



Financial Literacy and Dynamic Environment on MSMEs Performance Through Digital Literacy in Batam

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Abstract

This study aims to analyze Financial Literacy and Dynamic Environment through digital financial literacy on the Performance of Women MSMEs in Batam City. This study uses a quantitative research design using the covariance-based partial least square (PLS) testing method and the Sobel test for mediation testing. Data collection was conducted by distributing online questionnaires to female MSME actors spread across Batam City. This study used an associative research method. The data collection method used questionnaires. Using Jacob Cohen's formula, the sample in this study consisted of 204 respondents. The instrument used in this study was a questionnaire. The data were analyzed using SEM with the help of the Partial Least Square (PLS) program. The analysis results showed that financial literacy and dynamic environment had a positive and significant effect on MSME performance. In addition, digital financial literacy was proven to have a direct effect on MSME performance and mediated the effect of financial literacy and dynamic environment on performance. These findings emphasize the importance of digital financial literacy in improving the competitiveness and performance of MSMEs in the digital era.

Keywords: **Digital Financial Literacy, Dynamic Environment, Financial Literacy, Performance**

INTRODUCTION

Women have an important role in the MSME (Micro, Small, and Medium Enterprises) sector in Indonesia, contributing significantly to economic growth and job creation. Data shows that approximately 61% of all MSMEs in Indonesia are managed by women, making them a key pillar of this sector. Women not only act as business owners but also often act as agents of social change in their communities, introducing innovations and supporting local economic development. However, women often face various challenges, such as limited access to capital, lack of management training, and cultural barriers that hinder their business growth. However, with the right support, such as financial literacy training and access to digital technology,

women can improve the performance of their MSMEs and contribute more to the national economy (Fatimah & Lestari, 2023). Empowering women in entrepreneurship not only strengthens their position in the market but also plays a crucial role in achieving sustainable development goals (OJK, 2023).

Good financial literacy not only enables entrepreneurs to manage their finances more efficiently but also helps them make wise investment decisions. Research shows that women entrepreneurs tend to have more limited access to financial education and resources, which can hinder the growth and performance of MSMEs (Luo et al., 2021). Financial literacy in Indonesia shows that even though the financial literacy index has increased, there are still major challenges in achieving optimal understanding across all levels of society (World Bank, 2022.).

Based on a national financial literacy and inclusion survey conducted by the OJK in 2023, Indonesia's financial literacy index reached 49.68%, up from 38.03% in 2019. This shows an increase in public awareness and understanding of financial products and services. However, this figure is still far below the financial inclusion index, which reached 85.10%, indicating that although access to financial services is quite widespread, understanding of financial use and management is not yet evenly distributed (Prajogo, 2016). Many women entrepreneurs in Indonesia still have low financial literacy, which impacts their ability to make sound financial decisions. According to the OJK, the financial literacy index among women entrepreneurs is still below the national average. Financial literacy and a dynamic environment are closely related and influence each other, especially in the context of micro, small, and medium enterprises (MSMEs). Good financial literacy enables entrepreneurs to make wise financial decisions in the face of rapid changes in the economic, social, and technological environment (Thathsarani & Jianguo, 2022).

The research shows that MSMEs that are able to adapt quickly to environmental changes perform better and are able to increase their competitiveness (Maulana, 2021). In addition, support from government policies that are responsive to the needs of MSMEs also plays an important role in creating a climate conducive to the growth of this sector (Ministry of Cooperatives and SMEs, 2023). The digitization of MSMEs in Batam City faces several significant challenges. First, a lack of understanding of technology is one of the main obstacles. Many MSME players are not yet accustomed to using digital devices, making it difficult for them to adapt to e-commerce platforms or digital marketing tools. This results in them missing out on opportunities to reach a wider market.

Secondly, access to digital infrastructure is also a problem. Although Batam has relatively good infrastructure, not all MSMEs have adequate access to stable and fast internet, which is necessary to run an online business efficiently. Third, funding issues often prevent

MSMEs from investing in technology and digital training. Many business owners lack the capital to upgrade their systems or to participate in training programs that can improve their digital skills. Fourth, the availability of skilled human resources in the digital field is also a challenge. Many MSMEs find it difficult to find workers who are able to manage and utilize digital technology effectively. The differences between MSMEs in Batam City and in other regions in the context of digitalization are quite striking. In Batam City, despite efforts to encourage digitalization, MSMEs still face various challenges, such as a lack of technological understanding and limited infrastructure. Although Batam has great potential for digitalization thanks to its strategic location and rapid economic growth, the adoption of digital technology among MSMEs in Batam still lags behind other regions. In addition, the level of access to funding for technology investment also varies. MSMEs in several major cities have more access to financial institutions and funding programs that support digitalization, while MSMEs in Batam often find it difficult to obtain capital to invest in technology.

LITERATURE REVIEW

The Resource-Based View (RBV) theory is a managerial framework used to determine the strategic resources that companies can utilize to achieve competitive advantage. This theory focuses on the internal resources and capabilities of companies (Rahmatullah et al., 2024.) The Resource-Based View (RBV) theory proposes that organizations can achieve competitive advantage by concentrating on their internal assets and capabilities. By doing so, they can develop strategies that not only improve their performance but also build and maintain a superior position compared to their competitors in the market (Lusardi & Mitchell, 2014) . The performance of SMEs, determined by the growth of the company and the personal wealth of its owners, is closely related to the ability of these companies to manage resources effectively (Sianipar et al., 2023.) This underscores the importance of strategic resource allocation and utilization, which is crucial for maintaining competitive advantage, driving profitability, and ensuring long-term success in a dynamic business environment (Anggraini et al., 2023).

Financial Literacy

Financial literacy is defined as the mastery of a set of knowledge, attitudes, and behaviors that have become important in enabling people to make responsible decisions when trying to achieve financial well-being. In their research, (Taghizadeh et al., 2023) define financial literacy as the ability to manage one's finances. The higher a person's level of financial literacy, the more likely they are to engage in prudent financial behavior and effective financial management. According (Appiah & Agblewornu, 2024) individuals with higher financial

knowledge tend to be wiser in their financial behavior compared to respondents with lower financial knowledge. According to previous research findings, a high level of financial literacy has a positive influence on financial management behavior. Financial literacy is an important factor in the implementation of good financial management to achieve financial well-being (Adiki et al., 2021.). Companies with good financial literacy will be able to strategically identify and respond to changes in the business, economic, and financial climate. These decisions will result in creative and targeted solutions to improve business performance and sustainability. It can therefore be concluded that if entrepreneurs in the MSME sector have sufficient financial literacy, they will make better business and financial decisions over time, which will help businesses overcome crises and improve their performance. (Fitria, 2024) Financial literacy indicators typically cover four main aspects: financial knowledge, financial behavior, financial attitudes, and financial management skills (Tehuayo et al., 2024.) Financial knowledge, Financial Behavior, Financial Attitudes, Financial Management Skills.

Dynamic Environment

An environment of dynamism can foster creativity and resilience, which are key to maintaining business success. Characterized by rapid and unpredictable change, an environment of dynamism can significantly alter the trajectory of a business's development, compelling organizations to adapt quickly (Taghizadeh et al., 2023). In response to this dynamic environment, digital capabilities have emerged as a strategic asset that enables organizations to leverage digital technologies and platforms, thereby enhancing their competitive advantage and ensuring they remain resilient amid these fluctuations (Hikmah et al., 2023). Environmental dynamism itself, according to (Permana & Ellitan, 2020), is a rapid and unpredictable change that alters the pattern of business environment development. Environmental dynamism has several indicators of the level of environmental change. These indicators include changes in government regulations, consumer demand, technology, and innovation (Permana & Ellitan, 2020).

Digital Financial Literacy

Digitalization has become a major part of the development of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. Digital literacy includes the ability to use digital technology, understand information online, and use social media or e-commerce to support business activities. In the context of MSMEs, digital literacy plays an important role in helping business actors understand and utilize technology, improve operational efficiency, and expand market reach (Arifuddin et al., 2022).

Digital literacy contributes significantly to improving this performance in several ways. First, digital literacy helps MSMEs utilize digital platforms for wider product marketing, which in turn can increase sales and market share. Second, a good understanding of digital technology makes it easier for MSME players to access market information, understand consumer trends, and tailor their products to market needs. Research shows that there are several key aspects of digital literacy that influence MSME performance (Daud et al., 2021).. Digital literacy is the ability to understand, use, and navigate digital technology and the internet wisely and responsibly. Digital literacy indicators cover several important aspects that reflect competence in using technology effectively and safely. Digital financial literacy indicators measure how well respondents understand Knowledge, Experiences, Skills, and Awareness. According to (Rahayu, 2022). there are four aspects of digital financial literacy, Knowledge, Experience, Skill, Awareness.

Performance

Performance is the result of work that can be achieved by an individual or group of people in an organization, in accordance with their respective authorities and responsibilities in order to achieve organizational goals. According to Rivai (2013) in (Usmaniyah & Abrori, 2024), business performance is a general term used to refer to some or all of the actions or activities of an organization in a given period with reference to a number of standards such as projected past costs based on efficiency, management accountability, and the like. Meanwhile, according to (Luo et al., 2021) business performance is a description of the level of achievement of a program of activities or policies in realizing the goals, objectives, vision, and mission of an organization as outlined in an organization's strategic plan. The business performance indicators adopted from the research conducted by (Daud et al., 2021) are sales growth, capital growth, market and marketing growth, and profit growth. The hypotheses in this study are H1: Financial literacy affects the performance of women-owned MSMEs in Batam City, H2: The dynamic environment affects the performance of women-owned MSMEs in Batam City. H3: Digital financial literacy mediates financial literacy in the performance of women-owned MSMEs in Batam City. H4: Digital financial literacy mediates the dynamic environment in the performance of women-owned MSMEs in Batam City.

METHODS

The type of research conducted in this study is descriptive quantitative. Descriptive quantitative research examines a specific population or sample and collects data using research instruments and statistical data analysis with the aim of testing predetermined hypotheses

(Susanto et al., 2024.) This study uses explanatory research and is associative in nature. The research population consists of all MSMEs in Batam City. In this study, the researcher used purposive sampling techniques. Purposive sampling is a technique for collecting research data sources based on various considerations. These considerations include, for example, selecting individuals who are considered to have the most knowledge about the expected outcomes, or who are considered to be the most knowledgeable, thereby facilitating the researcher's exploration of the object or social situation being studied. The result is high-quality data (Susanto et al., 2024.)

This study also used snowball sampling. The researcher used the snowball sampling technique because of certain considerations that were likely to be encountered during the research. These considerations included the possibility that the data obtained would be insufficient. The snowball sampling technique is a technique for collecting data sources that starts with a small number and then grows larger because the small number of data sources is not yet able to provide satisfactory data, so other informants are sought to be used as data sources (Wardana, 2023) Purposive sampling in this study was conducted using the following criteria to select participants: Small and Medium Enterprises (SMEs) owned by female entrepreneurs; SMEs that have been established for at least three years; SMEs engaged in the food and beverage (F&B) sector, Fashion, services, and handicraft industries. In this study, 25 SME representatives were selected for each sector based on these criteria. The goal was to have 100 respondents participate in this study. The study used PLS analysis to test the research hypotheses presented by the researchers in the form of hypotheses. Data analysis was performed using smartPLS 4.0 software to determine the relationships between variables in the study (Wardana, 2023)

RESULTS AND DISCUSSION

The outer model, also known as the measurement model, is used to evaluate the relationship between latent variables and their respective indicators. This stage aims to ensure that the indicators used in the research are both valid and reliable in measuring the constructs. The evaluation includes several tests, such as convergent validity, discriminant validity, and reliability test. Convergent validity is assessed through the value of Outer Loading and Average Variance Extracted (AVE), where an indicator is considered valid if its loading factor is greater than 0.7 and the AVE value exceeds 0.5. Reliability, on the other hand, is measured using Cronbach's Alpha and Composite Reliability; both are expected to have values above 0.7, indicating internal consistency among the indicators. In this study, the evaluation results of the

outer model for each variable including Financial Literacy, Dynamic Environment, Digital Literacy, and Business Performance are summarized in the following table.

Tabel 1. Outer Loading

Variables	Item	Outer Loading	Cronbach Alpha	AVE
Financial Literacy	LK1	0.821	0.748	0.821
	LK2	0.732		
	LK3	0.831		
	LK4	0.741		
	LK5	0.715		
	LK6	0.811		
	LK7	0.727		
	LK8	0.812		
Dynamic Environment	DE1	0.821	0.821	0.8233
	DE2	0.839		
	DE3	0.791		
	DE4	0.794		
	DE5	0.870		
	DE6	0.936		
	DE7	0.812		
	DE8	0.741		
Digital Literacy	DL1	0.863	0.745	0.836
	DL2	0.731		
	DL3	0.712		
	DL4	0.829		
	DL5	0.811		
	DL6	0.912		
	DL7	0.752		
	DL8	0.843		
Performance	KU1	0.750	0.812	0.825
	KU2	0.803		
	KU3	0.862		
	KU4	0.794		
	KU5	0.760		
	KU6	0.812		
	KU7	0.798		
	KU8	0.840		

Source: Data processed by SmartPLS 4

Based on the data in Table 1 above, it is known that each research variable indicator has an outer loading value >0.7 . The data above shows that there are no variable indicators with an outer loading value below 0.7, so all indicators are declared feasible or valid for use in research and can be used for further analysis. Based on Table 1 above, it is known that perceived

behavioral control, perceived safety, attitude, and interest have an average variant extracted value > 0.50 . Thus, it can be said that each variable has good discriminant validity. Based on the data presented in Table 1 above, it can be seen that the Cronbach's alpha value of each research variable is > 0.7 . Thus, these results show that each research variable has met the Cronbach's alpha value requirement, so it can be concluded that all variables have a high level of reliability.

Composite Reliability

Composite Reliability is used to test the reliability value of indicators in a variable. A variable can be said to meet composite reliability if it has a composite reliability value > 0.6 . The following are the composite reliability values of each variable used in this study:

Tabel 2. *Composite Reliability*

Variabel	Composite Realibility
<i>Financial Literacy</i>	0,862
<i>Dynamic Enviroment</i>	0,821
<i>Digital Literacy</i>	0,791
<i>Performance</i>	0,823

Source: Data processed by SmartPLS 4

Based on the data processing that has been carried out, the results of the data processing can be used to answer the hypothesis in this study. Hypothesis testing in this study can be seen through the T-Statistics and p-Values. The hypothesis in this study can be accepted if the P Values are < 0.05 . To assess the significance of the model, it can be seen from the t-statistic value between the independent variable and the dependent variable in the Path Coefficient table in the SmartPLS output below:

Tabel 3. Hypotesis Test

		Path Coefficient	P-Value	(95 %) path Coefficient	F Square
<i>Financial Performance</i>	<i>Literacy-> Performance</i>	0.328	0.000	0.021	0.106
<i>Dynamic enviroment</i>	<i>->Performance</i>	0.232	0.025	0.043	0.208
<i>Digital Literacy</i>	<i>-> Financial Literacy -> Performance</i>	0.253	0.042	0.221	0.504
<i>Digital Literacy</i>	<i>-> Dynamic Enviroment ->Performance</i>	0.421	0.000	0.321	0.406

Source: Data processed by SmartPLS 4

The Effect of Fintech on MSME Performance

The results of hypothesis testing in this study indicate that the financial literacy variable has a positive and significant effect on MSME performance ($\beta = 0.328$; $p = 0.000$). This finding shows that the higher the level of financial literacy of MSME players, the better their performance. This is in line with the Resource-Based View (RBV) perspective, which states that internal resources, such as financial knowledge and skills, can be a strategic strength in increasing a company's competitiveness. Financial literacy helps business actors in financial planning, budgeting, investment decision-making, and risk management, thereby supporting sustainable business growth. Research by (Lusardi & Mitchell, 2014) reinforces this finding by stating that financial literacy is positively correlated with the ability to make smart and efficient financial decisions, which ultimately contributes to improved business performance.

The Influence of Dynamic Environment on MSME Business Performance

The dynamic environment variable has also been proven to have a significant effect on MSME performance ($\beta = 0.232$; $p = 0.025$). A dynamic business environment is characterized by a high rate of change in technology, consumer demand, and market conditions. In this context, RBV emphasizes the importance of an organization's ability to adapt and respond quickly to external changes through the development of dynamic capabilities (Teece et al., 2016). MSMEs that are able to adjust their strategies and operations to external changes will be more competitive. A study by (Zainal Abidin et al., 2022) found that MSMEs that are able to read environmental changes and adjust product innovation and marketing strategies show better performance than passive MSMEs.

The Influence of Digital Financial Literacy Mediates the Influence of Dynamic Environment on MSME Performance

The results show that digital financial literacy significantly mediates this relationship ($\beta = 0.253$; $p = 0.042$). Although there is a discrepancy in the confidence interval values recorded in the table, the significance of the p-value still indicates a mediating effect. Digital financial literacy is the ability to access, understand, and use digital financial services such as mobile banking, e-wallets, and online financing platforms. This enables MSMEs to manage cash flow, payments, and loans more efficiently. According to (Rahmawati, 2021), MSME players with high digital financial literacy adapt more quickly to changes in financial technology and are able to expand their market through digital transactions, which ultimately has a positive impact on business performance.

The Influence of Financial Literacy on Financial Management Behavior

The results of this study indicate that digital financial literacy also plays a role in mediating the influence of a dynamic environment on MSME performance ($\beta = 0.421$; $p = 0.000$). This finding indicates that in the face of a rapidly changing business environment, MSMEs with good digital capabilities are better able to respond to changes and take advantage of opportunities. Digital technology makes it easier for business actors to access real-time market information, understand consumer trends, and innovate products and services. This is in line with the findings (Fatimah & Lestari, 2023) which state that the use of digital technology can strengthen the flexibility and agility of MSME businesses in responding to external environmental dynamics.

Finally, the total indirect effect value of 0.523 with a p-value of 0.028 and an F Square of 0.817 confirms that the mediating role of digital financial literacy is very strong in bridging the influence of financial literacy and the dynamic environment on MSME performance. The high F Square value indicates that the contribution of digital financial literacy as a mediating variable is significant. Overall, these results support the RBV framework and show that mastery of digital financial literacy is a strategic asset in facing external challenges and increasing the competitiveness of MSMEs, especially in the era of digital transformation.

CONCLUSION

Based on the results of the analysis, it can be concluded that financial literacy has a positive and significant effect on the performance of MSMEs in Batam City, indicating that a higher level of financial understanding among business owners leads to better business outcomes. Likewise, the dynamic environment positively and significantly influences MSME performance, showing that a rapidly changing business environment encourages entrepreneurs to adapt quickly and improve operational efficiency. Furthermore, digital financial literacy plays a significant mediating role in strengthening the effect of financial literacy on MSME performance, suggesting that financial knowledge becomes more effective when supported by digital financial skills. In addition, digital financial literacy also mediates the relationship between the dynamic environment and MSME performance, meaning that MSMEs with higher levels of digital financial literacy are better equipped to respond to environmental changes and maintain strong business performance.

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