



Integrating Financial Literacy, Financial Bootstrapping, and Entrepreneurial Competence to Optimize Online MSME Performance

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Abstract

This study aims to evaluate the impact of financial bootstrapping and entrepreneurial competence on the performance of online Micro, Small, and Medium Enterprises (MSMEs), while examining financial literacy as a moderating variable. Using a quantitative explanatory approach, data were gathered from online MSMEs in Sorong City and analyzed via Structural Equation Modeling-Partial Least Squares (SEM-PLS). The results reveal that entrepreneurial competence significantly and positively enhances MSME performance, whereas the effect of financial bootstrapping is positive but statistically insignificant. Additionally, financial literacy was found not to moderate the relationship between either financial bootstrapping or entrepreneurial competence and overall business performance. Practically, these findings imply that to sustain long-term growth and success, online MSME owners should prioritize developing strong core entrepreneurial skills alongside foundational financial knowledge, rather than expecting financial literacy to act as a catalyst for informal funding strategies.

Keywords: *Financial Bootstrapping, Entrepreneurial Competence, Financial Literacy, MSME Performance, MSME Digitalization.*

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1. INTRODUCTION

Training Data up to October 2023 Micro, Small and Medium Enterprises (MSMEs) are the backbone of national economy with a contribution figure of approximately 60% in Indonesia's Gross Domestic Product (GDP)(Kemenko Perekonomian, 2024). Indonesia GDP reached IDR 22,139 trillion in 2024 with a soaring GDP per capita of IDR 78.62 million to highlight it as indonesia's fast economic growth (Wisnubroto, 2025). The recent 2024 SNLIK survey stated financial literacy index reached a level of 65.43% and financial inclusion was increased to an inclusive rate at 75.02%, still indicate the obstacles in understanding financial management (OJK & BPS, 2024). This gap indicates that many MSME actors still face limitations in making effective financial decisions, particularly in managing business sustainability in the digital era. In the context of digital economic transformation, financial literacy is increasingly important because online business actors are required to manage electronic transactions, digital cash flows, and flexible financing strategies more effectively than conventional businesses.

Sorong City is the economic center of Southwest Papua. However, Bank Indonesia data show that working capital credit disbursement in this region remains lower than consumer credit, accounting for only 30.47%, or IDR 5.04 trillion of total credit (Antara News, 2023). This indicates that MSMEs still have limited access to capital from formal financial institutions. Flexible financing methods such as financial bootstrapping can be an alternative. Block et al. (2022) explained that the ability of entrepreneurs to manage capital sources from financial bootstrapping mechanisms enables them to apply prudential banking principles in financial governance. Entrepreneurs' ability to manage internal financing sources reflects the extent to which they can access financing from formal financial institutions. This is crucial because many MSMEs in developing regions, including Sorong, still tend to focus on short-term consumption and have not fully applied capital efficiency principles in their operations. Furthermore, Sorong City represents an important empirical context because it is one of the emerging economic centers in eastern Indonesia that is currently experiencing growth in digital-based entrepreneurial activities. However, MSMEs in this region still face structural limitations in accessing formal financing, uneven financial education, and limited managerial capacity in utilizing internal funding strategies efficiently. This condition creates a unique context for examining how internal resources can optimize MSME performance in developing regions outside major economic centers in Indonesia.

Theoretically, based on the Resource-Based View approach, financial bootstrapping and entrepreneurial competence represent two forms of internal resources that support business operations and may create sustainable competitive advantage for MSMEs. Previous research has also supported the effectiveness of these strategies. A study in the United Arab Emirates showed that financial bootstrapping was positively correlated with family business experience and growth intentions (Alhammadi & Rahman, 2025). Studies by Zwane et al. (2024) and Gunarathne et al. (2024) showed that this approach is effective in developing economies if supported by good management skills and financial knowledge. Oluwakemi et al. (2024) the study found that bootstrapping techniques, such as financial subsidies and payment deferrals, significantly improved the business performance of MSMEs in Nigeria through more efficient capital allocation. On the other hand, Ludiya & Kurniawan (2020), explained that business actors need entrepreneurial competencies to manage their businesses, make risk-based decisions, and innovate products. A study by Mohsin et al. (2017) confirmed that strategic, conceptual, and technical competencies have a positive influence on MSME innovation and growth, especially in the context of the digital market. In addition, online MSMEs exhibit different operational characteristics from conventional MSMEs, as they rely heavily on digital platforms, electronic transactions, social commerce, and rapid market adaptation(Tubastuvi et al, 2024). These conditions require business actors not only to possess entrepreneurial competence, but also to have adequate financial management capabilities in managing digital cash flows, short-term financing decisions, and operational sustainability in highly competitive online markets. Therefore, the dynamics of online MSMEs require a more integrated approach between entrepreneurial capability and financial management compared to conventional business models.

Wira Dika et al. (2021) previous studies have demonstrated that integrating financial literacy with bootstrapping strategies can reduce MSMEs' dependence on external financing sources. However, earlier research has generally examined

financial literacy, financial bootstrapping, and entrepreneurial competence separately, while empirical evidence explaining the simultaneous interaction among these variables remains limited. In particular, prior research has not adequately explained whether financial literacy strengthens or weakens the effectiveness of entrepreneurial competence and financial bootstrapping strategies in improving online MSME performance (Tubastuvi et al, 2024) (Wira Dika et al, 2021) (Hasanudin & Panigfat, 2023). Therefore, there is still limited understanding regarding the mechanism through which financial literacy functions not only as a direct determinant of business performance, but also as a moderating factor influencing the relationship between internal financing strategies, entrepreneurial competence, and MSME performance outcomes (Hererra et al, 2023). The use of financial literacy as a moderating variable is important because entrepreneurs with strong entrepreneurial competence and bootstrapping strategies may still face difficulties in achieving optimal business performance if they lack the ability to manage financial planning, financial decision-making, and business cash flow effectively. Conversely, higher financial literacy may strengthen the effectiveness of internal financing strategies and entrepreneurial competencies in supporting sustainable business performance among online MSMEs. Thus, there remains a research gap in understanding how financial literacy, financial bootstrapping, and entrepreneurial competency interact simultaneously to improve the performance of digital MSMEs, particularly in eastern Indonesia, which has distinct economic characteristics compared to other regions.

The urgency of this research lies in providing empirical evidence and theoretical contributions to strengthen the adaptive capacity of digital MSMEs through the optimal utilization of internal resources amid limited access to formal capital. Based from the above background, without reducing purposeful of research to accomplish objectives, this study test whether financial literacy entrepreneurial competence and financial bootstrapping strategies performance influence the online msme in Sorong City with fincencial literacy as moderating roles.

2. LITERATURE REVIEW

2.1 Resource-Based View (RBV)

Instead, the primary focus of RBV is managing unique resources that organizations own to achieve a sustainable competitive advantage over a long time period and infinity projects opportunities for rivals through competencies and capabilities (Barney, 1991; Birger Wernefelt, 1984). In the context of a business, resources such as knowledge, experience and social networks are important factors in developing strategies in an effort to achieve superior company performance. Research conducted by Hervé et al. (2020), shows that optimizing internal resources, such as product innovation and effective governance, contributes to improved business performance. This finding reinforces the view that MSME performance can improve when business actors are able to transform internal resources into sustainable competitive advantages. Strategies such as financial bootstrapping may serve as effective tools for leveraging internal resources, particularly a firm's liquid assets, to achieve competitive advantage.

2.2 MSME Performance

Business performance refers to the level of achievement in implementing activities, policies, or projects to realize an organization's targets, goals, mission, and vision as outlined in its strategic plan (Putri & Le, 2020). According to Johan and Akbar (2020), MSME performance involves financial aspects such as profitability, cost efficiency, and achievement of strategic targets. MSME performance can be assessed through their success in creating relevant innovations in the market, which is an indicator of their ability to adapt to changes in the business environment (Lubis & Salsabila, 2024). Business performance indicators include: (1) financial performance, (2) customer performance, (3) internal process performance, and (4) growth performance (Tjahjadi et al., 2020).

2.3 Financial Bootstrapping

Financial bootstrapping was first introduced as a strategy for utilizing internal resources to finance business operations while minimizing dependence on external funding sources by Amar Bhide (1992) the concept was introduced to describe how entrepreneurs can start and operate their businesses using personal funds without relying on external sources of financing. It

was further developed by Winborg and Landström (2001) as an alternative financing strategy that includes cost efficiency, the use of personal assets, delaying supplier payments, and leveraging social networks. This strategy is widely implemented by small and medium enterprises (MSMEs) who face limited access to formal funding sources, such as bank loans or credit from financial institutions. This finding is consistent with a previous study by Parmitasari et al. (2023), finding is in line with prior research, which emphasized that financial bootstrapping is not only concerned with efficient resource utilization but also with creativity in identifying ways to independently finance and manage business operations. Its indicators include: (1) funding sources, (2) receivables management, (3) use of shared facilities, (4) payment delays, (5) investment minimization, and (6) financial subsidies.

2.4 Entrepreneurial Competence

Entrepreneurial competence refers to the combination of knowledge, attitudes, and skills required by entrepreneurs to improve business performance through managerial ability, decision-making, and business strategy development (Ludiya & Kurniawan, 2020). Educational background, work experience, and external support are things that influence a person's entrepreneurial competency (Purnamasari et al., 2019). In this study, the indicators of entrepreneurial competence refer to the dimensions used to assess the knowledge, skills, and abilities required for effective business management and development to Zhang and Ayele (2022), in this study, the indicators of entrepreneurial competence include: (1) personal relationship competency, (2) business and management skill competency, (3) entrepreneurial and human relations competency, (4) market competitiveness competency, (5) financial skill competency, and (6) innovation and entrepreneurial access competency.

2.5 Financial Literacy

According to Choerudin et al. (2023) financial literacy is an ability that includes knowledge and skills in managing finances effectively. Thus, financial literacy can be understood as the ability to apply knowledge and skills in making informed judgments and effective decisions regarding the use and management of financial resources. Business owners who have good financial literacy will be able to master the right way to manage their finances (Nuzulya Pahlawi, 2024). In line with a study by Wise (2013) which shows that increasing financial literacy can help small businesses avoid financial management errors that have the potential to harm the business. The financial literacy indicators in this study refer to Chen and Volpe, as cited in Hidayat (2020), namely personal financial management, savings in the form of bank deposits, insurance, and investment.

2.6 The Effect of Financial Bootstrapping on MSME Performance

Financial bootstrapping is an important foundation in the early stages of a business, especially for businesses with limited capital (Grichnik et al., 2014). When viewed through the lens of the Resource-Based View (RBV), financial bootstrapping reflects a firm's ability to utilize internal resources effectively and efficiently to sustain business continuity. Through a bootstrapping strategy, MSMEs can optimize limited resources, such as the use of personal funds, strict cash flow management, and the utilization of business networks, thereby improving business performance. Thus, the more effectively financial bootstrapping is implemented, the higher the performance of MSMEs, as it enables them to create competitive advantages based on internal resources. In research by Parmitasari et al. (2023) this was proven effective in improving MSME performance. This finding is supported by Rita and Nastiti (2024) who stated that financial bootstrapping and digital transformation have a positive and significant impact on the financial performance of MSMEs.

H1: Financial Bootstrapping has a positive and significant effect on MSME performance.

2.7 The Effect of Entrepreneurial Competence on MSME Performance

Fazal et al. (2022) previous research stated that entrepreneurial competence is important for MSMEs because it supports their ability to identify market opportunities, manage risks, and respond to business competition, thereby improving business performance. In line with this, the RBV theory states that such unique resources are competitive advantages for MSMEs by becoming intangible resources, one of which is entrepreneurial competence. Entrepreneurs with high competence manage resources efficiently, leverage strategic thinking and adapt to market dynamics ultimately enhancing business performance. This finding aligns with studies by Purnamasari et al. (2019) and Ahmad et al. (2022) this finding is consistent with previous

research, which found that entrepreneurial competence positively influences business performance, emphasizing the importance of individual ability and motivation in managing a business to achieve optimal outcomes.

H2: Entrepreneurial Competence has a positive and significant effect on MSME Performance

2.8 The Effect of Financial Literacy on MSME Performance

The contribution of financial literacy to the performance of MSMEs is that financial literacy helps business actors in financial planning, risk management and the capital structure of a business. This is supported by the RBV theory, where financial literacy is a resource that can improve the ability of MSMEs to manage and utilize financial resources effectively. Thus, the higher the financial literacy, the better the performance of MSMEs because they are able to create competitive advantages based on financial knowledge and capabilities. Hererra et al. (2023) the study showed that financial literacy positively influences MSME performance through the mediating roles of financial access and risk management. In line with this research, Worokinasih et al. (2023) also found that financial literacy and social capital increase emotional intelligence and boost business performance.

H3: Financial Literacy has a positive and significant effect on MSME Performance

2.9 The Role of Financial Literacy in Moderating the Relationship between Financial Bootstrapping and MSME Performance

The Resource Based View (RBV) theory states that competitive advantage is achieved by a firm leveraging upon its resources well (Barney, 1991). Financial bootstrapping means creatively and judiciously using internal finance in terms of MSMEs, whereas Financial Literacy can be described as the art of having knowledge and understanding about how to manage the businesses financially. In this case, financial literacy as an intangible resource can increase the effectiveness of implementing financial bootstrapping in business financial management. Thus, financial literacy strengthens the influence of financial bootstrapping on MSME performance by improving business actors' ability to manage and utilize financial resources optimally. These findings are supported by Wira Dika et al. (2021), who found that financial bootstrapping influences MSME performance and the moderating role of financial literacy.

H4: Financial Literacy can moderate the influence of Financial Bootstrapping on MSME Performance

2.10 The Role of Financial Literacy in Moderating the Relationship between Entrepreneurial Competence and MSME Performance

According to Resource-based view (RBV) theory, a firm gains advantage over its competitors through better resource endowments (Barney, 1991). In the case of MSMEs, entrepreneurial competence is defined as an intangible resource that relates to managerial skills, decision making and business strategy development; while financial literacy reflects the ability to comprehend and manage financial resources. Therefore, entrepreneurs with higher financial literacy are expected to utilize their entrepreneurial competence more effectively through better financial planning, resource allocation, and decision-making, which may strengthen the positive relationship between entrepreneurial competence and MSME performance. This argument is supported by Tubastuvi et al. (2024), Hasanudin and Panigfat (2023), and Worokinasih et al. (2023), who found that financial literacy contributes positively to MSME performance. However, the moderating effect of financial literacy may not always be positive. Higher levels of financial literacy may encourage more cautious and risk-aware behavior, which can reduce entrepreneurial aggressiveness in innovation, risk-taking, and business expansion. A study by Pangeran (2016) found that financial literacy does not consistently moderate all dimensions of entrepreneurial capability and may have no significant moderating effect on the relationship between innovativeness and performance. Similarly, Barokah et al. (2024) reported that higher financial literacy can encourage more conservative financial behavior, potentially weakening the influence of entrepreneurial characteristics on business performance when entrepreneurs prioritize financial stability over expansion and innovation.

H5: Financial Literacy can moderate the influence of Entrepreneurial Competence on MSME Performance

3. RESEARCH METHOD

This research was conducted in Sorong City, Southwest Papua, which has great potential for the development of online MSMEs. Empirical studies conducted by Hidayah et al. (2023) and Yuliani & Amin (2022), explain the phenomenon of Sorong city consumers who are already moving towards digitalization of trade and payment methods, supporting this research to be carried out as an addition to local digital business literature. This research is explanatory in nature and aims to examine and explain the relationships among the variables under study. Explanatory research aims to reveal the causal relationship between the variables studied, namely financial bootstrapping, entrepreneurial competence, online MSME performance, and financial literacy as a moderating variable. Partial Least Squares (PLS) was used as an analytical tool in this study. This multivariate statistical method allows simultaneous analysis of multiple independent and dependent variables (Hair et al., 2010). The data source is obtained from a research instrument in the form of a questionnaire which will be distributed to the target sample. This study used three exogenous variables: financial bootstrapping, entrepreneurial competence, and financial literacy, comprising 16 indicators. The endogenous variable in this study was online MSME performance, which consisted of four indicators. All of these indicators were later articulated as a research instrument and measured with a five-level Likert scale: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree and (5) strongly agree.

The population in this study consisted of all online MSME actors in Sorong City who actively used digital platforms, such as e-commerce and social media. Samples were taken using nonprobability sampling techniques, specifically incidental sampling. According to Sugiyono (2020), incidental sampling is a sampling technique based on chance encounters with individuals who match the sample characteristics and are relevant to the research context. The sample characteristics determined in this study were:

1. Businesses that had been operating for at least one year.
2. Actively using digital platforms for marketing or operations.

The sample size was determined based on the ratio of research variable indicators. According to Hair et al., the general rule for the ratio of observations to variables is to have at least five observations for each variable analyzed, while a more acceptable sample size is a ratio of 10 observations per variable (Hair et al., 2019; Qosasi et al., 2019). Using this rule, with 20 indicators used in this study, the required sample size is in the range of 100-200 samples. In addition to the 5-10 times indicator rule, this study also employed the minimum R^2 method proposed by Joseph F. Hair Jr. et al. (2017) to ensure that the sample size was adequate for estimating the SEM-PLS model with moderation effects. The minimum sample size was determined based on the maximum number of arrows pointing to an endogenous construct, a significance level of 0.05, statistical power of 0.80, and a minimum expected R^2 value of 0.25. Based on the minimum R^2 table developed by Hair et al. (2017), the required minimum sample size was lower than the 98 respondents used in this study. Therefore, the sample size is considered sufficient to reliably estimate the proposed direct and moderating effects. The primary data in this study were obtained through a questionnaire consisting of two main sections. The first section included demographic or general questions, and the second section contained statements related to indicators of exogenous variables.

All constructs were assessed using a self-administered questionnaire completed by the same respondents, in which case common method bias (CMB) might be a concern in an attempt to reduce this risk, respondents were informed that their responses would be anonymous and confidential. Moreover, the questionnaire items were based on previously established instruments and organized in a standardized way to limit response style bias and social desirability. These procedural remedies were implemented to reduce the potential influence of common method bias (CMB) on the study findings. Nevertheless, the possibility of method bias cannot be completely eliminated and should be taken into consideration when interpreting the results. Research model of this study:

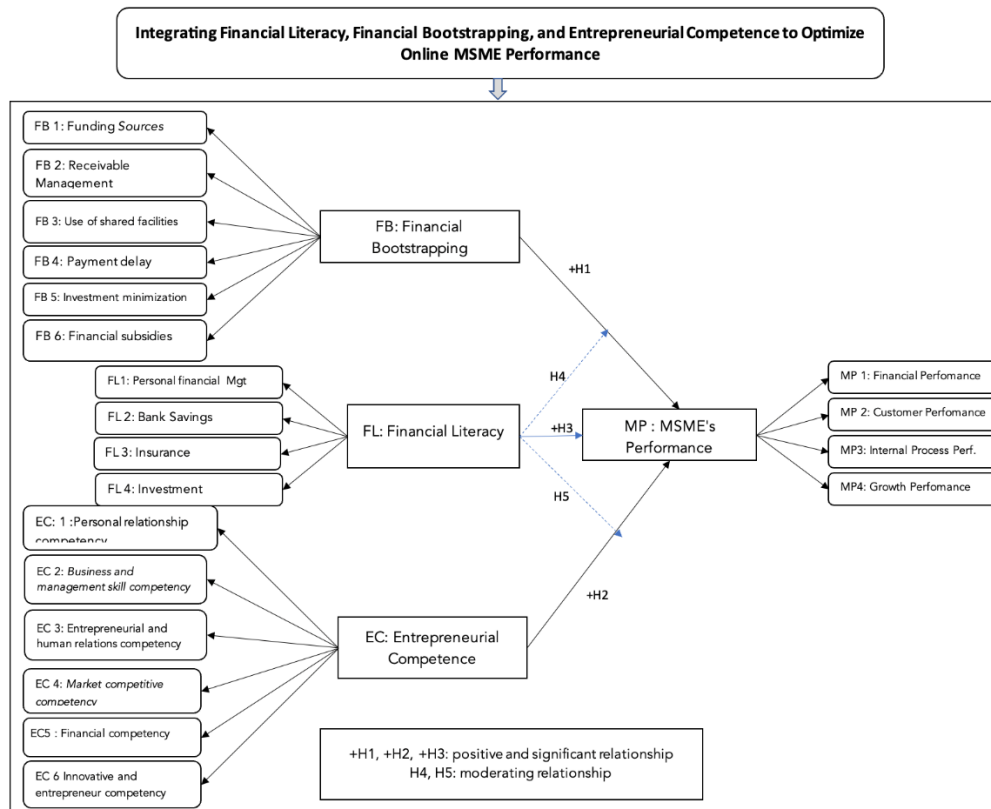


Figure 1. Research Model

4. RESULTS AND DISCUSSION

4.1 RESULTS

The research was conducted in Sorong City, Southwest Papua Province, from December 2024 to March 2025, and data were collected using a questionnaire. Measurement of respondent characteristics in this study was carried out using a nominal scale to show the absolute frequency and percentage of gender, age, education level, type of business, business duration, monthly revenue and online media used. The respondents in this study were MSME actors in Sorong City who utilized online media for business operations and marketing, with a total of 110 respondents obtained. The characteristics of the respondents are presented in Table 1.

Table 1 | Characteristic Respondents

No	Characteristics	Information	Sum	%
1	Gender	Male	16	15%
		Female	94	85%
		Total	110	100%
2	Age	17-25	74	67%
		26-35	26	23%
		36-45	3	3%
		46-55	8	7%
		Total	110	100%
3	Level of Education	Elementary School	1	1%
		Junior High School	3	3%
		Senior High School	78	71%
		Bachelor (S1)	28	25%
		Total	110	100%
4	Type of Business	Food and Beverage	64	58%
		Fashion and Accessories	29	26%
		Crafts and Souvenirs	9	8%
		Health and Beauty	5	5%

No	Characteristics	Information	Sum	%
		Services	2	2%
		Agriculture and Plantations	1	1%
		Total	110	100%
5	Business Duration	1 Years	42	38%
		2-5 Years	58	53%
		6-10 Years	8	7%
		>10 Years	2	2%
		Total	110	100%
6	Monthly Revenue	< 5 Million	68	62%
		6-15 Million	30	27%
		16-30 Million	7	6%
		> 50 Million	5	5%
		Total	110	100%
7	Online Media Used for Business Marketing	Instagram	79	-
		Facebook	67	-
		Whatsapp	66	-
		Tiktok Shop	20	-
		Shopee	3	-
		Tokopedia	1	-

Source: Primary Data, 2025

The data shows that most respondents are female (85%) and this may affect financial behavior and business management of online MSMEs in the City of Sorong. Female entrepreneurs often associate with better financial planning and focus more on building a sustainable business. 67% of respondents were between the ages of 17-25 years, which suggests that many MSME owners are young entrepreneurs who are generally more adaptable to digital technology and social media trends as well as a greater opportunity for online business. For education, most respondents had senior high school background (71%) indicating that they have simple knowledge and basic literacy that may help them to run online business activities.

The characteristics of online MSMEs in Sorong City indicate that most businesses are still operating on a small scale and are in the early growth stage. The food and beverage sector dominated the respondents (58%), followed by fashion and accessories (26%). Most businesses had been operating for 2-5 years (53%), while 38% had operated for less than one year, indicating that many MSMEs were still developing market stability and business sustainability. And as it turns out, most respondents claimed monthly revenues of less than IDR 5 million (62%), indicating not only that these businesses are micro scale but also their limited capacity to run on capital. The majority of the respondents reported using multiple digital platforms to support their business activities, with Instagram, Facebook and WhatsApp being the most commonly used. Certainly, the tool for those places perhaps having some elements of cheap and easy with an increase progression on client outreach. This finding highlights the important role of social media in supporting marketing, customer interaction, and transaction activities among online MSMEs in Sorong City.

Table 2 | Descriptive Statistics

Variable	Code	Statement Items	Scale	Mean	Standard Deviation	Category
Financial Bootstrapping	FB1	I use personal funding sources for business operations.	Likert 1-5	4.04	1.09	High
	FB2	I manage my accounts receivable well.		4.29	0.95	High
	FB3	I utilize shared facilities to reduce business costs.		4.05	1.02	High
	FB4	I defer certain payments to maintain business cash flow.		2.99	1.53	Moderate
	FB5	I only make investments that are absolutely necessary for the business.		4.17	1.04	High
	FB6	I take advantage of any subsidies or financial assistance available.		3.93	1.20	High

Variable	Code	Statement Items	Scale	Mean	Standard Deviation	Category
Entrepreneurial Competence	EC1	I am able to establish good relationships with customers or business partners.	Likert 1-5	4.51	0.89	High
	EC2	I have the skills to manage a business well.		4.48	0.80	High
	EC3	I am able to motivate and work with others in a team.		4.36	0.82	High
	EC4	I understand how to compete with similar businesses in the market.		4.53	0.71	High
	EC5	I have the ability to manage business finances well.		4.34	0.85	High
	EC6	I am able to create innovative ideas for business development.		4.19	0.93	High
MSME Performance	MP1	My business can generate adequate profits.	Likert 1-5	4.05	0.99	High
	MP2	Customers are satisfied with the products or services I offer.		4.42	0.89	High
	MP3	I always ensure that operational processes run efficiently.		4.36	0.86	High
	MP4	My business has increased in the last few years.		4.18	0.95	High
Financial Literacy	FL1	I can manage my personal finances well.	Likert 1-5	4.42	0.80	High
	FL2	I have savings or deposits in the bank.		4.37	0.89	High
	FL3	I understand the importance of having insurance for financial protection.		4.00	1.03	High
	FL4	I make investments to grow assets or income.		4.28	0.80	High

Source: SmartPLS 4 (Primary Data), 2025

As shown in Table 2, the highest mean values were observed for the MSME performance and financial literacy variables, both with a mean score of 4.42. Meanwhile, the lowest value is found in the financial bootstrapping variable with a mean of 2.99, and the highest standard deviation is 1.99. It can be concluded that the mean value of each indicator exceeds its standard deviation, indicating that the data quality in this study is satisfactory.

4.1.1. Common Method Bias Test

To assess the potential presence of common method bias, Harman's single-factor test was conducted by loading all measurement items into an exploratory factor analysis. According to Podsakoff et al. (2003), common method bias may be a concern when a single factor accounts for a substantial proportion of the total variance. First, the first factor contributed to only 42.5% of the total variance which is less than the recommended 50% threshold. For this reason, common method bias is unlikely to be a serious threat to the validity of our findings.

4.1.2. Measurement Model Test (Outer Model)

The results of the measurement model test (outer model) were carried out to test the relationship between indicators and latent variables. As shown in Figure 2, the measurement model assessment comprises convergent validity, discriminant validity, and reliability, each of which is discussed in the following sections.

4.1.2.1 Convergent Validity Test Results

Convergent validity was assessed using outer loadings and the Average Variance Extracted (AVE). According to Hair et al. (2019), outer loading values ≥ 0.70 and AVE values ≥ 0.50 indicate acceptable validity. The results showed that several indicators did not meet the criteria; therefore, FB3, FB4, FB6, and FL3 were removed through an iterative process by deleting each indicator one at a time to improve measurement quality and internal consistency. These indicators were removed gradually through an iterative process, meaning that they were eliminated one at a time rather than simultaneously.

Discriminant validity was further assessed using the HTMT and cross-loading criteria. The initial results indicated high HTMT values between several constructs, particularly between Entrepreneurial Competence and MSME Performance. Following Hair et al. (2017), indicators EC5 and MP2 were removed iteratively due to conceptual overlap and their contribution to poor discriminant validity. Following the removal of these indicators, the HTMT values improved, and all remaining

indicators demonstrated acceptable cross-loading results, confirming that the final measurement model achieved adequate validity and was suitable for further analysis. The details are explained in the table below;

Table 3 | Convergent Validity

Latent Variable	Indicator	Statement Item	Outer Loading	AVE	Information
Financial Bootstrapping	Funding sources	FB1	0.754	0.602	VALID
	Receivable management	FB2	0.741		VALID
	Investment minimization	FB5	0.829		VALID
Entrepreneurial Competence	Personal relationship competency	EC1	0.871	0.647	VALID
	Business and management skill competency	EC2	0.777		VALID
	Entrepreneurial and human relations competency	EC3	0.820		VALID
	Market competitive competency	EC4	0.777		VALID
	Innovative and entrepreneur competency Access	EC6	0.773		VALID
Financial Literacy	Personal financial management	FL1	0.868	0.692	VALID
	Savings in the form of bank deposits	FL2	0.823		VALID
	Investment	FL4	0.802		VALID
MSME Performance	Financial performance	MP1	0.789	0.710	VALID
	Internal process performance	MP3	0.879		VALID
	Growth performance	MP4	0.857		VALID

Source: SmartPLS 4 (Primary Data), 2025

Table 4 | Indicators Excluded from the Model

Latent Variable	Indicator	Statement Item	Outer Loading	Information
Financial Bootstrapping	Use of shared facilities	FB3	0.635	Removed (Outer Loading < 0.70)
	Payment delay	FB4	0.381	Removed (Outer Loading < 0.70)
	Financial subsidies	FB6	0.656	Removed (Outer Loading < 0.70)
Entrepreneurial Competence	Financial skill competency	EC5	0.770	Removed to improve discriminant validity
Financial Literacy	Insurance	FL 3	0.685	Removed (Outer Loading < 0.70)
MSME Performance	Customer performance	MP2	0.764	Removed to improve discriminant validity

Source: SmartPLS 4 (Primary Data), 2025

4.1.2.2 Discriminant Validity Test Results

Discriminant validity was evaluated using cross-loadings and the Heterotrait-Monotrait Ratio (HTMT). According to Henseler et al. (2015), cross-loading is one of the dominant approaches in testing discriminant validity in PLS-SEM. The cross-loading results indicate that each indicator exhibits the highest loading on its respective construct relative to other constructs, demonstrating that all indicators adequately represent their intended constructs.

Table 5 | Discriminant Validity (Cross Loading)

	Financial Bootstrapping	Entrepreneurial Competence	MSME Performance	Financial Literacy
FB1	0.754	0.457	0.441	0.468
FB2	0.741	0.578	0.508	0.444
FB5	0.829	0.514	0.529	0.524
EC1	0.611	0.871	0.681	0.680
EC2	0.530	0.777	0.614	0.558
EC3	0.536	0.820	0.650	0.545
EC4	0.523	0.777	0.576	0.579
EC6	0.484	0.773	0.619	0.623

	Financial Bootstrapping	Entrepreneurial Competence	MSME Performance	Financial Literacy
MP1	0.513	0.670	0.789	0.596
MP3	0.551	0.660	0.879	0.666
MP4	0.547	0.647	0.857	0.581
FL1	0.597	0.684	0.668	0.868
FL2	0.550	0.634	0.594	0.823
FL4	0.378	0.525	0.553	0.802

Source: SmartPLS 4 (Primary Data), 2025

Table 6 | Dicriminant Validity (HTMT)

	Entrepreneurial Competence	Financial Bootstrapping	Financial Literacy	MSME Performance
Entrepreneurial Competence (X2)				
Financial Bootstrapping (X1)	0.876			
Financial Literacy (Z)	0.902	0.847		
MSME Performance (Y)	0.944	0.871	0.925	

Source: SmartPLS 4 (Primary Data), 2025

The HTMT assessment indicates that most construct pairs demonstrate acceptable levels of discriminant validity. Following the refinement of the measurement model through the removal of indicators EC5 and MP2, all HTMT values decreased substantially compared to the initial model and remained below the more liberal threshold of 0.95 suggested by Hair et al. (2019). Although several construct pairs, particularly Entrepreneurial Competence Financial Literacy (0.902), Entrepreneurial Competence MSME Performance (0.944), and Financial Literacy MSME Performance (0.925), slightly exceeded the stricter threshold of 0.90, these values were considered acceptable because of the conceptual relatedness among the constructs and the satisfactory cross-loading results. Thus, the measurement model achieved adequate discriminant validity

4.1.2.3 Reliability Test Results

The reliability of each latent variable was evaluated using Cronbach's alpha and composite reliability values. According to Ghozali (2015), a construct has good reliability if the Cronbach's alpha value is above 0.60 and the composite reliability is above 0.70. These results were obtained in this study as seen in Table 6 which all variables obtained a Cronbach's alpha value of ≥ 0.60 and composite reliability ≥ 0.70 . What these results show is that each one of the constructs has good reliability.

Table 7 | Reliability (Cronbach's Alpha dan Composite Reliability)

	Cronbach's Alpha	Composite Reliability (rho_c)
Financial Bootstrapping (X1)	0.669	0.819
Entrepreneurial Competence (X2)	0.863	0.901
MSME Performance (Y)	0.795	0.880
Financial Literacy (Z)	0.777	0.870

Source: SmartPLS 4 (Primary Data), 2025

4.1.3. Structural Model Test (Inner Model)

4.1.3.1 Results of the Determination Coefficient Test (R Square)

R-square (R^2) provides an assessment of how well the model and outcome variables explain variability in the data. According to Hair et al. (2019), the R^2 values of 0.75, 0.50, and 0.25 reflect substantial, moderate, and weak power for explanation respectively. Also shown in table 7 it appears that Financial Bootstrapping, Entrepreneurial Competence and Financial Literacy explains the variance of MSME Performance by 67.9% with an Adjusted R^2 value of 0.664. This outcome

suggests an explanation of the variance ranging from moderate to low and that the remaining 33.6 % is accounted for by factors outside of the model.

Table 8 | Koefisien Determinasi (R-Square)

	R-Square	R-Square Adjusted
MSME Performance (Y)	0.679	0.664

Source: SmartPLS 4 (Primary Data), 2025

4.1.3.2 Effect Size Test Results (F Square)

The results of the f-square (f^2) test indicate the effect size of each predictor variable on the endogenous variable, thereby demonstrating the extent to which a predictor contributes to the explained variance of the model. According to Cohen (2013), an F-square value of 0.02 means weak, 0.15 is sufficient, and 0.35 is strong. The test results show that Entrepreneurial Competence is the most influential factor in improving MSME Performance, followed by Financial Bootstrapping and Financial Literacy. The details are explained in the table below;

Table 9 | Effect Size (F Square)

	MSME Performance	Information
Financial Bootstrapping (X1)	0.017	Weak
Entrepreneurial Competence (X2)	0.182	Sufficient
MSME Performance (Y)	-	-
Financial Literacy (Z)	0.119	Weak
Financial Bootstrapping x Financial Literacy (X1 x Z)	0.016	Weak
Entrepreneurial Competence x Financial Literacy (X2 x Z)	0.021	Weak

Source: SmartPLS 4 (Primary Data), 2025

4.1.3.3 Q Square Test Results

The Q-square (Q^2) test, conducted using the blindfolding procedure, was employed to assess the predictive relevance of the structural model. According to Ghazali (2015), Q^2 values of 0.02, 0.15, and 0.35 indicate weak, moderate, and strong predictive relevance, respectively. The Q^2 for MSME Performance is 0.60, such that the model has a strong predictive relevance.

Table 10 | Q Square

	Q-Square
MSME Performance	0.60

Source: SmartPLS 4 (Primary Data), 2025

4.1.3.4 Goodness of Fit (GoF) Results

Model fit was assessed using the Standardized Root Mean Square Residual (SRMR). According to Ghazali (2015), an SRMR value below 0.10 indicates an acceptable model fit. The results show SRMR values of 0.080 for the estimated model and 0.081 for the saturated model, indicating that the research model demonstrates a good fit to the data.

Table 11 | Goodness of Fit (GoF)

	Saturated model	Estimated model
SRMR	0.081	0.080

Source: SmartPLS 4 (Primary Data), 2025

4.1.3.5 Hypothesis Test Results

The hypothesis testing procedure was conducted using the bootstrapping method. The proposed hypotheses were evaluated by comparing the t-statistic values with the critical t-value and examining the corresponding p-values. In this study, the t-table value was obtained based on the degree of freedom (df) of 2 (number of samples minus two; 110 - 2) and a significance level of 0.05 for a two-tailed test, thus, in this study, the calculated t-table value is 1.982. When t-statistic troubled

below critical t-value and p value are greater than 0.05, then hypothesis is rejected. On the other hand, hypothesis is accepted if t statistic > critical t-statistic and p-value < 0.05. The details are explained in the table below;

Table 12 | Uji Hipotesis (Path Coefficient)

	Original sample (O)	Sample mean (M)	Standard dev(STDEV)	T statistics (O/STDEV)	P values	Result
Financial Bootstrapping (X1) -> MSME Performance (Y)	0.109	0.144	0.092	1.180	0.119	Not Supported
Entrepreneurial Competence (X2)-> MSME Performance (Y)	0.437	0.415	0.106	4.130	0.000	Supported
Financial Literacy (Z) -> MSME Performance (Y)	0.309	0.309	0.080	3.875	0.000	Supported
Financial Bootstrapping (X1) x Financial Literacy (Z) -> MSME Performance (Y)	0.117	0.116	0.130	0.899	0.184	Not Supported
Entrepreneurial Competence (X2) x Financial Literacy (Z) -> MSME Performance (Y)	-0.125	-0.126	0.133	0.941	0.173	Not Supported

Source: SmartPLS 4 (Primary Data), 2025

Table 11, presented that Financial Bootstrapping (X1) has no significant effect on MSME Performance (Y), with a t-statistic value equal to 1.180, which is less than the critical t-value (t critical), at 1.982 and p-value = 0.119, which is greater than $\alpha = 0.05$ thus H0 is accepted and H2 is rejected. Meanwhile Entrepreneurial Competence (X2) colour to MSME Performance(Y) have a very strong effect with t-count value 4,130 > critical t-value 1,982 and p-value t-table 1.982, p-value = 0.000 < 0.05. In addition, the interaction effect between Financial Bootstrapping (X1) and Financial Literacy (Z) on MSME Performance (Y) is not significant. The t-table value of 1.982 was higher than the t-statistics value of 0.899, and the p-value of 0.184 are greater than alpha (0.05). Then, the interacting effect between Entrepreneurial Competence (X2) and Financial Literacy (Z) on MSME Performance (Y). Significance is indicated by a t-statistic value of 0.941 being less than the critical value of t (1.982) and p-value (0.173), which is higher than 0.05. While the path coefficient is negative also (-0.125), the moderating effect is not statistically significant.

4.2 DISCUSSION

4.2.1. The Effect of Financial Bootstrapping on MSME Performance

The results of hypothesis testing of the bootstrapping method indicates that Financial bootstrapping (X1) has a positive but insignificant effect on MSME Performance (Y), with a path coefficient = 0.109, t-statistic = 1.180 < 1.982, and p-value of 0.119 > 0.05. So we accept the null hypothesis (H0) and reject the first hypothesis (H1). These results show that bootstrapping measures weaker payment delays, lower investment amount, common facilities use and informal funds could not enhance online MSME performance in a significant manner. This condition may reflect the characteristics of online MSMEs in Sorong City, which generally require more stable financial resources to support digital technology, online marketing, and logistics management. In addition, the effectiveness of financial bootstrapping is highly dependent on the financial literacy and managerial capabilities of MSME actors. Limited financial management capabilities may reduce the effectiveness of internal financing strategies and create operational constraints that affect long-term business performance. The results of this study different from those of Rita & Nastiti, (2024), but are in line with Winborg & Landström (2001) and Grichnik et al. (2014) who stated that the effectiveness of financial bootstrapping depends on the ability to manage internal resources, as well the RBV theory by Barney (1991), which emphasizes the importance of resource management to create competitive advantage. This

research is also supported by Ebben & Johnson, (2006), Fatoki (2014) and Auken (2005), who explained that financial bootstrapping primarily supports short-term business survival rather than long-term performance improvement.

4.2.2. The Effect of Entrepreneurial Competence on MSME Performance

In addition, the effectiveness of financial bootstrapping is highly dependent on the financial literacy and managerial capabilities of MSME actors. Limited financial management capabilities may reduce the effectiveness of internal financing strategies and create operational constraints that affect long-term business performance. This shows that the higher the entrepreneurial competence of MSME actors, the higher the business performance because business actors are better able to innovate, make decisions, manage risks, and optimally utilize market opportunities. The significant effect of entrepreneurial competence may reflect the characteristics of online MSMEs in Sorong, which are predominantly social-media-based micro businesses managed by young entrepreneurs. With these types of digital platforms, effective communication skills, product innovation, and the ability to react to ever-changing online buyer trends becomes even more critical than strategic financing. The prevalence of digital platforms, on the other hand, demands business actors to always align with consumers' preferences, improve online marketing skills and customer engagement which also makes entrepreneurial competence an important internal resource for achieving competitive advantage. The results of this study align with Ahmad et al. (2022) and Fazal et al. (2022), who stated that entrepreneurial competence has a positive effect on business efficiency and sustainability. This is supported by Lumpkin & Dess (1996), who emphasize that innovation, proactivity, and the courage to take risks play an important role in business success. In addition, Mardhiah et al. (2025) showed that entrepreneurial competence can be improved through training and experience.

4.2.3. The Effect of Financial Literacy on MSME Performance

The results of the analysis prove that Z: Financial Literacy has a positive and significant effect on Y: MSME Performance (path coefficient = 0.309) The hypothesis is supported by t-statistics of 3.875 greater than the critical t-value of 1.982 and p-value of 0.000 less than 0.05. Therefore, the null hypothesis (H0) is rejected; and third hypothesis (H3) is accepted. This indicates that the higher the level of financial literacy of MSMEs will lead to better business performance as MSMEs can manage their cash flow, plan a budget, make investment decisions and minimize risks in finances. The results of this study are in line with Lusardi & Mitchell (2013) and Fatoki (2014), who stated that financial literacy plays an important role in business sustainability and decision making. In addition, Wise (2013) and Enqvist et al. (2014) The study found that financial literacy helps business actors avoid financial management errors and improve working capital efficiency, highlighting its importance in enhancing the performance and sustainability of MSMEs.

4.2.4. The Role of Financial Literacy in Moderating the Relationship between Financial Bootstrapping and MSME Performance

The result indicates that the interaction between Financial Bootstrapping (X1) and Financial Literacy (Z) has a positive but not significant effect on MSME Performance (Y), with a Path Coefficient of 0.117. A t-statistic of 0.899 is below the critical t-value of 1.982, while a p-value is equal to 0.184 (greater than 0.05). Consequently, fourth hypothesis (H4) is rejected and the null hypothesis (H0) is accepted. This indicates that Financial Literacy does not significantly moderate the relationship between Financial Bootstrapping and MSME Performance among online MSMEs in Sorong City.

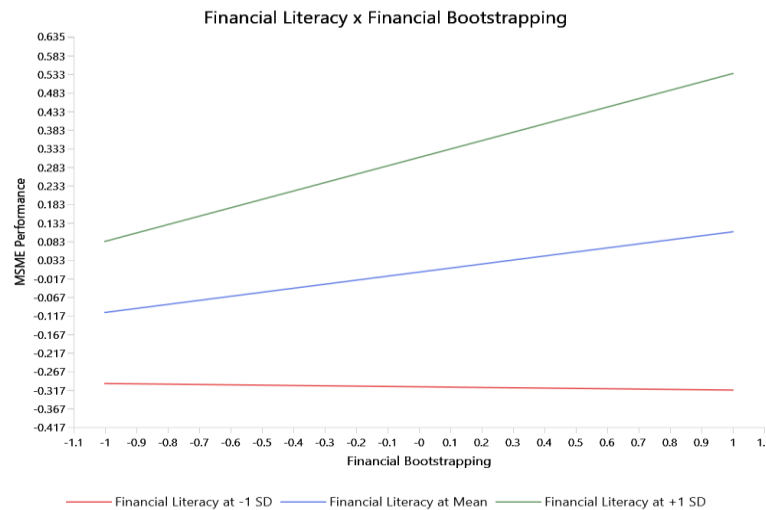


Figure 2. Simple Slope Interaction between Financial Bootstrapping and Financial Literacy on MSME Performance

Figure 2 presents the simple slope interaction between Financial Bootstrapping and Financial Literacy in relation to MSME Performance. Although the moderation effect is statistically insignificant, the interaction plot provides additional insight into the pattern of the relationship. The graph shows that when Financial Literacy is at a high level (+1 SD), the relationship between Financial Bootstrapping and MSME Performance tends to be positive. At the mean level of Financial Literacy, the relationship remains positive but relatively weaker. Meanwhile, at a low level of Financial Literacy (-1 SD), the slope becomes slightly negative, indicating that MSMEs with limited financial knowledge may gain fewer benefits from financial bootstrapping practices.

One possible explanation for the insignificant moderating effect is that financial bootstrapping practices are generally operational and experience-based in nature. MSME owners may rely on practical business experience, informal financial management, and day-to-day resource allocation rather than formal financial knowledge when implementing bootstrapping strategies. As a result, the effectiveness of financial bootstrapping may depend more on the entrepreneur's ability to manage available resources than on the level of financial literacy possessed by the business owner. This condition may be particularly relevant for online MSMEs in Sorong City, where business decisions are often driven by practical experience and resource constraints rather than formal financial planning.

Interestingly, although Financial Literacy has a significant direct effect on MSME Performance, its interaction with Financial Bootstrapping is insignificant. This suggests that Financial Literacy contributes to business performance independently rather than by strengthening the effectiveness of financial bootstrapping strategies. This finding is consistent with Wira Dika et al. (2021), who found that financial literacy does not always strengthen the relationship between financial bootstrapping and MSME performance in Indonesian MSMEs. This indicates that the effectiveness of bootstrapping strategies may depend more on the ability of business owners to manage limited resources and apply practical financial management rather than solely on their financial knowledge. This finding differs from the expectations derived from RBV theory, which positions financial literacy as a strategic resource capable of enhancing the effectiveness of organizational capabilities (Barney, 1991). Nevertheless, the result suggests that the benefits of financial bootstrapping may be realized independently of financial literacy levels. While previous studies by Lusardi & Mitchell (2013), Fatoki (2014), Wise (2013), and Enqvist et al. (2014) emphasize the importance of financial literacy in improving financial decision-making and business sustainability, the present study indicates that such benefits do not necessarily translate into a stronger relationship between financial bootstrapping and MSME performance in the context of online MSMEs in Sorong City.

4.2.5. The Role of Financial Literacy in Moderating the Relationship between Entrepreneurial Competence and MSME Performance

The test results demonstrate that the interaction of Entrepreneurial Competence (X2) on Financial Literacy (Z) have negative but not significant effect towards MSME Performance (Y), which has a path coefficient = -0,125. H_0 : t-statistic value $0.941 > 0.05$. Thus Financial Literacy has no significant moderation of the relationship between Entrepreneurial Competence and MSME Performance. Therefore, the fifth hypothesis (H5) is rejected while accepting the null hypothesis (H_0).

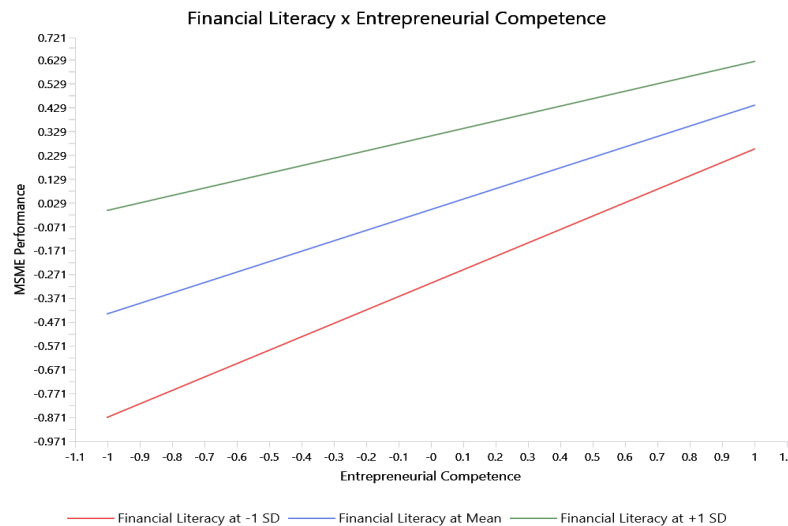


Figure 3. Simple Slope Interaction between Entrepreneurial Competence and Financial Literacy on MSME Performance

The simple slope interaction of Entrepreneurial Competence, Financial Literacy with MSME Performance is shown in Figure 3. Interaction plot indicates that movement of Entrepreneurial Competence has a positive relationship not only with MSME Performance but also at every level of Financial Literacy as shown in [Figure 1]. Without moderating Financial Literacy, MSME Performance is likely to increase along with Entrepreneurial Competence at low (-1 SD), mean and high (+1 SD) level of Financial Literacy. Moreover, MSMEs with more Financial Literacy still have significantly higher expected performance than the other. However, the differences among the slopes are relatively small, indicating that Financial Literacy does not substantially alter the strength of the relationship between Entrepreneurial Competence and MSME Performance.

One possible explanation for the insignificant moderating effect is that Entrepreneurial Competence directly contributes to business performance through managerial capability, innovation, market understanding, and business decision-making. These competencies may remain beneficial regardless of the entrepreneur's level of Financial Literacy. As a result, the contribution of Entrepreneurial Competence to MSME Performance may operate independently rather than being contingent upon Financial Literacy. This finding is supported by Prastyatini and Irawan (2026), who found that entrepreneurial resilience did not significantly moderate the relationship between entrepreneurial competence and sustainable MSME performance. This indicates that entrepreneurial competence may contribute to business performance independently, without necessarily depending on the presence of certain moderating factors. This condition may be particularly relevant to online MSMEs in Sorong City, where business owners often rely on practical experience, informal learning processes, and direct market interactions rather than formal financial knowledge when managing and developing their businesses.

This finding differs from the expectation derived from the Resource-Based View (RBV), which suggests that strategic resources may enhance the effectiveness of other organizational capabilities (Barney, 1991). Nevertheless, the result indicates that Entrepreneurial Competence remains an important determinant of MSME Performance regardless of the entrepreneur's level of Financial Literacy. From a behavioral finance perspective, MSME actors with higher Financial Literacy may evaluate business risks more carefully and avoid excessively aggressive business strategies. Consequently, Entrepreneurial Competence may be utilized in a more controlled and risk-aware manner, which could explain the negative direction of the interaction coefficient. However, this interpretation remains tentative because the interaction effect did not reach statistical significance.

Although previous studies have shown that Financial Literacy influences entrepreneurial decision-making and financial management practices (Fatoki, 2014; Enqvist et al., 2014), the present study suggests that these benefits do not necessarily translate into a significant moderating effect in the context of online MSMEs in Sorong City.

5. CONCLUSION

This study concludes that the performance of online MSMEs in Sorong City is primarily influenced by Entrepreneurial Competence and Financial Literacy rather than Financial Bootstrapping. Financial bootstrapping has a positive but insignificant effect on MSME performance, indicating that internal financing strategies alone are insufficient to drive business growth. In contrast, entrepreneurial competence and financial literacy have a positive and significant effect on MSME performance. However, financial literacy does not significantly moderate the relationship between financial bootstrapping or entrepreneurial competence and MSME performance. These findings highlight the importance of strengthening entrepreneurial skills and financial capabilities, alongside appropriate financing strategies, to support the sustainable development of online MSMEs.

6. LIMITATION AND IMPLICATION

Although this research was conducted systematically, several limitations should be considered. First, the scope of this study was limited to online MSMEs in Sorong City; therefore, the findings may not be fully generalizable to other regions with different economic and business conditions. Furthermore, limitations in the respondent data collection process mean that researchers have difficulty reaching business owners directly, which has the potential to affect the depth and accuracy of the information obtained. This study considers only Financial Literacy as a moderating variable, while other factors that may influence MSME Performance, such as business digitalization, government support, and the business environment, were not examined in greater depth.

This study is expected to contribute to the business literature by enriching the development of digital-based MSME strategies in regions facing economic development challenges. MSMEs are expected to participate in training or educational programs on financial management to better understand the right strategies for managing business capital. With a better understanding, entrepreneurs can optimize the use of financial bootstrapping to avoid risks. The government and financial institutions can organize training that focuses on financial management, risk management, and appropriate investment strategies for MSMEs. Future researchers are encouraged to explore other factors, such as business digitalization, product innovation, and access to business networks, as additional moderating variables. They may also expand the regional scope and apply alternative research methods. Furthermore, future studies should develop more comprehensive research instruments, particularly for indicators related to Financial Bootstrapping and Financial Literacy.

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