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How Digital Capabilities Drive SME Performance: The Mediating Role of Business Innovation and the Moderating Role of Resilience

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Kata kunci :
Digital Literacy, Digital Technology Adoption, Entrepreneurial Orientation, Business Innovation, Business Resilience, SME Performance

Abstrak

Objective *This study examines the influence of digital literacy, digital technology utilization, and entrepreneurial orientation on MSME performance, with business innovation as a mediating variable and business resilience as a moderating variable in the digital era.*

Design/Methodology/Approach *A quantitative survey approach was applied to 220 MSME operators in East Lombok Regency, analyzed using PLS-SEM to test direct, indirect, and moderating effects.*

Findings *Digital technology adoption, business innovation, business resilience, and digital literacy positively and significantly affect MSME performance. Entrepreneurial orientation indirectly influences performance through business innovation. Digital literacy does not significantly affect business innovation. Business innovation mediates the relationship between digital technology adoption, entrepreneurial orientation, and MSME performance. Business resilience moderates only the innovation–performance relationship. The model shows strong explanatory power ($R^2 = 0.736$; $Q^2 = 0.650$).*

Practical Implications *MSME owners should optimize digital technology use and continuously innovate. Government and stakeholders should promote digital literacy and business resilience programs to sustain MSME growth.*

Originality/Value *This study integrates digital literacy, digital technology adoption, entrepreneurial orientation, business innovation, and business resilience into a comprehensive model, uniquely positioning innovation as a mediator and resilience as a moderator of MSME performance.*

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a vital role in Indonesia's economic structure. According to an official report by the Ministry of Cooperatives and SMEs of the Republic of Indonesia (2023) , the SME sector contributes more than 60% to the national Gross Domestic Product (GDP) and accounts for approximately 97% of the workforce. Data from the Central Statistics Agency (BPS) also indicates that SMEs are the primary drivers of the economy in various regions, including West Nusa Tenggara Province.

As the digital era evolves, business competition patterns have undergone significant changes. The utilization of digital technology offers opportunities for SMEs to expand market access through various platforms such as e-commerce, social media, and digital payment systems. A report from *the Organisation for Economic Co-operation and Development* (2021) notes that the adoption of digital technology plays a crucial role in enhancing the productivity and competitiveness of SMEs, particularly in developing countries. In line with this, the Bank's states that digital transformation contributes to improved operational efficiency and the growth of small businesses.

However, the level of digital technology adoption among SMEs still faces various obstacles, particularly regarding digital literacy. Low digital literacy limits the ability of SME

operators to manage digital marketing, online transactions, and data-driven decision-making (OECD, 2021; Raharjo, Afrianty and Prakasa, 2024; Nugraheni, Darma and Muhammad, 2025) . Recent studies indicate that digital literacy significantly impacts the performance of SMEs through the optimized use of digital technology (Suryani, 2023; Pratama & Wardani, 2022).

In addition to digital factors, an entrepreneurial mindset is a key determinant in improving the performance of SMEs. Research published in *the Journal of Small Business Management* shows that the dimensions of innovation, proactivity, and risk-taking have a positive impact on the growth of small businesses(Qasim, Shuhaiber, and Rawshdeh, 2025) . Similar findings also indicate that an entrepreneurial orientation encourages SME actors to be more adaptive to changes in the digital business environment (Escoz-Barragán and Becker, 2025; Samsami, San-Martín and Palazuelos, 2025).

Although digital literacy, digital technology adoption, and entrepreneurial orientation are associated with SME performance, some studies indicate that these effects are not always direct. Business innovation acts as a mediating mechanism in transforming digital capabilities into improved business performance (Guo, Yang, and Shi, 2023). Innovation in products, processes, and business models has been shown to strengthen SMEs' competitiveness in the digital era.

On the other hand, *business* resilience is a critical factor in navigating economic uncertainty and market dynamics. A study published in *the International Journal of Entrepreneurial Behavior & Research* indicates that SMEs with high levels of resilience are better able to maintain performance during crises and shifts in the business environment (Doern, Williams, and Vorley, 2022) . Thus, business resilience is hypothesized to strengthen the relationship between business innovation and SME performance.

Although various studies have examined the relationship between digitalization and SME performance, most of these studies remain partial and have not integrated intervening and moderator variables into a comprehensive model, particularly in the context of SMEs in Selong City, East Lombok Regency. Therefore, this study aims to test an integrated model involving business innovation as an intervening variable and business resilience as a moderator variable in explaining improvements in the performance of digital-based and entrepreneurial SMEs.

METHODS

This study employs a quantitative approach using an explanatory model. The quantitative approach was chosen because the primary objective is to examine the causal relationships among the variables defined in the conceptual framework, including the effects of digital literacy, digital technology adoption, and entrepreneurial orientation on SME performance. Business innovation serves as the intervening variable, while business resilience acts as the moderator. Explanatory research aims to analyze the relationship between cause and effect through hypothesis testing grounded in existing theories, specifically *the Resource-Based View* (RBV) and *Dynamic Capability Theory*. This study employs a cross-sectional design, in which data is collected at a single point in time without repeated observations. This design was chosen because the research objective is to capture the reality of MSMEs within the context of digital transformation in Selong City, East Lombok Regency. The study population consists of all active Micro, Small, and Medium

Enterprises (MSMEs) in Selong City, East Lombok Regency. These types of MSMEs encompass various business categories, including trade, food and beverage, services, home-based industries, and creative enterprises that have been operating sustainably. This population was selected because MSMEs play a crucial role in the regional economic structure and serve as key players in digital transformation at the local level. The selection of the population in Selong City is based on the fact that this area is the economic hub of East Lombok Regency, with a significant and growing number of MSMEs. Additionally, the increasing use of digital technologies such as social media, online marketplaces, and electronic payment systems among SMEs in Selong City indicates progress in digital transformation related to the research variables: digital literacy, digital technology adoption, entrepreneurial orientation, business innovation, business resilience, and SME performance. The sample size for this study was determined based on *Structural Equation Modeling* (SEM) guidelines, taking into account model stability and statistical power, resulting in a total of 220 respondents.

The instrument used in this study was a structured questionnaire divided into two main sections. The first section focused on participant demographics, while the second section contained statements designed to evaluate latent constructs related to the variables defined in the research framework. The participant identification section includes information regarding the type of business, duration of operation, number of employees, and the level of digital technology utilization in business activities. Meanwhile, the research statement section was designed to assess variables such as digital literacy, digital technology adoption, entrepreneurial attitudes, business innovation, business resilience, and SME performance. Each variable is evaluated using a number of indicators drawn from relevant literature in the fields of strategic management, entrepreneurship, digital transformation, and small and medium enterprise performance. The adaptation procedure was conducted by considering the research context applicable to SMEs in Selong City, East Lombok Regency, while maintaining the conceptual meaning of each construct. All items in the statements were rated using a five-point Likert scale, with a range of values from 1 (Strongly Disagree) to 5 (Strongly Agree). This scale was selected because it more accurately reflects respondents' views and levels of agreement, and facilitates statistical analysis using the *Structural Equation Modeling* (SEM) approach. Before being used for primary data collection, the research instrument must undergo a content validity process involving expert evaluation, including academics in the fields of management and entrepreneurship as well as SME professionals who understand digital transformation in small businesses. This process aims to ensure that each statement item accurately and clearly represents the construct being measured and aligns with the research context.

The quality of the measurement instrument was tested through construct validity analysis and reliability testing. Construct validity was analyzed using *Confirmatory Factor Analysis* (CFA) by checking factor loadings, *Average Variance Extracted* (AVE), and Composite Reliability, where each indicator is considered valid if it has a factor loading above 0.60 and an AVE greater than 0.50. Reliability testing of the measurement instrument was conducted using *Cronbach's Alpha* and *Composite Reliability*, with a minimum threshold of 0.70 as an indicator of sufficient reliability. Data collection was conducted through the distribution of questionnaires both in person and via an online platform. Before completing the questionnaire, respondents received an explanation regarding the research objectives, data confidentiality guarantees, and the principle of voluntary participation.

Data analysis was performed using *Structural Equation Modeling* (SEM) with the *Partial Least Squares* (PLS) approach, selected for its ability to handle complex models, numerous indicators, and tolerance for non-normal data distributions. The analysis process was conducted using SmartPLS software. The analysis stages included descriptive statistical analysis, testing of the measurement model (outer model) to ensure construct validity and reliability, and testing of the structural model (inner model) to examine relationships between variables by considering path coefficients, R-squared, effect sizes, and significance through bootstrapping at a 5% significance level. Mediation testing was performed using bootstrapping, while moderation analysis was conducted using the *interaction term* approach.

RESULTS AND DISCUSSION

3.1 Results

3.1.1 Demografi Responden

Tabel 1. Respondent Demographics

Respondent Characteristics		Number	Percentage
Gender	Male	91	41,4%
	Female	129	58,6%
Age	< 25 years	85	38,6%
	25–36 years	58	26,4%
	36–58 years	30	13,6%
	59 years and older	4	1,8%
Characteristics	Culinary	87	39,6%
	Merchants	88	40%
	Services	29	13,2%
	Handicrafts	6	2,7%
	Other	10	4,6%
Length of Business Operation	< 1 year	45	20,5%
	1–3 years	40	18,2%

	3 years	16	7,3%
	4 years	28	12,7%
	Other	91	41,4%

The study respondents in Selong Subdistrict, East Lombok Regency, who are MSME actors, numbered 220 people and were dominated by men, with 91 respondents (41.4%), while women numbered 129 respondents (58.6%). Based on age, the majority of respondents were in the productive age group, with the largest proportion in the under-25 age range (85 respondents; 26.4%), followed by those aged 25–36 (58 respondents; 36.4%) and 36–58 (30 respondents; 13.6%). There were 4 respondents (1.8%) aged under 59, the smallest group. In terms of their role in developing businesses and adapting to digital technology advancements in business activities, the largest proportion of MSME business owners were Merchants (88 respondents; 40%), followed by Food and Beverage (87 respondents; 39.6%), Services (29 respondents; 13.2%), while other categories included 10 respondents, and Crafts with 6 respondents (2.7%). In terms of business experience, the trade and food sectors are the most dominant among MSME operators in Selong City, with "Other" comprising 91 respondents (41.4%) while <1 year accounted for 45 respondents (20.5%) and 1–3 years for 86 respondents (30.5%), while involvement of 3–5 years was recorded at 40 respondents (18.2%), 4 years at 28 respondents (12.7%), and 3 years at 16 respondents (7.3%). This composition indicates that the research data on this condition reflects the dynamic development of MSMEs in the region, which has the potential to continue growing, particularly through the utilization of digital technology, the enhancement of digital literacy, and the strengthening of business innovation to improve business performance.

3.1.2 Results of *Partial Least Squares - Structural Equation Modeling* (PLS-SEM) Data Analysis

This study employed data analysis techniques utilizing *Partial Least Squares Structural Equation Modeling* (PLS-SEM) assisted by SmartPLS Version 4 software. The PLS-SEM data management process includes testing the measurement model (outer model), evaluating model goodness and fit, and testing the structural model (inner model) (Sarstedt and Liu, 2024) . The research model is presented in Figure 1 below:

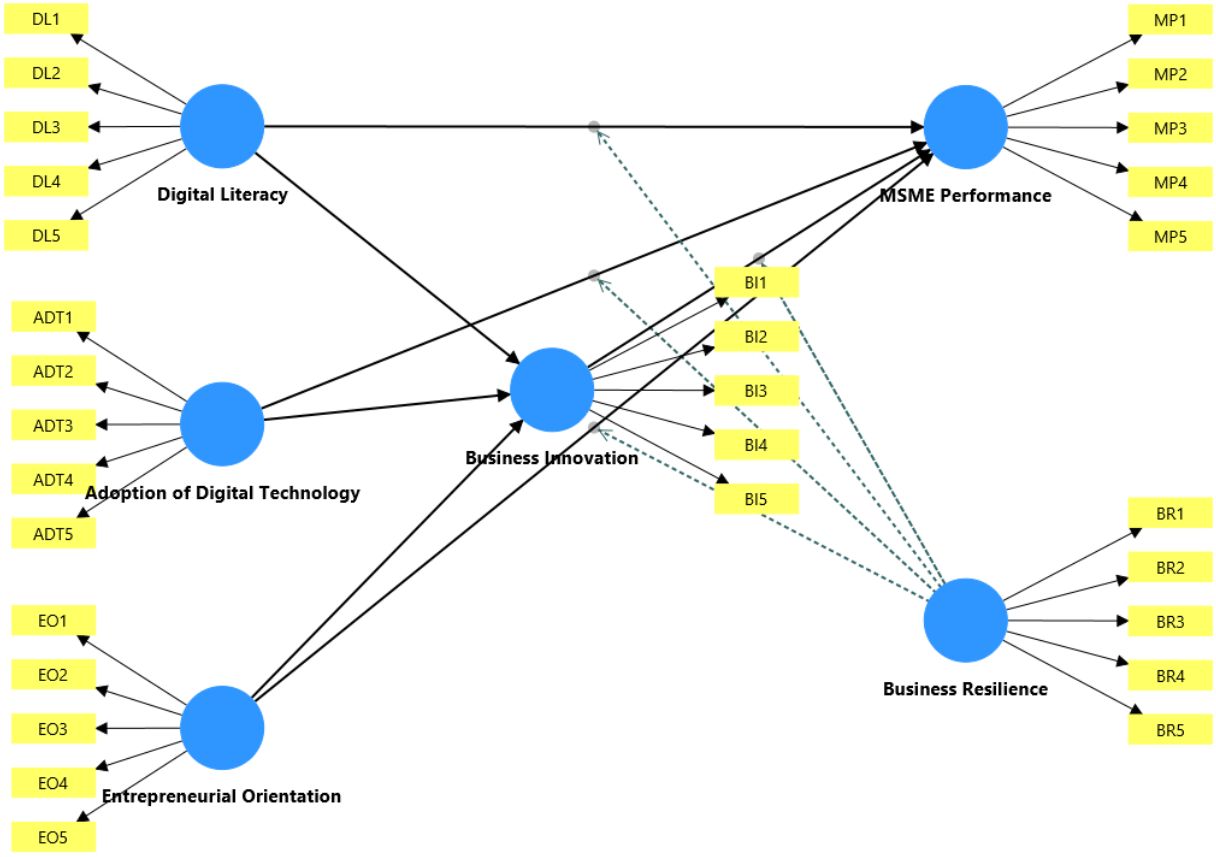

Figure 1. PLS-SEM Research Model

The conceptual model developed in this study represents the relationships among latent constructs measured through reflective indicators, as illustrated in Figure 1. The exogenous variables consist of three constructs: Digital Literacy, operationalized through five indicators (DL1–DL5); Digital Technology Adoption, measured through five indicators (ADT1–ATT5); and Entrepreneurial Orientation, represented by five indicators (EO1–EO5). These three constructs reflect the ability of SME actors to access and utilize digital technology productively, implement technology in business operations, and demonstrate innovative and proactive tendencies in business decision-making. A reflective measurement approach was chosen based on the consideration that each indicator is a manifestation of its latent construct; thus, changes in the latent construct will be reflected in all indicators representing it.

Structurally, the model positions Business Innovation (BI1–BI5) as an intervening variable that mediates the influence of the three exogenous constructs on the two endogenous constructs: SME Performance (MP1–MP5) and Business Resilience (BR1–BR5). Digital Literacy, Digital Technology Adoption, and Entrepreneurial Orientation are positioned as primary predictors that exert a direct influence on SME Performance as well as an indirect influence through the mediating mechanism of Business Innovation. Additionally, the influence of Business Innovation on Business Resilience is tested, as represented by the dashed line in the path diagram, indicating that innovations stemming from digital capabilities and an entrepreneurial orientation further strengthen SME resilience in facing business environment dynamics.

The entire model structure was estimated using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach with the assistance of SmartPLS software. This method

was selected based on its ability to handle models with complex latent constructs, its lack of strict requirements for normal data distribution, and its optimal estimation performance with moderate sample sizes. Through this approach, hypothesis testing was conducted simultaneously on direct, indirect, and mediating effects among variables to produce a comprehensive understanding of the factors determining the performance and resilience of SMEs in the era of digital transformation.

3.1.3 Evaluation of the Measurement Model (*Outer Model*)

The initial stage in *PLS-SEM* analysis is testing the measurement model or outer model. The purpose of evaluating the measurement model or *outer model* is to assess the validity of the indicators and the reliability of the constructs. In this study, all latent variables were formed using reflective indicators. In a reflective model, the evaluation of the outer model includes convergent validity, discriminant validity, and reliability (Cheung *et al.*, 2024). The following are the results of *the outer model* testing in this study:

3.1.4 Convergent Validity Testing

The convergent validity test aims to determine whether the indicators of the variables used are truly significant in reflecting the construct or latent variables. A reflective indicator is considered valid if the *outer loading or factor loading* value is greater than 0.7. This means that if a reflective indicator has an *outer loading* value below 0.7, that indicator will be removed and the test will be conducted again (Hair *et al.*, 2023; ; Cheung *et al.*, 2024). The following are the results of the convergent validity analysis in this study:

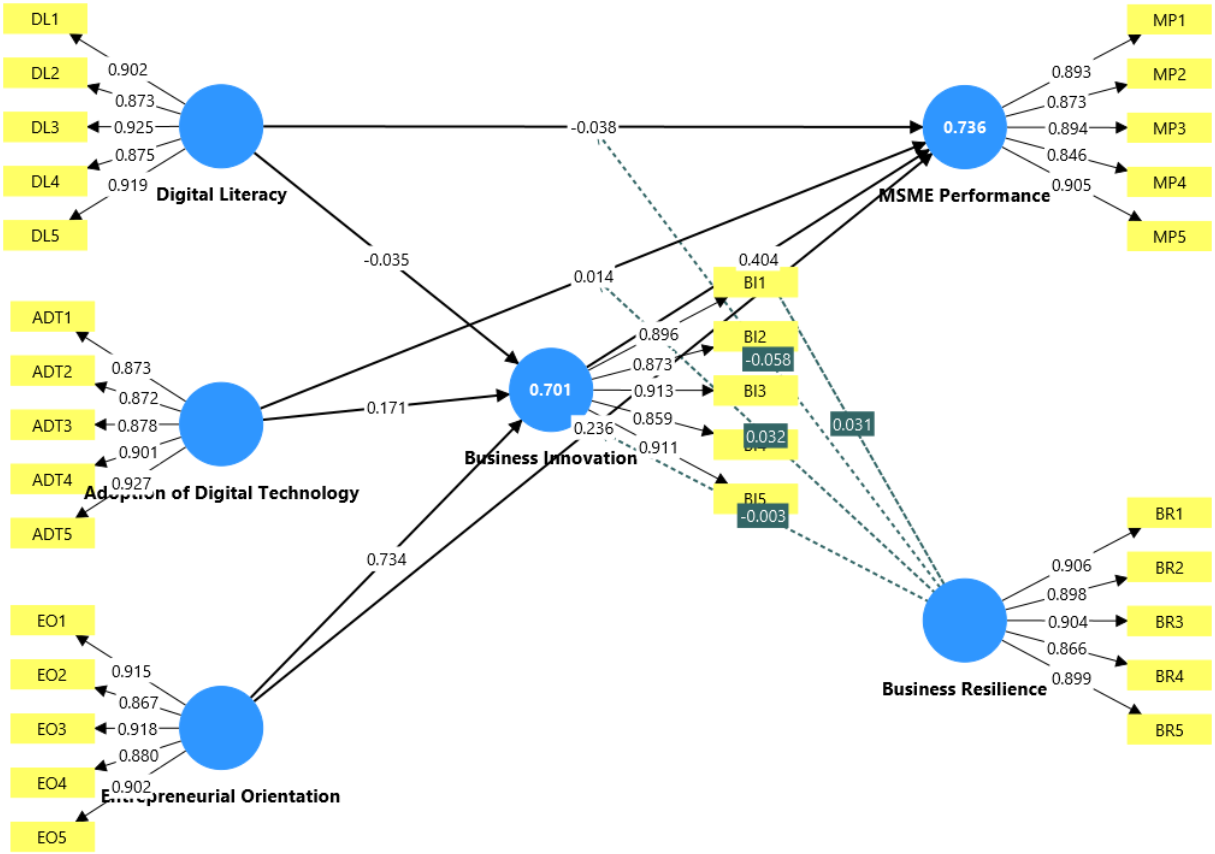

Figure 2. Validity Testing Based on *Outer Loading*

Tabel 2. Pengujian Validitas Konvergen: *Outer Loading*

Variable	Indicator	*Outer Loading*	Description

Adoption of Digital Technology	ADT1	0,873	Valid
	ADT2	0,872	Valid
	ADT3	0,878	Valid
	ADT4	0,901	Valid
	ADT5	0,927	Valid
Business Innovation	BI1	0,896	Valid
	BI2	0,873	Valid
	BI3	0,913	Valid
	BI4	0,859	Valid
	BI5	0,911	Valid
Business Resilience	BR1	0,896	Valid
	BR2	0,898	Valid
	BR3	0,904	Valid
	BR4	0,866	Valid
	BR5	0,906	Valid
Digital Literacy	DL1	0,902	Valid
	DL2	0,873	Valid
	DL3	0,925	Valid
	DL4	0,875	Valid
	DL5	0,919	Valid
Entrepreneurial Orientation	EO1	0,915	Valid
	EO2	0,867	Valid
	EO3	0,918	Valid
	EO4	0,880	Valid
	EO5	0,902	Valid
MSME Performance	MP1	0,893	Valid
	MP2	0,873	Valid
	MP3	0,894	Valid
	MP4	0,846	Valid
	MP5	0,905	Valid

Based on Table 2, all indicators have *outer loadings/factor loadings* greater than 0.7, which means that all model indicators have met convergent validity. Additionally, convergent validity was assessed by examining the AVE (*Average Variance Extracted*) values. A construct is considered to meet convergent validity if its AVE value exceeds 0.5*et al.*, 2023; Cheung *et al.*, 2024) . The following are the AVE values for each research variable:

Table 3. Convergent Validity Testing: *Average Variance Extracted* (AVE)

Variabel Laten	*Average variance extracted* (AVE)	Description
Adoption of Digital Technology	0,793	Valid
Business Innovation	0,793	Valid
Business Resilience	0,800	Valid
Digital Literacy	0,808	Valid
Entrepreneurial Orientation	0,804	Valid
MSME Performance	0,788	Valid

Based on Table 3, all variables have an AVE value greater than 0.5. Therefore, it can be concluded that the model in this study meets the criteria for convergent validity.

3.1.5 Discriminant Validity Testing

Discriminant validity was tested to ensure that each concept of the latent variables differs from the others. Discriminant validity can be assessed through the Heterotrait-Monotrait Ratio (HTMT) test; the recommended value should be less than 0.9 to ensure discriminant validity between two reflective constructs (Cheung *et al.*, 2024) . The results of the Heterotrait-Monotrait Ratio test are as follows:

Table 4. Discriminant Validity Test: HTMT

	ADT	BI	BR	DL	EO	MP
Adoption of Digital Technology (ADT)						
Business Innovation (BI)	0,709					
Business Resilience (BR)	0,727	0,849				
Digital Literacy (DL)	0,780	0,670	0,740			
Entrepreneurial Orientation (EO)	0,758	0,885	0,789	0,783		
MSME Performance (MP)	0,672	0,880	0,837	0,660	0,830	

Additionally, discriminant validity can be assessed using *the Fornell-Lacker criterion*, which states that a model has good discriminant validity if the AVE squared value of each exogenous construct (values on the diagonal) exceeds the correlation between that construct and other constructs (values below the diagonal) (Sarstedt and Liu, 2024). The results of the *Fornell-Lacker criterion* test are as follows:

Table 5. Discriminant Validity Test: Fornell-Larcker Criterion

	ADT	BI	BR	DL	EO	MP
Adoption of Digital Technology (ADT)	0,891					
Business Innovation (BI)	0,667	0,891				
Business Resilience (BR)	0,683	0,796	0,895			
Digital Literacy (DL)	0,730	0,630	0,695	0,899		
Entrepreneurial Orientation (EO)	0,711	0,830	0,740	0,737	0,897	
MSME Performance (MP)	0,630	0,821	0,782	0,617	0,777	0,882

3.1.6 Reliability Testing

Reliability testing is conducted to determine the level of internal consistency of indicators in measuring a specific construct or latent variable. A questionnaire is considered reliable and consistent as a research tool if its *Cronbach's alpha* and *composite reliability* values exceed 0.70 (Hair *et al.*, 2023; Cheung *et al.*, 2024). The statistical results of the reliability test are presented in the following table:

Table 6. Reliability Testing

Variable	*Cronbach's alpha*	*Composite Reliability*	Description
Adoption of Digital Technology	0,935	0,950	Riliabel
Business Innovation	0,935	0,950	Riliabel
Business Resilience	0,938	0,952	Riliabel
Digital Literacy	0,940	0,955	Riliabel
Entrepreneurial Orientation	0,939	0,954	Riliabel
MSME Performance	0,929	0,946	Riliabel

Table 6 shows that all research variables have *Cronbach's alpha* and *composite reliability* values greater than 0.7. Thus, it can be concluded that all indicator constructs have met the required reliability, allowing the analysis to proceed to the next stage, namely *the structural model*.

3.1.7 Model Quality and Fit Evaluation

The second part of the PLS SEM analysis involves evaluating the goodness of fit and model fit of the structural model. This evaluation is conducted to ensure that the constructed structural model *is robust* and accurate by examining several indicators, including *the Standardized*

Root Mean Square Residual (SRMR) , *the* , *the Q-Square predictive relevance* (Q^2), the multicollinearity test (VIF), and the coefficient of determination R-Square (R^2) .

1) Testing the *Standardized Root Mean Square Residual* (SRMR) Value

Once the requirements for the measurement model are met, a model *goodness-of-fit* test is conducted. The goodness of fit of the PLS model can be assessed using the model's *Standardized Root Mean Square Residual* (SRMR) value. The PLS model is considered to meet the goodness-of-fit criteria or is deemed to fit if the SRMR value is ≤ 0.1 (Amatan, Han, and Pang, 2025) . The following are the SRMR values for the PLS model in this study:

Table 7. Standardized Root Mean Square Residual (SRMR) Values

	Saturated model	Estimated model
SRMR	0,043	0,054

The results of the model goodness-of-fit test in Table 7 show that the SRMR value for the saturated model is 0.043 (≤ 0.1) and the SRMR value for the estimated model is 0.054 (≤ 0.1). Thus, an SRMR value of 0.10 is still within the tolerance limit, although it is at the upper threshold. This means that the model can still be considered a good fit, but with the caveat that the level of model fit to the data falls into the "adequate" category, not "very good." This indicates that the developed model structure is capable of adequately explaining the data and is suitable for use in further analysis, such as testing relationships between variables in a PLS-SEM structural model.

2) Testing the Predictive Relevance (Q^2) Value

The Q-Square Predictive Relevance (Q^2) in PLS (*Partial Least Squares* analysis indicates the model's predictive power. A Q^2 value greater than 0 indicates the model has good predictive relevance, while a Q^2 value less than 0 indicates the model has poor predictive relevance. Qualitatively, Q^2 values are interpreted as 0 (low influence), 0.25 (moderate influence), and 0.50 (high influence) (Becker *et al.*, 2023; Hair *et al.*, 2023; Sarstedt and Liu, 2024) .

Table 8. *Q-Square* Values for Predictive Relevance (Q^2)

Endogenous Variables	Q^2	Description
Business Innovation	0,684	Has a high *predictive relevance* value
MSME Performance	0,650	Has a high *predictive relevance* value

Based on the results of the predictive relevance test using the Q^2 value (*Stone-Geisser*), it was found that both endogenous variables in the model have a Q^2 value > 0, namely Business Innovation (Q^2 = 0.684) and MSME Performance (Q^2 = 0.650). This finding indicates that the model has good predictive relevance, meaning the structural relationships established not only explain the endogenous variables but also possess adequate predictive capability regarding the observed values in the research data*et al.*, 2023; Hair *et al.*, 2023) .

For the endogenous variable Business Innovation, the Q^2 value of 0.684 indicates high predictive relevance. This means that the predictor variables in the research model Digital Literacy, Digital Technology Adoption, and Entrepreneurial Orientation possess strong predictive power regarding the level of Business Innovation among SMEs (Sarstedt and Liu, 2024) . Substantively, these findings indicate that enhancing the capabilities of SME actors in understanding digital technology, adopting digital technology in business activities, and possessing a strong entrepreneurial orientation can drive innovation in business activities. Such innovation can take

the form of product innovation, service innovation, or innovation in business processes carried out by SME actors.

Furthermore, for the endogenous variable "MSME Performance," a Q^2 value of 0.650 was obtained, which also falls into the category of high predictive relevance. This value indicates that the research model has excellent predictive power regarding SME performance. This means that the combination of the variables Digital Literacy, Digital Technology Adoption, Entrepreneurial Orientation, Business Innovation, and Business Resilience is capable of explaining and predicting the variations in SME performance observed in this study. Conceptually, these results suggest that improvements in digital literacy and the utilization of digital technology by SME operators can enhance operational efficiency and expand market access (Li, Su, and Wang, 2024; Sarstedt and Liu, 2024) . Additionally, the entrepreneurial orientation possessed by business operators can foster innovative and proactive attitudes in facing business competition. Business innovations resulting from the combination of these factors will ultimately lead to improved SME performance, in terms of business growth, increased sales, and business sustainability . Furthermore, the presence of Business Resilience as a moderator variable also contributes to strengthening the relationship between the variables in the model and SME performance. Business resilience reflects the ability of SMEs to survive and adapt to changes in the business environment, thereby strengthening the impact of business innovation on improved business performance.

Thus, overall, the high Q^2 values for both endogenous variables indicate that the research model possesses strong predictive validity, making it more reliable for hypothesis testing and drawing practical implications regarding the structural model linking Digital Literacy, Digital Technology Adoption, Entrepreneurial Orientation, Business Innovation, Business Resilience, and MSME Performance can be used more confidently to explain the relationships between variables and to test hypotheses in this study.

3) Multicollinearity Test

Uji Multikolinearitas dilakukan untuk mengetahui apakah dalam model penelitian terjadi gejala multikolinieritas atau terjadinya korelasi yang tinggi antar variabel bebas. Hasil yang baik adalah tidak terjadinya gejala korelasi yang tinggi antar variabel bebas (Hair *et al.*, 2023; Sarstedt and Liu, 2024). Asumsi pengambilan keputusan adalah Jika nilai VIF < 5 maka tidak terjadi gejala multikolinieritas, jika nilai VIF > 5 maka terjadi gejala multikolinieritas (Becker *et al.*, 2023). Hasil Uji Multikolinearitas pada penelitian ini adalah sebagai berikut:

Table 9. Results of the Multicollinearity Test (VIF)

	Business Innovation	MSME Performance
Adoption of Digital Technology	2,490	2,687
Business Innovation	-	4,610
Business Resilience	-	3,583
Digital Literacy	2,690	3,222
Entrepreneurial Orientation	2,546	4,691
MSME Performance	-	4,691

Based on Table 9, all VIF values are less than 5 (VIF <5). Thus, it can be concluded that there is no multicollinearity issue in this study.

4) KoefCoefficient of Determination R-Square (R^2)

Based on the coefficient of determination (R^2), this value indicates the proportion of variance in the endogenous construct that can be explained by all exogenous constructs in the structural model. R^2 ranges from 0 to 1; the higher the value, the higher the model's explanatory power (*in-sample explanatory power*).

Tabel 10. Nilai R Square (R^2)

Variabel Endogen	R^2
Business Innovation	0,701
MSME Performance	0,736

Based on the results of the structural model evaluation using the coefficient of determination (R^2), it was found that Business Innovation has an R^2 value of 0.701. This value indicates that 70.1% of the variation in Business Innovation can be explained by the predictor variables in the research model, namely Digital Literacy, Digital Technology Adoption, and Entrepreneurial Orientation. Meanwhile, the remaining 29.9% of the variation is explained by other factors outside the research model that were not included in this analysis. An R^2 value of 0.701 falls into the "substantial" category in a Partial Least Squares (PLS) model (Hair *et al.*, 2023)). This indicates that the variables of digital literacy, digital technology adoption, and entrepreneurial orientation make a significant contribution to explaining the level of business innovation among SMEs. Conceptually, these findings indicate that the ability of SME actors to understand digital technology, utilize digital technology in business activities, and possess a strong entrepreneurial orientation can drive the creation of various forms of innovation within the business. Such innovations may take the form of product innovation, service innovation, or innovation in business operational processes.

Furthermore, for the endogenous variable SME Performance, an R^2 value of 0.736 was obtained. This value indicates that 73.6% of the variation in SME performance can be explained by the variables included in the research model, namely Digital Literacy, Digital Technology Adoption, Entrepreneurial Orientation, Business Innovation, and Business Resilience as a moderator variable operationalized through interaction terms in the relationships tested within the structural model. Meanwhile, the remaining 26.4% of the variation in MSME performance is explained by other factors outside the research model that were not included in this analysis, such as market conditions, the level of business competition, access to capital, the quality of human resources, and other business environmental factors that can influence MSME performance. An R^2 value of 0.736 indicates that the research model possesses substantial explanatory power in explaining the factors influencing SME performance. This means that the combination of digital literacy, digital technology adoption, entrepreneurial orientation, business innovation, and business resilience contributes significantly to explaining both improvements and declines in SME performance in this study.

Overall, the relatively high R^2 values for both endogenous variables indicate that the research model possesses strong explanatory power for Digital Literacy, Digital Technology Adoption, and Entrepreneurial Orientation.

3.1.8 Structural Model Evaluation (*Inner Model*)

Analysis of the significance level of path coefficients in PLS-SEM was conducted using the bootstrapping technique to determine the direction of the relationship and the significance of the influence of exogenous latent variables on endogenous latent variables. The assessment of these effects is based on the t-statistic or p-value from the bootstrapping results. Since all research hypotheses in this study are directional (positive), hypothesis testing uses a one-tailed test with a significance level of 5% ($\alpha = 0.05$). The decision criteria for the one-tailed test are: H0 is rejected (H1 is accepted) if the t-statistic > 1.645 and the path coefficient is positive, or equivalently, the one-tailed p-value < 0.05, indicating that the exogenous variable has a significant positive effect on the endogenous variable. Conversely, if the t-statistic is ≤ 1.645 or the path coefficient is not positive (and the one-tailed p-value is ≥ 0.05), then H0 is not rejected, indicating that the effect of the exogenous variable on the endogenous variable is not significant in the hypothesized direction (Hair *et al.*, 2023). The complete results of the structural test or structural model are described in Figure 3 and Table 11:

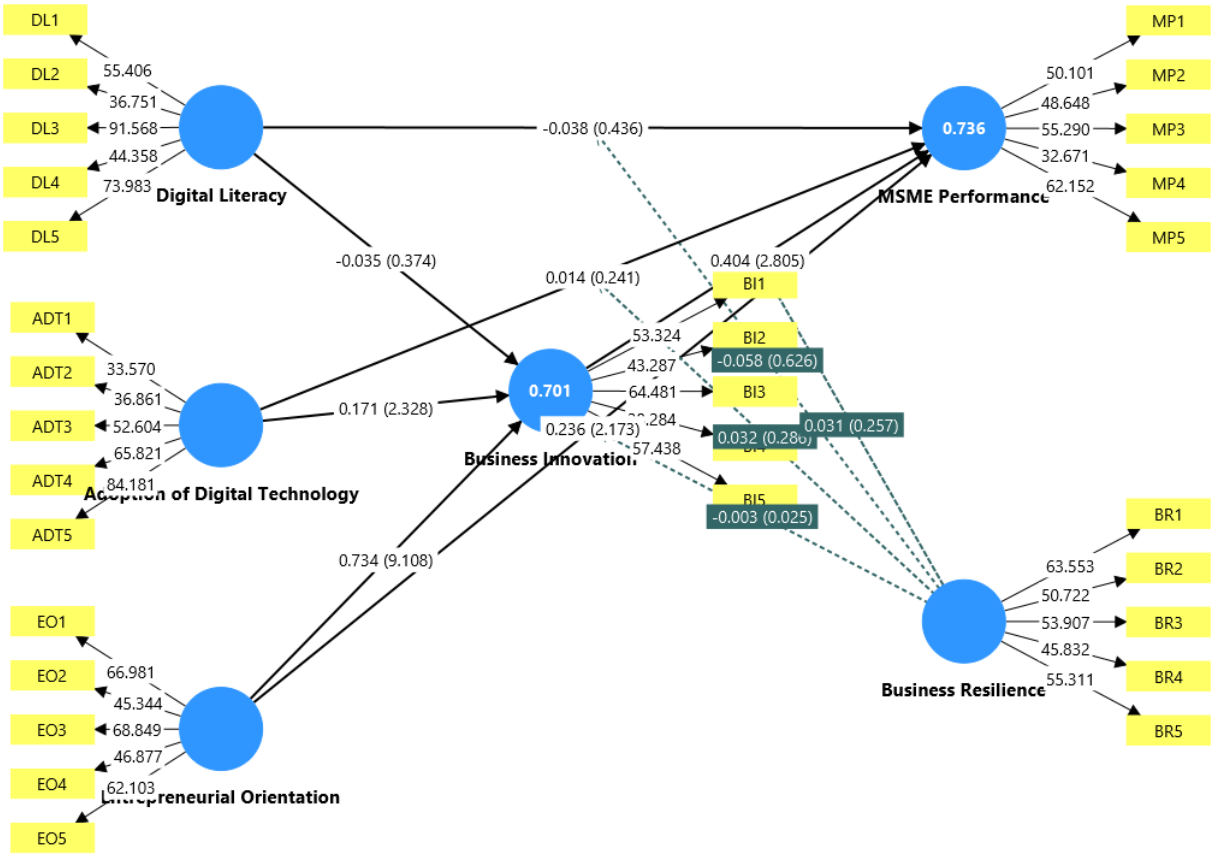

Figure 3. *Path Diagram* (*path coefficients* and *t-statistics*)

Table 11. Hypothesis Testing

Hipotesis	Path	Original sample (Path Coeff)	Sample mean	Standard deviation	T statistics	P values	Description

Direct Impact							
H1	**Adoption of Digital Technology -> SME Performance**	0.111	0.104	0.055	2.007	0.022	Accepted
H2	**Business Innovation -> MSME Performance**	0.427	0.433	0.098	4.355	0,000	Accepted
H3	**Business Resilience -> MSME Performance**	0.343	0.351	0.091	3.793	0,000	Accepted
H4	**Digital Literacy -> MSME Performance**	0.166	0.162	0.085	1.965	0.025	Accepted
H5	**Entrepreneurship Orientation -> MSME Performance**	-0.068	-0.071	0.083	0.817	0.207	Rejected
H6	**Adoption of Digital Technology -> Business Innovation**	0.169	0.166	0.074	2.28	0.011	Accepted
H7	**Digital Literacy -> Business Innovation**	-0.036	-0.024	0.095	0.379	0.352	Rejected
H8	**Entrepreneurship Orientation -> Business Innovation**	0.736	0.727	0.08	9.186	0,000	Accepted
Indirect Effect							
H9	**Adoption of Digital Technology -> MSME Performance**	0.072	0.073	0.039	1.844	0.033	Accepted
H10	**Digital Literacy -> MSME Performance**	-0.015	-0.011	0.042	0.364	0.358	Rejected
H11	**Entrepreneurship Orientation ->**	0.314	0.314	0.079	3.977	0,000	Accepted

	MSME Performance						
The Moderating Effect							
H12	**Business Resilience × Adoption of Digital Technology -> MSME Performance**	-0.048	-0.027	0.095	0.509	0.305	Rejected
H13	**Business Resilience x Business Innovation -> MSME Performance**	0.192	0.17	0.106	1.803	0.036	Accepted
H14	**Business Resilience x Digital Literacy -> MSME Performance**	-0.07	-0.089	0.078	0.9	0.184	Rejected
H15	**Business Resilience x Entrepreneurial Orientation -> MSME Performance**	-0.095	-0.074	0.123	0.777	0.219	Rejected

*: Significant at α=5% (p-value < 0.05)

Based on the hypothesis test table, the results can be interpreted as follows:

Direct Effect

1. H1: Adoption of Digital Technology → MSME Performance (Accepted)
   A comprehensive analysis indicates that the integration of digital technology has a positive impact on the performance of MSMEs, as reflected by a path coefficient of 0.111. The statistical significance of this effect is confirmed by a t-statistic of 2.007 and a p-value of 0.022 (<0.05), both of which exceed the established thresholds. Thus, H1 is accepted. This study concludes that the utilization of digital tools, including social media platforms, online marketplaces, and digital payment mechanisms, contributes to improved operational efficiency, increased market penetration, and stimulates enhanced performance of SME units.
2. H2: Business Innovation → MSME Performance (Accepted)
   Empirical analysis indicates that innovation in the business domain has a positive and substantial impact on the performance of Micro, Small, and Medium Enterprises (MSMEs), as reflected by a path coefficient of 0.427. Statistical testing yielding a t-statistic of 4.355 and a p-

value of 0.000 (less than 0.05) confirms the significance of this relationship. Thus, H2 is accepted. This confirms that SMEs' capacity to effectively implement innovations in product, service, and operational procedures contributes to enhanced competitive advantage and business outcomes.

3. H3: Business Resilience → SME Performance (Accepted)
   Business resilience was empirically proven to have a significant positive influence on SME performance, with an estimated path coefficient of 0.343. A t-statistic value of 3.793 and a p-value of 0.000 (below the 0.05 threshold) reinforce the significance of this observed relationship. Thus, H3 is accepted. This finding indicates that SMEs' ability to sustain their existence and adapt to the dynamics of the business environment is a crucial factor in improving organizational performance.
4. H4: Digital Literacy → MSME Performance (Accepted)
   Empirical analysis indicates a substantial positive correlation between digital literacy and the performance of Micro, Small, and Medium Enterprises (MSMEs), as evidenced by a path coefficient of 0.166. Statistical significance is confirmed by a t-statistic of 1.965 and a p-value of 0.025, both of which fall below the significance threshold of 0.05. Thus, H4 is accepted. This finding underscores that the competence of SME actors in adopting and integrating digital technology contributes positively to improved operational capabilities and business outcomes.
5. H5: Entrepreneurial Orientation → MSME Performance (Rejected)
   The results of the quantitative investigation reveal that entrepreneurial orientation exhibits a negative path coefficient of -0.068, with a t-statistic of 0.817 and a p-value of 0.207. The lack of statistical significance at the accepted level (p-value > 0.05) implies that there is no meaningful relationship between these variables. Thus, H5 is rejected. These results indicate that, in the context of this study, entrepreneurial orientation does not directly influence improvements in SME performance.
6. H6: Adoption of Digital Technology → Business Innovation (Accepted)
   The analysis reveals that the adoption of digital technology makes a positive contribution to business innovation, as evidenced by a path coefficient of 0.169. The statistical significance of this effect is confirmed by a t-statistic of 2.28 and a p-value of 0.011, both of which fall below the 0.05 threshold. Thus, H6 is accepted. This finding indicates that the integration of digital technology by Micro, Small, and Medium Enterprises (MSMEs) facilitates the emergence of innovation at the product, service, and business operational model levels.
7. H7: Digital Literacy → Business Innovation (Rejected)
   Statistical analysis shows that digital literacy is associated with a path coefficient of -0.036, a t-statistic of 0.379, and a p-value of 0.358 (>0.05). These results indicate that there is no statistical significance in this relationship. Therefore, H7 is rejected. The implication of this finding is that the level of digital literacy possessed by Micro, Small, and Medium Enterprises (MSMEs) in the context of this study is not yet sufficient to directly facilitate increased business innovation.
8. H8: Literasi Digital → Inovasi Bisnis (Ditolak)
   Analisis statistik menunjukkan bahwa literasi digital terkait dengan koefisien jalur sebesar -0,036, nilai statistik-t sebesar 0,379, dan nilai p-value sebesar 0,358 (>0,05). Hasil ini mengindikasikan bahwa tidak terdapat signifikansi statistik pada hubungan tersebut. Dengan demikian, H7 ditolak. Implikasi dari temuan ini adalah bahwa tingkat literasi digital yang

dimiliki oleh para pelaku Usaha Mikro, Kecil, dan Menengah (UMKM) dalam konteks penelitian ini belum memadai untuk secara langsung memfasilitasi peningkatan inovasi bisnis.
H8: Entrepreneurial Orientation → Business Innovation (Accepted)
Analysis of the hypothesis test results indicates that entrepreneurial orientation positively contributes to business innovation, as evidenced by a path coefficient of 0.736. The statistical significance of this relationship is reinforced by a t-statistic of 9.186 and a p-value of 0.000 (, <0.05). Thus, H8 is accepted. This finding implies that entrepreneurial attributes, including a willingness to take risks, a proactive nature, and innovative capacity, can facilitate MSMEs in advancing business innovation.

Indirect Effects (Mediation/Intervening)

1. H9: H9: Digital Technology Adoption → MSME Performance (Accepted)
   The adoption of digital technology demonstrates a positive influence on the performance of Micro, Small, and Medium Enterprises (MSMEs), as evidenced by a path coefficient of 0.072. The significance of this relationship is reinforced by a t-statistic of 1.844 and a p-value of 0.033 (<0.05). Thus, H9 is accepted. The implication of this finding is that the utilization of digital technology has the capacity to encourage MSME actors to innovate in terms of products, services, and business workflows.
2. H10: Digital Literacy → SME Performance (Rejected)
   The results of the statistical analysis reveal that digital literacy contributes to a path coefficient of -0.015, with a t-statistic of 0.364 and a p-value of 0.358. Since this p-value is greater than 0.05, the relationship is deemed statistically insignificant. Thus, H10 is rejected. This finding indicates that, in the context of this study, digital literacy has not yet shown a significant direct impact on improving SME performance.
3. H11: Entrepreneurial Orientation → SME Performance (Accepted)
   Entrepreneurial orientation is empirically confirmed to have a significant positive effect on business innovation, as reflected by a path coefficient of 0.314. High statistical significance is evident from the t-statistic value of 3.977 and a p-value of 0.000 (<0.05), confirming a very substantial relationship. Thus, H11 is accepted. The implication of this finding is that entrepreneurial characteristics such as an innovative mindset, a proactive attitude, and a willingness to manage risk effectively contribute to improved performance at the Micro, Small, and Medium Enterprises (MSME) level.

Moderating Effects

1. H12: Business Resilience × Digital Technology Adoption → MSME Performance (Rejected)
   The moderating effect of business resilience on the relationship between digital technology adoption and MSME performance yielded an interaction coefficient of -0.048, with a t-statistic of 0.509 and a p-value of 0.305 (>0.05). This indicates that the effect is not significant. Thus, H12 is rejected, implying that business resilience does not moderate the relationship between digital technology adoption and SME performance.
2. H13: Business Resilience × Business Innovation → SME Performance (Accepted)
   The analysis results confirm that the interaction between business resilience and business innovation yields a coefficient of 0.192 with a t-statistic of 1.803 and a p-value of 0.036 (<0.05). Thus, H13 is accepted. This proves that business resilience effectively amplifies the impact of business innovation on SME performance.

3. H14: Business Resilience × Digital Literacy → SME Performance (Rejected)
   Testing the hypothesis regarding the moderating effect of business resilience and digital literacy on SME performance yielded a coefficient of -0.07, with a t-statistic of 0.9 and a p-value of 0.184, which is greater than 0.05. Thus, H14 is rejected, indicating that business resilience does not moderate the relationship between digital literacy and SME performance.
4. H15Business Resilience × Entrepreneurial Orientation → SME Performance (Rejected)
   The analysis of the interaction between business resilience and entrepreneurial orientation showed a coefficient of -0.095, supported by a t-statistic of 0.777 and a p-value of 0.219 (>0.05). These findings indicate that the moderating effect is not statistically significant. Thus, H15 is rejected.

DISCUSSION

Overall, the structural model in this study demonstrates a clear and strong ability to predict SME performance. This is evident from the R-squared value for SME performance of 0.756, meaning that 75.6% of the variation in SME performance can be explained by variables such as digital literacy, digital technology adoption, entrepreneurial orientation, business innovation, and business resilience as a moderator variable. The Q^2 value of 0.675 indicates that the model has a fairly good predictive ability, so that the results of this study are not only able to explain the relationships between variables but also to accurately predict SME performance.

In essence, these findings indicate that the performance of small and medium-sized enterprises (SMEs) in Selong City, East Lombok Regency, depends not only on factors within the businesses themselves but is also significantly influenced by entrepreneurs' ability to utilize digital technology, enhance their understanding of technology, foster an entrepreneurial spirit, and generate new ideas or innovations in business. On the other hand, a business's ability to survive is also crucial in strengthening the link between business innovation and SME performance, indicating that SMEs capable of adapting and being resilient are typically more successful in reaping the benefits of the innovations they implement.

3.2.1 The Impact of Digital Technology Adoption on SME Performance

The analysis indicates that the use of digital technology has a positive and significant impact on SME performance. The coefficient value is $\beta = 0.111$, the t-value is 2.007, and the significance level is $p = 0.022$, thus accepting the H1 hypothesis. This finding suggests that the higher the level of digital technology adoption by SME operators, the better the business outcomes they achieve. In line with this, research shows that the adoption of digital technology helps business owners utilize various digital platforms such as social media, marketplaces, and electronic payment systems to improve operational efficiency and expand their market reach*et al.*, 2021) . In the digital transformation process, the implementation of digital technology is a key factor influencing the capabilities of small and medium-sized enterprises (SMEs). Utilizing digital technology helps SMEs access broader markets, improve marketing effectiveness, and accelerate transaction processes (Martínez-Caro, 2023; Wang and Zhang, 2025) . Therefore, SMEs that can effectively leverage digital technology are generally better able to improve their outcomes (Asa, Nautwima and Johannes, 2026) . This finding aligns with various previous studies showing that the use of digital technology significantly helps improve SME performance, as it makes operational processes more efficient and opens access to broader markets through digital platforms (Guo, Yang and Shi, 2023) .

3.2.2 The Impact of Business Innovation on SME Performance

The analysis results indicate that business innovation has a significant positive impact on SME performance, with a path coefficient of β = 0.427, a t-value of 4.355, and a p-value of 0.000, thus accepting H2. This finding indicates that the ability of SME actors to engage in business innovation is highly influential in improving business performance (Valdez-Juárez et al., 2024; Wang and Zhang, 2025) . Business innovation encompasses updates to products, services, processes, and business models aimed at creating added value and enhancing business competitiveness (Clauss *et al.*, 2023) . Amid increasingly intense business competition, innovation has become an essential strategy for SMEs to sustain their presence and accelerate business growth. The findings of this study indicate that SMEs capable of sustaining innovation tend to achieve higher performance compared to those that do not implement innovation *(Guo et al., 2023)* . This is because innovation provides business owners with the opportunity to align products and services with market needs and create differentiation that enhances consumer appeal.

3.2.3 The Effect of Business Resilience on MSME Performance

The analysis results indicate that business resilience has a positive and significant influence on SME performance, with a path coefficient of β = 0.343, a t-value of 3.793, and a p-value of 0.000, thus accepting H3. This finding indicates that SMEs' ability to survive and adapt to changes in the business environment makes a significant contribution to improved business performance (Doern, Williams, and Vorley, 2022b) . Business resilience reflects the ability of SME operators to face various challenges such as changes in market conditions, business competition, and economic uncertainty. SMEs with high business resilience tend to be more adaptive in facing changes in the business environment and can maintain business continuity in the long term. This aligns with research stating that business resilience is a key factor in maintaining the sustainability and stability of small business performance, especially when facing economic uncertainty.

3.2.4 The Impact of Digital Literacy on SME Performance

Analysis indicates that digital literacy has a positive and significant effect on SME performance, with a path coefficient of β = 0.166, a t-value of 1.965, and a p-value of 0.025, thus accepting H4. This finding indicates that SME entrepreneurs' ability to understand and apply digital technologies can enhance business performance (Wulandari, Diah, and Asari, 2025) . Digital literacy enables business owners to use various digital technologies more effectively, including in digital marketing, managing online transactions, and utilizing data for business decision-making. Therefore, a high level of digital literacy can improve operational efficiency and expand market access for SMEs. This finding aligns with research demonstrating that digital literacy plays a crucial role in enhancing business owners' ability to use digital technologies, which in turn positively impacts SME performance (Park and Kim, 2024) .

3.2.5 The Influence of Entrepreneurial Orientation on SME Performance

The analysis indicates that entrepreneurial orientation does not have a significant impact on MSME performance, with a path coefficient of β = -0.068, a t-value of 0.817, and a p-value of 0.207; thus, H5 is rejected. These findings confirm that entrepreneurial orientation has not yet succeeded in exerting a direct influence on improving MSME performance in this study. Theoretically, entrepreneurial orientation represents the tendency of business actors to be innovative, proactive, and willing to take risks in managing their businesses (Hamzah, 2025). However, in the context of this study, entrepreneurial orientation does not have a significant direct impact on business performance. This may be due to several factors, such as resource constraints, poor market access, or suboptimal innovation capabilities among certain MSME

actors. Therefore, entrepreneurial orientation likely exerts a greater influence through other channels, such as business innovation (Li *et al.*, 2025).

3.2.6 The Effect of Digital Technology Adoption on Business Innovation

The analysis results indicate that the adoption of digital technology has a positive and significant effect on business innovation, with a path coefficient of β = 0.169, a t-value of 2.280, and a p-value of 0.011, thus accepting H6. This finding indicates that the use of digital technology by SME actors can drive the emergence of various types of innovation in business operations, including product innovation, service innovation, and process innovation *(Guo et al., 2023)*. Digital technology provides opportunities for SME operators to develop new business models, expand marketing networks, and enhance customer interactions *(Verhoef et al., 2021)*. Thus, the adoption of digital technology can serve as a driving factor in fostering business innovation among SMEs (Guo *et al.*, 2023).

3.2.7 The Influence of Digital Literacy on Business Innovation

The test results indicate that entrepreneurial orientation has a positive and significant impact on business innovation, with a path coefficient β = -0.036, a t-value of 0.379, and a p-value of 0.352, leading to the rejection of H7. This finding suggests that the ability of SME actors to understand digital technology has not directly driven the creation of business innovation. This may be due to the fact that digital literacy is more related to the ability to use technology, while business innovation requires additional factors such as creativity, resources, and business environment support *(* Zahwa, Sutjipto, and Salim, 2025).

3.2.8 Bisnis The Effect of Entrepreneurial Orientation on Business Innovation

The test results indicate that entrepreneurial orientation has a positive and significant effect on business innovation with a path coefficient of β = 0.736, a t-value of 9.186, and a p-value of 0.000, thus accepting H8. This finding indicates that SME entrepreneurs with a strong entrepreneurial orientation tend to be more active in generating innovations for their businesses(Qasim, Shuhaiber and Rawshdeh, 2025) . An innovative, proactive attitude, along with the courage to take risks, encourages entrepreneurs to develop new products, improve service quality, and design more creative business strategies. The findings of this study align with previous research indicating that entrepreneurial orientation has a significant influence on a company's innovation capacity (Santos, Marques, and Ferreira, 2024).

3.2.9 The Mediating Effect of Business Innovation

Test results indicate that business innovation acts as a mediating variable in the relationship between digital technology adoption and SME performance, as well as between entrepreneurial orientation and SME performance. These findings confirm that business innovation plays a crucial role in linking digital capabilities and entrepreneurial orientation to improved business performance *(Guo et al., 2023)*.

3.2.10 Pengaruh Moderasi Ketahan Usaha

The results of the moderation test indicate that business resilience only moderates the relationship between business innovation and SME performance, whereas it does not show a significant moderating effect on other variable relationships. These findings suggest that SMEs with high levels of business resilience tend to be able to leverage business innovation more effectively to improve business performance. Business resilience helps SME operators cope with changes in the business environment and maximize the benefits of the innovations implemented (Doern, Williams and Vorley, 2022b.

CONCLUSION

This study demonstrates that SME performance is significantly influenced by a combination of several internal factors: digital technology adoption, business innovation, business resilience, and digital literacy. The research model exhibits strong explanatory power ($R^2 = 0.736$), indicating that these variables account for the majority of the variation in SME performance.

The use of digital technology has been proven to improve operational efficiency, expand market access, and drive business innovation. Business innovation itself is a key factor in enhancing competitiveness and business sustainability through the development of products, services, and business processes. Additionally, business resilience plays a crucial role in maintaining the stability and growth of SMEs amidst the dynamics and uncertainties of the business environment.

Digital literacy also contributes positively to SME performance by enhancing entrepreneurs' ability to effectively utilize technology. Meanwhile, entrepreneurial orientation does not directly influence performance but plays a significant role in driving business innovation.

Overall, the results of this study confirm that improvements in SME performance depend not only on operational aspects but also on the ability to adapt, innovate, and utilize digital technology. Therefore, support from various parties is needed to improve digital literacy, strengthen innovation, and drive the digital transformation of SMEs to face future economic challenges.

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