business failure among small to micro and medium enterprises in South Africa'. *Africa's Public Service Delivery and Performance Review*, 7(1). doi:10.4102/apsdpr.v7i1.210.
- Carbo-Valverde, S., Rodríguez-Fernández, F., & Udell, G. F. (2016). Trade credit, the financial crisis, and SME Access to finance. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2307246
- Cetindamar, D., & Phaal, R. (2022). Technology management in the age of Digital Technologies. *IEEE Transactions on Engineering Management*, 1–9. doi: 10.1109/tem.2021.3101196
- Chouki, M., Talea, M., Okar, C., & Chroqui, R. (2022). Barriers to information technology adoption within small and Medium Enterprises: A systematic literature review. *Emerging Issues and Trends in Innovation and Technology Management*, 369–412. doi: 10.1142/9789811247729_0015
- Chowdhury, M. A. S., Chuanmin, S., Sokolová, M., Akbar, A., Ali, Z., & Alam, M. Z. (2022). Assessing the empirical linkage among access to finance, firm quality, and firm performance: New insight from Bangladeshi SMEs. *Frontiers in Psychology*, 13. doi: 10.3389/fpsyg.2022.865733

- Cole, S. & Fernando, N. (2008). Assessing the Importance of Financial Literacy. ADB Finance for the Poor. *A Quarterly Newsletter of the Focal Point for Microfinance*. Volume 9, Number 3, September 2008
- Dahmen, P., & Rodríguez, E. (2014). Financial Literacy and the success of small businesses: An observation from a small business development center. *Numeracy*, 7(1). doi: 10.5038/1936-4660.7.1.3
- Davidsson, P. (2010). Small firm growth. *Foundations and Trends® in Entrepreneurship*, 6(2), 69–166. doi: 10.1561/03000000029
- De Mel, S., McKenzie, D., & Woodruff, C. (2012). Business training and female enterprise start-up, growth, and dynamics: Experimental evidence from Sri Lanka. *Policy Research Working Papers*. doi: 10.1596/1813-9450-6145
- Frimpong, S. E., Agyapong, G., & Agyapong, D. A. (2022). Financial literacy, access to digital finance and performance of SMEs: Evidence From Central region of Ghana. *Cogent Economics & Finance*. doi: 10.1080/23322039.2022.2121356
- Gale, W. G., & Levine, R. (2011). Financial literacy: What works? how could it be more effective? *SSRN Electronic Journal*. doi: 10.2139/ssrn.2316933
- Gathungu, J.N. (2013). The effect of entrepreneurial education and training on development of small and medium size enterprises in Githunguri District Kenya International. *Journal of Educational Research*, 1. <https://www.semanticscholar.org/paper/The-effect-of-entrepreneurial-education-and-on-of-Gathungu/3ebd720605a4a0ed4f8861e94fc575105c26968a>
- Gujarati, D.N. and Porter, D.C. (2009) *Basic Econometrics*. 5th Edition, McGraw Hill Inc., New York.
- Idris, M. (2021, May 15). Apa Saja Yang Termasuk MSE? Halaman all. *KOMPAS.com*. Retrieved February 12, 2023, from <https://money.kompas.com/read/2021/05/15/220000026/apa-saja-yang-termasuk-MSE-?page=all#:~:text=Arti%20MSE%20kategori%20usaha%20kecil,lebih%20profesional%20ketimbang%20usaha%20mikro>.
- Iko, W. (2019). Pengaruh Inklusi Keuangan Dan Literasi Keuangan Terhadap Kinerja MSE di Kecamatan Moyo Utara. *Jurnal Manajemen Dan Bisnis*, 2(1). doi: 10.37673/jmb.v2i1.305
- Kementrian Keuangan RI. (2022, January). Pembiayaan Ultra Mikro (UMi). [https://web.kemenkeu.go.id/umi#:~:text=Pembiayaan%20Ultra%20Mikro%20\(UMi\)%20merupakan,Kredit%20Usaha%20Rakyat%20\(KUR\)](https://web.kemenkeu.go.id/umi#:~:text=Pembiayaan%20Ultra%20Mikro%20(UMi)%20merupakan,Kredit%20Usaha%20Rakyat%20(KUR)).
- Kevane, M., & Wydick, B. (2001). Microenterprise lending to female entrepreneurs: Sacrificing economic growth for poverty alleviation? *World Development*, 29(7), 1225–1236. doi: 10.1016/s0305-750x(01)00032-8
- Khan, M. A. (2022). Barriers constraining the growth of and potential solutions for emerging entrepreneurial smes. *Asia Pacific Journal of Innovation and Entrepreneurship*, 16(1), 38–50. doi: 10.1108/apjie-01-2022-0002
- Klapper, L., & Lusardi, A. (2020). Financial literacy and financial resilience: Evidence from around the world. *Financial Management*, 49(3), 589-614. doi: 10.1111/fima.12283
- Limanseto, H. (2022, October 1). Perkembangan MSE sebagai Critical Engine Perekonomian Nasional Terus Mendapatkan Dukungan Pemerintah. *Perkembangan MSE sebagai critical engine perekonomian nasional terus Mendapatkan Dukungan pemerintah - kementerian Koordinator Bidang perekonomian Republik Indonesia*. Retrieved February 11, 2023, from <https://www.ekon.go.id/publikasi/detail/4593/perkembangan-MSE-sebagai-critical-engine-perekonomian-nasional-terus-mendapatkan-dukungan-pemerintah>
- Lubis, T. A., & Junaidi. (2016). Pemanfaatan Teknologi Informasi pada Usaha Mikro Kecil dan Menengah di Kota Jambi. *Perspektif Pembiayaan Dan Pembangunan Daerah*, 3(3). Retrieved from <https://media.neliti.com/media/publications/125916-ID-pemanfaatan-teknologi-informasi-pada-usa.pdf>.

- Lusardi, A., & Tufano, P. (2009). Debt literacy, financial experiences, and over in indebtedness. doi: 10.3386/w14808
- Malhotra, N. K., (2012). *Basic marketing research: Integration of social media*. Pearson
- Malhotra, N., & Birks, D. F. (2007). An applied approach. *Marketing research*. London: Prentice Hall.
- Manzoor, F., Wei, L., & Sahito, N. (2021). The role of SMEs in rural development: Access of SMEs to finance as a mediator. *PLoS ONE*, 16. doi: 10.1371/journal.pone.0247598
- Manzoor, F., Wei, L., & Sahito, N. (2021). The role of SMEs in rural development: Access of SMEs to finance as a mediator. *PLoS ONE*, 16. doi: 10.1371/journal.pone.0247598
- Mohammed, K. (2022). Access of Technology as a Mediator on Access to Finance to Drive Business Innovation in Small to Medium-Sized Enterprises. *Studies in Business and Economics*. doi: 10.2478/sbe-2022-0007
- Mutegi, K. & Phelister, N. (2015). Financial literacy and its impact on loan repayment by small and medium entrepreneurs. *International journal of economics, commerce and management*, United Kingdom
- Ogheneogaga Irikefe, P., & Isaac Opusunju, M. (2021). Effect of financial literacy on the growth of MSEs. *International Journal of Research Publications*, 90(1). doi: 10.47119/ijrp1009011220212541
- Organisation for Economic Cooperation & Development. (2016). *Financing smes and entrepreneurs* 2016.
- Oseifuah, E. K. (2013). Financial Literacy and Youth Entrepreneurship in South Africa. *African Journal of Economic and Management Studies*, 1(2), 164–182. doi: 10.1108/20400701011073473
- Otieno, S., Lumumba, M., Nyabwanga, Ojera, P., & Alphonse, J. O. (2013). Effect of provision of micro-finance on the performance of micro-enterprises: A study of youth micro-enterprises under Kenya Rural Enterprise Program (K-REP), Kisii County, Kenya. *African Journal of Business Management*, 5(20), 8290–8300. doi: 10.5897/ajbm11.1419
- Ozili, P. K. (2018). Impact of digital finance on Financial Inclusion and stability. *Borsa Istanbul Review*, 18(4), 329–340. doi: 10.1016/j.bir.2017.12.003
- Papadopoulos, T., Baltas, K. N., & Balta, M. E. (2020). The use of digital technologies by small and medium enterprises during COVID-19: Implications for theory and Practice. *International Journal of Information Management*, 55, 102192. doi: 10.1016/j.ijinfomgt.2020.102192
- Rahadi, F. (2019, February 13). Tingkat Kematian UKM di Indonesia Masih Tinggi. *Republika Online*. Retrieved February 11, 2023, from <https://www.republika.co.id/berita/pmuxj1291/tingkat-kematian-ukm-di-indonesia-masih-tinggi>
- Remund, D. L. (2010). Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of Consumer Affairs*, 44(2), 276–295. doi: 10.1111/j.1745-6606.2010.01169.x
- Robbani. (2019). Faktor Penyebab Gagalnya Bisnis Dan Tidak optimalnya Pertumbuhan Usaha. *UKM Indonesia*. <https://ukmindonesia.id/baca-deskripsi-posts/faktor-penyebab-gagalnya-bisnis-dan-tidak-optimalnya-pertumbuhan-usaha/>
- Rosana, F. (2022, November 11). Kemenkop UKM: MSE Berperan penting Dorong Ekonomi di Tengah Ancaman Resesi. *Tempo*. Retrieved February 11, 2023, from <https://bisnis.tempo.co/read/1655800/kemenkop-ukm-MSE-berperan-penting-dorong-ekonomi-di-tengah-ancaman-resesi>
- Samujh, R. (2011). Micro-businesses need support: Survival precedes sustainability. *Corporate Governance: The International Journal of Business in Society*, 11(1), 15–28. doi: 10.1108/14720701111108817
- Sanga, B., & Aziakpono, M. (2024). FinTech developments and their heterogeneous effect on digital finance for SMEs and entrepreneurship: Evidence from 47 African countries. *Journal of Entrepreneurship in Emerging Economies*. doi: 10.1108/jee-09-2023-0379

- Shih, T.-Y., & Ke, S.-C. (2013). Determinates of financial behavior: Insights Into Consumer Money Attitudes and Financial Literacy. *Service Business*, 8(2), 217–238. doi: 10.1007/s11628-013-0194-x
- Siekei, J., Wagoki, J., & Kalio, A. (2013). An assessment of the role of financial literacy on performance of small and micro enterprises: Case of Equity Group Foundation training program on SMEs in Njoro District, Kenya. *Business & Applied Sciences*, 1(7), 250-271.
- Sutomo, D. A. (2024). Community-led Economic Resilience: Fostering SME Growth through Financial Education. *Golden Ratio of Data in Summary*. doi: 10.52970/grdis.v4i2.657
- Tarigan, M. (2023, January 28). Rendahnya Tingkat literasi digital Jadi Tantangan Digitalisasi MSE. *Tempo*. Retrieved April 7, 2023, from <https://gaya.tempo.co/read/1685154/rendahnya-tingkat-literasi-digital-jadi-tantangan-digitalisasi-MSE>
- Thathsarani, U. S., & Wei, J. (2022). Do Digital Finance and the Technology Acceptance Model Strengthen Financial Inclusion and SME Performance? *Inf*. doi: 10.3390/info13080390
- Thathsarani, U. S., & Jianguo, W. (2022). Do Digital Finance and the technology acceptance model strengthen financial inclusion and SME performance? *Information*, 13(8), 390. doi 10.3390/info13080390
- Tiwari, A. K., Shahbaz, M., & Islam, F. (2013). Does financial development increase rural-urban income inequality? *International Journal of Social Economics*, 40(2), 151 – 168. doi: 10.1108/03068291311283616
- Ullah, B. (2020). Financial constraints, corruption, and SME growth in transition economies. *The Quarterly Review of Economics and Finance*, 75, 120 – 132. doi: 10.1016/j.qref.2019.05.009
- Wang, Y. (2016). What are the biggest obstacles to growth of smes in developing countries? – an empirical evidence from an enterprise survey. *Borsa Istanbul Review*, 16(3), 167 – 176. doi: 10.1016/j.bir.2016.06.001
- World Bank Group. (2017). Financial access. *World Bank*. Retrieved February 11, 2023, from <https://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/financial-access>
- World Bank. (2013). Doing business 2014: understanding regulations for small and medium-size enterprises. *Doing Business*. doi: 10.1596/9780821399842
- Yoshino, N. (2016). Major challenges facing small and medium-sized enterprises in Asia and solutions for mitigating them. *SSRN Electronic Journal*. doi: 10.2139/ssrn.2766242
- Zahoor, N., Zopiatlis, A., Adomako, S., & Lamprinakos, G. (2023). The micro-foundations of digitally transforming smes: How digital literacy and technology interact with managerial attributes. *Journal of Business Research*, 159, 113755. doi: 10.1016/j.jbusres.2023.113755