

THE EFFECT OF FINANCIAL KNOWLEDGE AND SKILLS ON MICRO BUSINESS PERFORMANCE MODERATED BY DIGITAL SECURITY AWARENESS

(A Study of Micro Food and Beverage Enterprises in Sidoarjo Regency)

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Abstract

This study aims to examine and analyze the effects of financial knowledge and skills on the performance of micro enterprises in the food and beverage industry in Sidoarjo Regency, with digital security awareness serving as a moderating variable in these relationships. Based on the Resource-Based View (RBV) framework, this study conceptualizes internal capabilities and digital security awareness as strategic resources that support business performance. The research employed a quantitative causal approach involving owners of micro food and beverage enterprises. The sample was determined using the Slovin formula with a 10% margin of error through a simple random sampling technique, resulting in 78 respondents. Data were collected using a structured questionnaire based on a five-point Likert scale. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software. The findings indicate that financial knowledge has a positive and significant direct effect on micro business performance. Entrepreneurial skills also have a positive and significant effect on micro business performance. Likewise, digital security awareness positively and significantly influences micro business performance. Furthermore, digital security awareness significantly moderates and strengthens the relationship between financial knowledge and micro business performance, as well as the relationship between entrepreneurial skills and micro business performance. The coefficient of determination indicates that financial knowledge, skills, and digital security awareness collectively explain a substantial proportion of the variance in micro business performance.

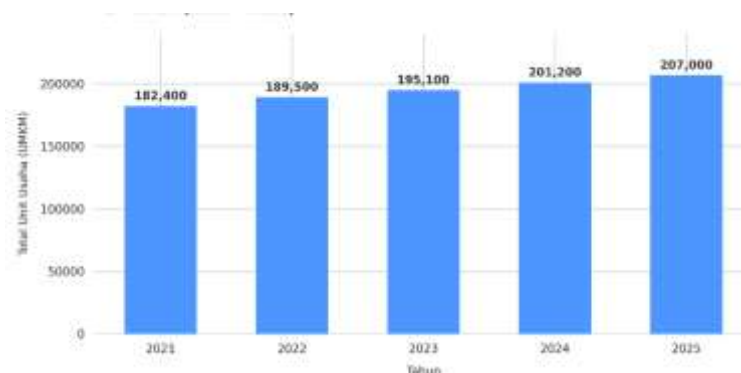
Keywords: Financial Knowledge, Skills, Digital Security Awareness, Micro Business Performance.

INTRODUCTION

Micro enterprises constitute one of the primary pillars of the economy, as they help maintain the purchasing power of low-income communities, generate employment opportunities, and demonstrate strong adaptability during periods of economic crisis. Consequently, strengthening governance has become a crucial factor in promoting regional economic resilience and independence (Bowo, 2023; Wulandari & Setiawan, 2025). At the same time, the digitalization of micro enterprises has continued to expand, with technology adoption reaching approximately 65%. However, this development has been accompanied by an increasing risk of cybercrime, making transaction data protection a major challenge in the digital transformation of Micro, Small, and Medium

Enterprises (MSMEs) (Asisa, 2022; Pratama & Wardani, 2024). In Sidoarjo Regency, the number of MSMEs increased consistently from 182,400 units in 2021 to 207,000 units in 2025, representing a growth of 13.49% over the five-year period, according to data from the Sidoarjo Regency Office of Cooperatives and MSMEs. This growth reflects the effectiveness of empowerment programs, digitalization initiatives, and improved access to financing, reinforcing Sidoarjo's position as one of the major drivers of the people's economy in East Java.

Figure 1. Growth Trend of the Total Number of Micro Enterprises in Sidoarjo Regency, 2019–2023



Source: Office of Cooperatives and Micro Enterprises of Sidoarjo Regency (2025)

The primary factors underlying business performance challenges are presumed to stem from inadequate financial knowledge and limited technical skills, both of which are essential prerequisites for making sound and strategic business decisions. From a theoretical perspective, adequate financial knowledge has been shown to improve the efficiency of operational budget allocation while minimizing overhead costs (Pratama & Wardani, 2024). Meanwhile, technical skills related to product taste standardization, ingredient selection, and food packaging play a critical role in attracting local consumer preferences. The positive relationship between financial knowledge and micro business performance enables entrepreneurs to identify investment opportunities for improving production facilities. Similarly, technical skills contribute positively to business performance by facilitating faster product adaptation to continuously evolving market demands.

Theoretically, this competency-oriented perspective aligns with the Resource-Based View (RBV), which argues that competitive advantage and sustainable business performance are primarily determined by unique and difficult-to-imitate internal organizational capabilities (Bowo, 2023). According to this theory, financial knowledge and practical skills should not merely be regarded as operational routines but rather as valuable intangible assets that serve as key drivers of efficiency and profitability in micro enterprises (Pratama & Wardani, 2024).

Accordingly, the novelty of this study lies in incorporating digital security awareness as a moderating variable in the relationship between entrepreneurial capabilities and business performance. Most previous studies have focused primarily on the general impact of technology adoption without considering the security of

transaction data as a critical factor (Sari & Rahayu, 2025). This quantitative study specifically investigates the extent to which cybersecurity awareness can strengthen the financial resilience and business performance of micro enterprises. The findings are expected to provide practical contributions by serving as a reference for policymakers in developing secure digitalization strategies for micro food and beverage enterprises in Sidoarjo Regency. Through the development of this extended theoretical model, the empirical findings are expected to offer robust evidence that contributes to the advancement of management science.

METHOD

This study employed a quantitative approach with a causal research design to examine the effects of financial knowledge and skills on micro business performance, with digital security awareness serving as a moderating variable among micro food and beverage enterprises in Sidoarjo Regency. A quantitative approach was selected because it enables the testing of relationships among variables through statistical analysis based on predefined hypotheses (Sugiyono, 2022). The research design was systematically developed to guide the entire research process, from problem formulation to the identification of research variables and indicators (Reken et al., 2024). The study was conducted between May 18 and June 25, 2026, with micro food and beverage enterprises in Sidoarjo Regency serving as the research object (Sugiyono, 2022; Reken et al., 2024).

The study population consisted of 350 micro food and beverage business owners based on data from the Office of Cooperatives and Micro Enterprises of Sidoarjo Regency (2025). A sample of 78 respondents was determined using the Slovin formula with a 10% margin of error through a simple random sampling technique (Sugiyono, 2022). The study utilized both primary and secondary data. Primary data were collected through structured questionnaires, while secondary data were obtained from the Office of Cooperatives and Micro Enterprises of Sidoarjo Regency, academic journals, and other scientific publications. The variables examined included financial knowledge, financial/entrepreneurial skills, digital security awareness as the moderating variable, and micro business performance as the dependent variable. All constructs were measured using indicators adapted from previous studies. Data collection was conducted through Likert-scale questionnaires, observations, and documentation to obtain comprehensive information regarding the business conditions of the respondents (Sugiyono, 2022; Romdona et al., 2025).

The research instrument was evaluated using convergent validity, discriminant validity, and reliability tests based on Composite Reliability and Cronbach's Alpha, with validity and reliability criteria following Sihombing et al. (2024). Data were analyzed using SmartPLS software through the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, which was selected because it is appropriate for relatively small sample sizes and does not require multivariate normality assumptions. Model evaluation consisted of assessing the outer model to examine the validity and reliability of the measurement instruments and the inner model through the coefficient of determination (R^2), path coefficients, t-statistics, and p-values. Hypothesis testing was performed using the bootstrapping procedure, where hypotheses were accepted

when the t-statistic exceeded 1.64 and the p-value was below 0.05 (Sugiyono, 2022; Sihombing et al., 2024).

RESULTS AND DISCUSSION

Data Analysis

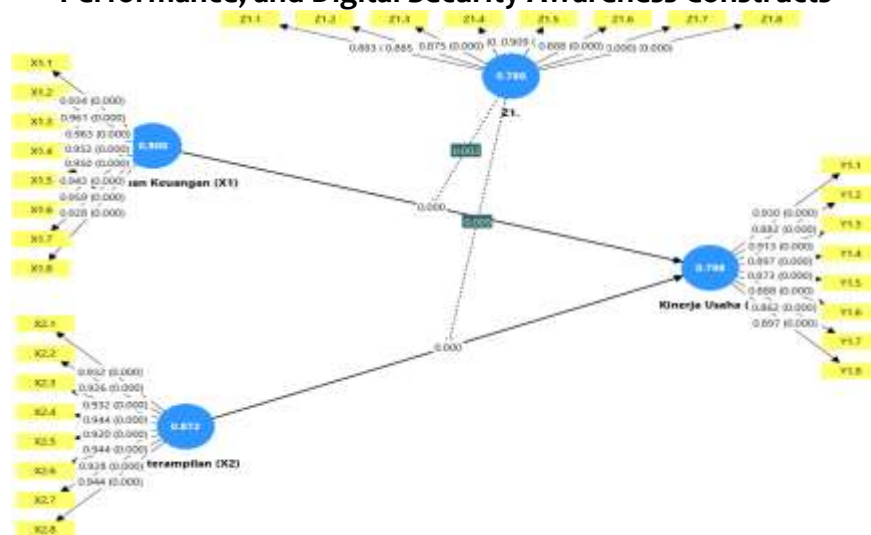
The first stage of the analysis involved testing the validity and reliability of the research instruments, followed by hypothesis testing. All analyses were conducted using SmartPLS 4 for Windows.

The research model evaluation consisted of two stages: the outer model and the inner model. The outer model focused on assessing the validity and reliability of the indicators used to measure the latent variables through convergent validity, discriminant validity, and construct reliability. Meanwhile, the inner model examined the structural relationships among the latent variables by evaluating the model's explanatory power and the significance of the hypothesized relationships using indicators such as the coefficient of determination (R^2), path coefficients, and statistical significance.

1. Outer Model

The outer model focuses on the relationship between the latent variables and their respective indicators. This stage aims to ensure that the measurement instruments used to represent each latent construct demonstrate adequate levels of validity and reliability. The outer model evaluation includes three primary assessments: convergent validity, discriminant validity, and construct reliability.

Figure 2. Outer Loading Values of the Financial Knowledge, Skills, Micro Business Performance, and Digital Security Awareness Constructs



Source: SmartPLS 4 Software Output, 2026

a. Convergent Validity

Convergent validity was assessed using two evaluation criteria: the factor loading (outer loading) values and the Average Variance Extracted (AVE).

1. Loading Factor

The estimated model output was evaluated based on the correlation between each indicator (measurement item) and its corresponding latent construct. An indicator was considered valid if it exhibited a loading factor greater than **0.70**. Indicators that

failed to meet this threshold would be excluded from the model. The results of the first-stage convergent validity test are presented in Table 1:

Table 1. Outer Loading Results for Convergent Validity Assessment

	Financial Knowledge (X ₁)	Skills (X ₂)	Business Performance (Y)	Digital Security (Z)	Remarks
X1.1	0,934				Valid
X1.2	0,961				Valid
X1.3	0,963				Valid
X1.4	0,952				Valid
X1.5	0,950				Valid
X1.6	0,943				Valid
X1.7	0,959				Valid
X1.8	0,928				Valid
X2.1		0,932			Valid
X2.2		0,926			Valid
X2.3		0,932			Valid
X2.4		0,944			Valid
X2.5		0,920			Valid
X2.6		0,944			Valid
X2.7		0,928			Valid
X2.8		0,944			Valid
Y1.1			0,930		Valid
Y1.2			0,882		Valid
Y1.3			0,913		Valid
Y1.4			0,897		Valid
Y1.5			0,873		Valid
Y1.6			0,888		Valid
Y1.7			0,862		Valid
Y1.8			0,897		Valid
Z1.1				0,883	Valid
Z1.2				0,885	Valid
Z1.3				0,875	Valid
Z1.4				0,896	Valid
Z1.5				0,909	Valid
Z1.6				0,888	Valid
Z1.7				0,861	Valid
Z1.8				0,905	Valid

Source: Processed using SmartPLS, 2026

Convergent validity was evaluated to determine the ability of each indicator to measure its respective construct. This assessment was performed by examining the outer loading value of each indicator. An indicator is considered to satisfy convergent

validity when its outer loading exceeds 0.70. Higher outer loading values indicate a stronger ability of the indicator to represent the latent construct.

The results demonstrate that all indicators measuring Financial Knowledge (X1), Skills (X2), Business Performance (Y), and Digital Security (Z) have outer loading values greater than 0.70, indicating that all indicators are valid and appropriate for further analysis. The outer loading values for the Financial Knowledge construct ranged from 0.928 to 0.963, while those for Skills ranged from 0.920 to 0.944. The Business Performance construct showed loadings ranging from 0.862 to 0.930, whereas Digital Security exhibited values between 0.861 and 0.909.

The highest outer loading value was observed for indicator X1.3 (0.963), while the lowest was recorded for indicator Z1.7 (0.861). Nevertheless, all indicators exceeded the recommended threshold of 0.70, indicating strong correlations with their respective constructs and demonstrating their adequacy in measuring the latent variables.

Therefore, it can be concluded that all indicators satisfy the requirements for convergent validity. Consequently, all measurement items were retained for subsequent analyses, including discriminant validity, construct reliability, and structural model (inner model) evaluation.

2. Average Variance Extracted (AVE)

The Average Variance Extracted (AVE) values are presented in Table 2. A construct is considered to have satisfactory convergent validity when its AVE value exceeds 0.50.

Table 2. AVE Results for Convergent Validity Assessment

Construct	Average Variance Extracted (AVE)	Remarks
Digital Security (Z)	0.788	Valid
Skills (X2)	0.872	Valid
Business Performance (Y)	0.798	Valid
Financial Knowledge (X1)	0.900	Valid

Source: Processed by the authors, 2026

The results indicate that all constructs achieved AVE values above the recommended threshold of 0.50. Specifically, Financial Knowledge (X1) obtained an AVE of 0.900, Skills (X2) recorded 0.872, Business Performance (Y) achieved 0.798, and Digital Security (Z) obtained 0.788. These findings indicate that each construct explains more than 50% of the variance in its corresponding indicators.

The highest AVE value was observed for Financial Knowledge (X1), indicating that its indicators provide an excellent representation of the underlying construct. Although Digital Security (Z) exhibited the lowest AVE value (0.788), this value remains well above the recommended minimum threshold, confirming that the construct also demonstrates satisfactory convergent validity.

b. Discriminant Validity

Discriminant validity was assessed to ensure that each construct in the measurement model represents a distinct concept and does not overlap with other constructs. In other words, discriminant validity evaluates the extent to which theoretically different constructs can be empirically distinguished. This assessment may

be conducted using one of three criteria: cross loadings, latent variable correlations, and the Fornell–Larcker criterion.

1. Cross Loading

An indicator is considered to possess adequate discriminant validity when its loading on its intended construct is higher than its loadings on all other constructs. The cross-loading results are presented in Table 3:

Table 3. Cross-Loading Results for Discriminant Validity Assessment

	Financial Knowledge (X1)	Skills (X2)	Business Performance (Y)	Digital Security (Z)	Remarks
X1.1	0,934	-0,002	0,703	0,692	Valid
X1.2	0,961	-0,012	0,691	0,661	Valid
X1.3	0,963	-0,012	0,725	0,706	Valid
X1.4	0,952	-0,062	0,650	0,660	Valid
X1.5	0,950	-0,038	0,726	0,666	Valid
X1.6	0,943	0,040	0,699	0,673	Valid
X1.7	0,959	-0,020	0,728	0,712	Valid
X1.8	0,928	-0,032	0,677	0,667	Valid
X2.1	-0,013	0,932	0,462	0,436	Valid
X2.2	-0,073	0,926	0,370	0,379	Valid
X2.3	-0,030	0,932	0,424	0,374	Valid
X2.4	-0,045	0,944	0,449	0,419	Valid
X2.5	-0,021	0,920	0,406	0,395	Valid
X2.6	-0,049	0,944	0,405	0,410	Valid
X2.7	0,102	0,928	0,483	0,479	Valid
X2.8	-0,028	0,944	0,400	0,409	Valid
Y1.1	0,650	0,394	0,930	0,806	Valid
Y1.2	0,663	0,461	0,882	0,784	Valid
Y1.3	0,722	0,401	0,913	0,784	Valid
Y1.4	0,645	0,347	0,897	0,794	Valid
Y1.5	0,580	0,386	0,873	0,767	Valid
Y1.6	0,621	0,443	0,888	0,773	Valid
Y1.7	0,683	0,418	0,862	0,789	Valid
Y1.8	0,701	0,420	0,897	0,837	Valid
Z1.1	0,660	0,373	0,783	0,883	Valid
Z1.2	0,662	0,453	0,748	0,885	Valid
Z1.3	0,691	0,354	0,778	0,875	Valid
Z1.4	0,618	0,370	0,808	0,896	Valid
Z1.5	0,627	0,373	0,824	0,909	Valid
Z1.6	0,582	0,449	0,789	0,888	Valid
Z1.7	0,608	0,367	0,724	0,861	Valid
Z1.8	0,645	0,417	0,838	0,905	Valid

Source: Processed using SmartPLS, 2026.

Based on the test results, all indicators of Financial Knowledge (X1), Skills (X2), Business Performance (Y), and Digital Security (Z) exhibit the highest loading values on their respective constructs. The loading values for the Financial Knowledge (X1) indicators range from 0.928 to 0.963, Skills (X2) from 0.920 to 0.944, Business Performance (Y) from 0.862 to 0.930, and Digital Security (Z) from 0.861 to 0.909. All of these values are higher than the corresponding cross-loadings on other constructs, indicating that each indicator effectively discriminates its intended construct from the others.

Therefore, the cross-loading assessment confirms that all indicators satisfy the requirements for discriminant validity. These findings demonstrate that each indicator adequately represents its respective construct and is suitable for subsequent analyses.

2. Latent Variable Correlation and the Fornell–Larcker Criterion

Latent variable correlation is one of the procedures used to assess discriminant validity by examining the relationships among constructs within the measurement model. High correlations between constructs may indicate potential issues related to discriminant validity or multicollinearity. The results of the Fornell–Larcker criterion are presented in Table 4:

Table 4. Fornell–Larcker Criterion Results

	Digital Security (Z)	Skills (X2)	Business Performance (Y)	Financial Knowledge (X1)
Digital Security (Z)	0,888			
Skills (X2)	0,444	0,934		
Business Performance (Y)	0,887	0,458	0,893	
Financial Knowledge (X1)	0,717	-0,018	0,739	0,949

Source: Processed using SmartPLS, 2026

The results indicate that the Skills (X2) construct has a square root of AVE (√AVE) value of 0.934, which is higher than its correlations with all other constructs. Similarly, Financial Knowledge (X1) has a √AVE value of 0.949, exceeding all of its inter-construct correlations. For Digital Security (Z), the √AVE value is 0.888, while its correlation with Business Performance (Y) is 0.887, indicating that the two values are very close. Likewise, Business Performance (Y) has a √AVE value of 0.893, only slightly higher than its correlation with Digital Security (Z) (0.887).

Overall, the Fornell–Larcker assessment demonstrates that discriminant validity has been achieved, as the √AVE value of each construct remains greater than its correlations with the other constructs. Although the difference between Digital Security (Z) and Business Performance (Y) is relatively small, both constructs remain empirically distinguishable within the proposed research model.

c Reliability Assessment

Construct reliability was evaluated using Cronbach's Alpha and Composite Reliability. These two measures assess the internal consistency of the indicators used to measure each construct.

Table 5. Reliability Test Results

Construct	Cronbach's Alpha	Composite Reliability	Remarks
Digital Security (Z)	0.962	0.967	Reliable
Skills (X ₂)	0.979	0.982	Reliable
Business Performance (Y)	0.964	0.969	Reliable
Financial Knowledge (X ₁)	0.984	0.986	Reliable

Source: Processed using SmartPLS, 2026.

The reliability analysis indicates that all constructs have Cronbach's Alpha and Composite Reliability values exceeding the recommended threshold of 0.70, confirming that all constructs satisfy the required reliability criteria. Financial Knowledge (X₁) demonstrates the highest level of reliability, with a Cronbach's Alpha of 0.984 and a Composite Reliability of 0.986. Meanwhile, Digital Security (Z) has the lowest Composite Reliability value (0.967), although it still falls within the excellent reliability category.

The consistently high reliability values across all constructs indicate that the indicators exhibit strong internal consistency in measuring the same underlying concept while minimizing measurement error. Accordingly, all research instruments are considered reliable and appropriate for structural model (inner model) evaluation and subsequent hypothesis testing.

2. Inner Model

In PLS-SEM, the inner model represents the structural relationships among the latent variables and is evaluated to determine the strength and significance of these relationships. The structural model assessment includes the coefficient of determination (R^2), effect size (f^2), Stone–Geisser's Q^2 predictive relevance, Goodness of Fit (GoF), and hypothesis testing.

a. R square

The R^2 value in PLS-SEM measures the extent to which the independent latent variables explain the variance of the dependent latent variable. It reflects the overall predictive power of the structural model. R^2 values range from 0 to 1, with higher values indicating greater explanatory capability. The results are presented in Table 6.

Table 6. Coefficient of Determination (R^2) Results

	R-square	R-square adjusted
Business Performance (Y)	0,873	0,864

Source: Processed using SmartPLS, 2026.

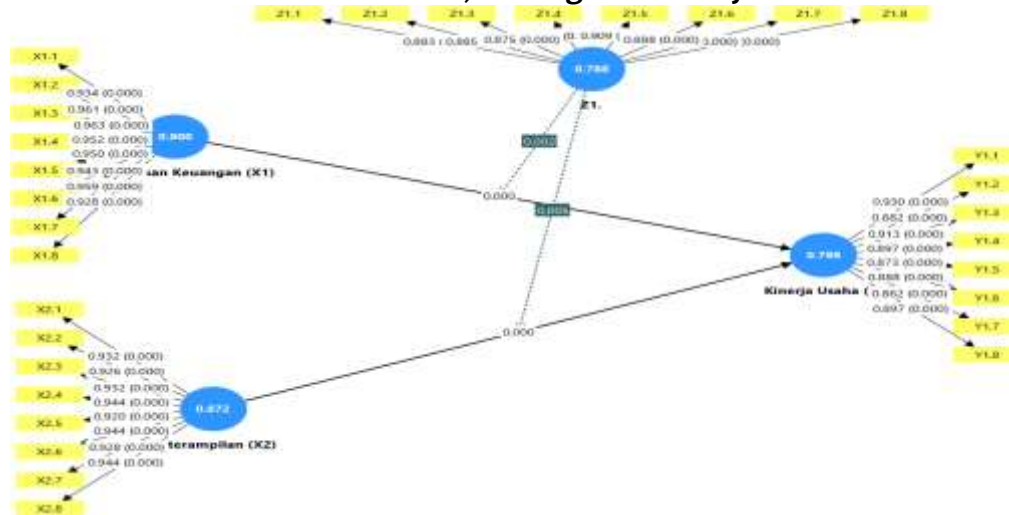
The results show that Business Performance (Y) has an R^2 value of 0.873 and an Adjusted R^2 value of 0.864. This indicates that 87.3% of the variance in business performance is explained by Financial Knowledge (X₁), Skills (X₂), and their interactions with Digital Security (Z) included in the research model. The remaining 12.7% of the variance is attributable to other factors outside the scope of this study.

Based on these findings, the structural model demonstrates strong predictive power, as the R^2 value exceeds the recommended benchmark of 0.75. Therefore, the independent variables included in this study provide substantial explanatory power in

predicting Business Performance (Y), indicating that the proposed structural model possesses a high level of explanatory capability.

b. Hypothesis Testing

Figure 3. Structural (Inner) Model of Financial Knowledge, Skills, Business Performance, and Digital Security



Source: Processed using SmartPLS, 2026.

Tabel 7. Path Coefficients

Structural Path	Original Sample (O)	t-Statistics	P-Values	Decision
Digital Security (Z) → Business Performance (Y)	0.526	6.213	0.000	Accepted
Digital Security (Z) × Skills (X2) → Business Performance (Y)	0.146	2.805	0.003	Accepted
Digital Security (Z) × Financial Knowledge (X1) → Business Performance (Y)	0.158	3.119	0.001	Accepted
Skills (X2) → Business Performance (Y)	0.228	4.196	0.000	Accepted
Financial Knowledge (X1) → Business Performance (Y)	0.317	4.137	0.000	Accepted

Source: Processed using SmartPLS, 2026

Based on the hypothesis testing results, all proposed hypotheses were supported. Financial Knowledge has a positive and significant effect on Business Performance ($\beta = 0.317$; $t = 4.137$; $p < 0.001$). Similarly, Skills positively and significantly influence Business Performance ($\beta = 0.228$; $t = 4.196$; $p < 0.001$). Digital Security also demonstrates a positive and significant direct effect on Business Performance, with the largest path coefficient among all direct relationships ($\beta = 0.526$; $t = 6.213$; $p < 0.001$), highlighting the critical role of digital security in enhancing business performance. Furthermore, Digital Security significantly moderates the relationship between Financial Knowledge and Business Performance ($\beta = 0.158$; $t = 3.119$; $p = 0.001$), indicating that stronger digital security awareness amplifies the positive effect of financial knowledge on business performance. In addition, Digital Security significantly strengthens the

relationship between Skills and Business Performance ($\beta = 0.146$; $t = 2.805$; $p = 0.003$), suggesting that entrepreneurial skills contribute more effectively to business performance when supported by a high level of digital security awareness.

DISCUSSION

1. The Effect of Financial Knowledge on Micro Business Performance

The empirical findings demonstrate that financial knowledge has a positive and significant direct effect on the performance of micro food and beverage enterprises in Sidoarjo Regency. This finding indicates that greater financial literacy and understanding among micro-enterprise owners lead to sustained improvements in business performance. Knowledge related to operational budgeting, daily expenditure control, and the separation of business capital from personal expenses forms a fundamental basis for maintaining operational efficiency. Furthermore, the ability to accurately calculate the cost of goods sold and maintain simple financial records helps minimize hidden costs and reduce the likelihood of financial losses.

From the perspective of the Resource-Based View (RBV), these findings reinforce the proposition that sustainable competitive advantage and long-term business performance depend on valuable and difficult-to-imitate internal resources. In the context of micro culinary enterprises, financial knowledge represents an important intangible asset that supports sound financial decision-making, optimizes cash flow, and mitigates debt-related risks. Without sufficient financial knowledge, micro enterprises remain vulnerable to cash flow shortages despite generating high sales volumes.

The present findings are consistent with previous empirical studies by Pratama and Wardani, who reported a positive relationship between financial knowledge and micro business performance. Likewise, the findings support those of Bidasari et al., who concluded that financial literacy is a key strategic asset for improving business efficiency and growth. These results provide further empirical evidence that strengthening entrepreneurs' financial capabilities is essential for enhancing business resilience against regional economic fluctuations.

2. The Effect of Skills on Micro Business Performance

The empirical analysis indicates that entrepreneurial skills have a positive and significant effect on the performance of micro food and beverage enterprises. This finding suggests that the accumulation of technical competencies and practical expertise serves as an important determinant of business success. Within the culinary sector, technical capabilities in food preparation, hygiene management, product standardization, and packaging innovation are critical for attracting customer preferences and fostering consumer loyalty. Additionally, proficiency in utilizing digital point-of-sale systems and social media marketing enables entrepreneurs to expand their local market reach more effectively.

According to the Resource-Based View (RBV), practical expertise and operational competencies constitute a unique form of human capital that is difficult for competitors to replicate. Specialized skills developed through continuous learning improve production efficiency, reduce material waste, and enable entrepreneurs to respond rapidly to changing market trends through product innovation. These

capabilities ultimately contribute to higher sales growth and broader customer acquisition.

These findings are consistent with previous studies by Wulandari and Setiawan, who found that entrepreneurial adaptability and technical competencies significantly improve culinary business performance. They also reinforce the findings of Fajri et al., who reported a positive relationship between operational management skills and sales performance. Collectively, these results highlight the importance of continuous skill development as a key driver of business transformation and competitiveness among micro enterprises.

3. The Moderating Role of Digital Security Awareness in the Relationship between Financial Knowledge and Micro Business Performance

The hypothesis testing results demonstrate that digital security awareness significantly moderates and strengthens the relationship between financial knowledge and micro business performance. This finding suggests that the positive impact of financial knowledge becomes substantially stronger when entrepreneurs possess a high level of awareness regarding cybersecurity and digital transaction protection. Effective financial management involving QRIS payments, bank transfers, and digital wallets requires strong security measures to protect operational funds against cyber threats such as phishing attacks, fraudulent transactions, and unauthorized access.

From the perspective of the Resource-Based View (RBV), digital security awareness can be regarded as a dynamic capability that functions as a protective organizational resource. Financial knowledge alone is insufficient to ensure business sustainability if financial assets remain vulnerable to cybercrime. Entrepreneurs with greater cybersecurity awareness are more likely to implement secure transaction procedures, safeguard banking credentials, and activate multi-factor authentication, thereby protecting the financial benefits derived from sound managerial decisions.

These findings extend previous research by Sari and Rahayu, which concluded that effective electronic financial management contributes to business sustainability when accompanied by appropriate cybersecurity measures. They also support the findings of Asisa, emphasizing the importance of secure digital transaction practices in maintaining healthy business cash flows. Therefore, digital security awareness functions as an important catalyst that strengthens the contribution of financial knowledge to improved business performance.

4. The Moderating Role of Digital Security Awareness in the Relationship between Skills and Micro Business Performance

The structural analysis further demonstrates that digital security awareness significantly moderates and strengthens the relationship between entrepreneurial skills and micro business performance. This indicates that entrepreneurs' technical abilities in producing, promoting, and marketing products digitally generate greater business outcomes when combined with strong digital security practices. As entrepreneurs increasingly rely on online marketplaces, social media platforms, and digital cashier applications, they also face greater risks of cyberattacks, account breaches, and customer data manipulation.

Within the Resource-Based View (RBV) framework, digital security awareness complements entrepreneurs' operational competencies by creating a trustworthy

digital business ecosystem. High levels of production and marketing skills can quickly lose their value if business communication channels or digital transaction accounts are compromised. By maintaining strong cybersecurity practices, entrepreneurs can protect sales records, preserve customer trust, and conduct digital business operations with greater confidence. This increased trust in secure electronic transactions ultimately encourages repeat purchases and expands market share.

These findings are consistent with those reported by Irhamuddin et al., who found that information security awareness strengthens the impact of digital operational capabilities on business performance. They also support previous studies by Wulandari and Setiawan and Sari and Rahayu, highlighting the importance of protecting the operational integrity of MSMEs in the digital environment. Overall, digital security awareness has been empirically confirmed as a crucial moderating variable that enhances the contribution of entrepreneurial skills to the sustainable performance of micro enterprises in Sidoarjo Regency.

CONCLUSION

Based on the results of the Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis and the subsequent discussion, several conclusions can be drawn.

First, financial knowledge has a positive and significant effect on the performance of micro food and beverage enterprises in Sidoarjo Regency. This finding indicates that greater knowledge of financial management, cash flow recording, capital management, and financial decision-making enables entrepreneurs to manage their resources more effectively, thereby improving business sustainability and performance.

Second, entrepreneurial skills have a positive and significant effect on micro business performance. Technical capabilities, product innovation, packaging, marketing, and business management competencies enhance productivity and competitiveness, ultimately leading to improved business performance.

Third, digital security awareness significantly moderates and strengthens the relationship between financial knowledge and micro business performance. Entrepreneurs who possess strong financial knowledge and simultaneously maintain secure digital transaction practices are better equipped to manage their businesses effectively and achieve superior performance.

Fourth, digital security awareness also significantly moderates and strengthens the relationship between entrepreneurial skills and micro business performance. The positive impact of entrepreneurial skills becomes greater when accompanied by effective digital security practices, including secure electronic transactions, business data protection, and vigilance against cyber threats.

Overall, this study demonstrates that financial knowledge and entrepreneurial skills are essential determinants of micro business performance. Furthermore, digital security awareness plays a crucial moderating role by strengthening the effects of both factors, thereby enabling the digital transformation of micro enterprises to generate more sustainable and optimal business outcomes.

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