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Digital Economy, Financial Inclusion and MSME Performance: Does Financial Literacy Moderate the Relationships?

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Abstract

Purpose – This study explores the moderating function of financial literacy and looks at how the digital economy, financial inclusion, and financial literacy affect MSME performance in Badung Regency, Indonesia, from an accounting and Resource-Based View perspective.
Design/Methodology/Approach – PLS-SEM is used in this quantitative investigation. A purposive sample of 177 MSME managers or proprietors in Badung Regency was analyzed, exceeding the minimum sample requirement of 82 observations based on the inverse square root method.
Results – The findings indicate MSME performance is positively impacted by the digital economy, financial inclusion, and financial literacy. Both the association between financial inclusion and MSME performance and the relationship between the digital economy and MSME performance are considerably moderated by financial literacy. From an accounting perspective, based on these findings digital and financial resources generate greater performance benefits when MSME owners can effectively interpret financial information, manage resources, and support planning, control, and decision-making.
Originality – This study extends MSME accounting literature by positioning financial literacy as a knowledge-based internal capability that not only directly improves MSME performance but also significantly moderates the effects of the digital economy and financial inclusion within a single integrated model.
Research limitations/Implications – Improving MSME performance requires an integrated approach that combines digital adoption, financial access, and financial literacy. One of the limitations of this study stems from its cross-sectional design, reliance on self-reported data, purposive sampling, and geographical focus on MSMEs in Badung Regency. Accordingly, caution is warranted when extending these findings beyond the study context.

Keywords: Digital Economy, Financial Inclusion, Financial Literacy, MSME Performance, Resource-Based View

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Introduction

Micro, Small, and Medium Enterprises (MSMEs) play a fundamental role in Indonesia's economic development by generating employment, enhancing income, and bolstering economic engagement. However, the sheer number of MSMEs does not in itself reflect their ability to deliver strong and sustainable performance. Compared to large companies, MSMEs generally face constraints in capital, human resources, managerial capabilities, digital skills, and access to information and financing (OECD, 2021). These constraints are also linked to the ability to manage the accounting and financial information necessary for decision making. In this study, MSME performance is seen as a layered concept consisting of financial and business growth aspects (Wiklund & Shepherd, 2005), operationalized through sales growth, profit growth, and asset growth, with customer growth added as a further indicator drawn from Dhamayantie & Fauzan (2017). Consequently, enhanced performance relies not solely on resource availability but also on MSMEs' capacity to effectively manage and convert those resources into economic value.

The rapid growth of the digital economy enables MSMEs to improve efficiency and expand business activities through various digital technologies. Digital adoption has been positively associated with MSME performance (Affandi et al., 2024; Eller et al., 2020), as also reflected in the widespread use of QRIS, which recorded 57 million users and 39.3 million merchants during the first half of 2025, with MSMEs accounting for 93.16% of the total merchants (Bank Indonesia, 2025). From an accounting perspective, digitalization also supports systematic financial recording and decision-making. Mahaini et al. (2022) show that financial-recording tools can improve financial administration and support business planning, while Rachman & Andriani (2024) found that SI APIK facilitates transaction recording and financial reporting for MSMEs. Similarly, Sofian et al. (2024) demonstrate that digital financial-recording applications assist MSMEs in monitoring their financial condition. Therefore, the benefits of the digital economy depend not only on technology adoption but also on MSMEs' ability to utilize digitally generated financial information for effective business decision-making.

Financial inclusion is equally important because it expands MSMEs' access to banking services, digital payments, credit, and other financial solutions (Johri et al., 2024). Greater access to finance can reduce financing constraints, support working capital and investment, and improve business performance (Bhattacharyya et al., 2023; D. Li & Sun, 2025; Ma & Jiang, 2024). From an accounting and finance perspective, effective use of financial access requires sound decisions regarding sources and uses of funds, working capital, financial obligations, financing costs, and risks. Nevertheless, not all SMEs benefit equally from increased access to financial services. The 2025 National Survey on Financial Literacy and Inclusion reported that Indonesia's financial inclusion and financial literacy indices stood at 80.51% and 66.46%, respectively (OJK & BPS, 2025). This gap indicates that access to and use of financial services are growing faster than the public's ability to understand and manage financial matters. This situation is particularly important for MSMEs because the use of credit, fintech, mobile banking, and digital payments requires business owners to assess the costs, benefits, risks, and financial consequences of every decision.

Against this backdrop, financial literacy plays a crucial role in enabling MSME entrepreneurs to make informed financial decisions regarding budgeting, cash flow management, financing, and investment (IS et al., 2025; Widjayanti et al., 2025). Hidayat et al. (2022) emphasize the importance of budgeting, managing income and expenditures, maintaining cash-flow stability, and managing debt and receivables in business financial management. Financial literacy is also associated with financial access, MSME performance, and debt-use decisions (Anshika & Singla, 2022; Basha et al., 2023). Therefore, the value derived from digital and financial resources is determined not only by their accessibility but also by entrepreneurs' capacity to assess and manage them effectively.

Financial literacy, therefore, not only has the potential to directly influence performance but can also determine the extent to which the digital economy and financial inclusion can translate into improved performance. Two SMEs with relatively similar levels of access to digital resources and financial services may exhibit different performance outcomes because the benefits of these resources depend on the entrepreneurs' capabilities to understand and manage financial aspects and apply them in business decision-making (Adomako et al., 2016; Li et al., 2024; Candraningrat et al., 2025). Thus, from an accounting perspective, financial literacy theoretically has the potential to serve as a capability that determines the effectiveness of utilizing digital and financial resources.

Although prior studies have established links between digitalization, financial access, financial literacy, and business performance, empirical evidence regarding the role of financial literacy remains mixed, with its effects varying across different resource contexts. Candraningrat et al. (2025), for example, show that financial literacy can amplify the impact of fintech on the financial performance of MSMEs, while Adomako et al. (2016) demonstrate that financial literacy enhances the positive association between access to finance and firm growth. In contrast, Mutamimah & Indriastuti (2023) found that although financial

literacy moderated the relationship between fintech and financial inclusion, fintech did not improve SME financial performance even when financial literacy was incorporated as a moderating variable. Meanwhile, financial inclusion had a positive effect on financial performance. These findings diverge from earlier research highlighting the role of financial literacy in strengthening the relationship between technological or financial resources and firm performance. Such inconsistencies suggest that the moderating influence of financial literacy has yet to be firmly established and may be contingent on the specific relationships under investigation.

This issue is particularly relevant for MSMEs in Badung Regency, as one of the hubs of economic and tourism activity in Bali. As of 2025, there were 58,302 MSMEs spread across six subdistricts in Badung Regency (Pemerintah Kabupaten Badung, 2025a). The local government has continued to strengthen MSME development through digitalization, broader market access, promotion, and improved access to financing. In 2025, for example, the credit ceiling of the Sidi Kumbara program was increased from IDR 25 million to IDR 100 million to support business development and competitiveness (Setda Kabupaten Badung, 2024; Pemerintah Kabupaten Badung, 2025b). These initiatives indicate the growing strategic importance of digital and financial resources in supporting MSME development. However, empirical evidence is still needed to clarify how far these resources, together with financial literacy, contribute to MSME performance. Examining these relationships in Badung may therefore provide a more concrete basis for understanding the factors that support MSME development and for informing more targeted policy and assistance programs.

Accordingly, this study examines the effects of the digital economy, financial inclusion, and financial literacy on MSME performance, as well as the moderating role of financial literacy in the relationships between the digital economy and financial inclusion with MSME performance. Financial literacy is viewed as a knowledge-based capability that may help MSMEs use digital and financial resources more effectively to improve profits, sales, customers, and assets. The novelty of this study lies in examining financial literacy as a complementary capability that simultaneously moderates two strategic resources, the digital economy and financial inclusion, within a single integrated model. This approach extends prior studies that have commonly examined these relationships separately and offers a more integrated explanation of how financial literacy may shape the contribution of digital and financial resources to MSME performance.

Literature Review and Hypothesis Development

Resource-Based View (RBV)

RBV argues that differences in firm performance are shaped by the resources and capabilities firms control and their ability to deploy them effectively. Wernerfelt (1984) emphasizes viewing firms based on their resources, while Barney (1991) emphasizes that organizational resources encompass tangible and intangible assets, competencies, operational routines, information, and accumulated knowledge that contribute to greater organizational efficiency and effectiveness. Organizational resources possessing unique strategic value, limited availability, low imitability, and minimal substitutability can serve as a foundation for sustained competitive advantage (Barney, 1991). Peteraf (1993) further highlights resource heterogeneity, limited competition before and after resource acquisition, and imperfect resource mobility as conditions supporting sustained competitive advantage.

RBV is pertinent for MSMEs because resource constraints make performance contingent on the capacity to acquire, combine, and utilize resources to develop capabilities and generate value (Sirmon et al., 2007; Lukovszki et al., 2020). From this perspective, this study positions the digital economy and financial inclusion as strategic external resources that provide MSMEs with access to digital technologies, information, markets, payment systems, and financial services. Previous studies have shown that the utilization of digital resources and access to financial services can contribute to better MSME performance. However, the availability of these resources alone may not generate the same performance outcomes across firms because MSMEs differ in their ability to use them effectively. Therefore, financial literacy is positioned as a knowledge-based capability that enables MSME owners to understand, evaluate, and utilize digital and financial resources more effectively in business decision-making. Previous research also indicates that financial literacy can directly improve business performance and, in some contexts, strengthen the effects of financial and technological resources on firm outcomes. Accordingly, the RBV framework in this study suggests that the digital economy and financial inclusion contribute to MSME performance as strategic resources, while financial literacy functions both as an internal capability and as a moderating capability that strengthens the effectiveness of these resources. Based on this theoretical reasoning and prior empirical findings, the study develops a framework in which the digital economy, financial inclusion, and financial literacy influence MSME performance, while financial literacy moderates the effects of the digital economy and financial inclusion on MSME performance.

The Impact of the Digital Economy on MSME Performance

RBV offers the perspective that resources are valuable to a company when they can be employed to develop and execute strategies that enhance the organization's efficiency and effectiveness (Barney, 1991). Within the MSME sector, digital technology could expand a business's capabilities in marketing, sales, transactions, customer communication, and obtaining market information. Digital platforms, including online marketplaces and social networking channels, provide MSMEs with opportunities to access broader markets, obtain valuable customer insights, and foster stronger consumer relationships (Ballerini et al., 2023; Cao & Weerawardena, 2023). Furthermore, integrating digital solutions, such as e-commerce platforms, electronic payment systems, and online marketing strategies, into business operations contributes to improved organizational performance (Affandi et al., 2024). Prior research has repeatedly highlighted the connection between the adoption of digital technologies and business performance. Affandi et al. (2024), in a study involving 5,035 MSMEs across 17 Indonesian provinces, found a positive association between digital technology adoption and business performance, reflected in increased sales growth. Savvakis et al. (2024) demonstrate that digitalization considerably enhances the financial performance of SMEs in Europe, with a more pronounced effect during the COVID-19 pandemic. Based on RBV, empirical findings, and the underlying mechanisms, greater engagement with the digital economy is expected to enhance MSMEs' ability to achieve superior business performance.

H_1: The digital economy has a positive effect on the performance of MSMEs.

The Impact of Financial Inclusion on MSME Performance

RBV explains that a company's resources and capabilities serve as a crucial foundation for creating competitive advantage and help explain differences in performance among companies (Barney, 1991; Wernerfelt, 1984). For MSMEs, access to financial resources is essential for meeting working capital needs and supporting investment and business development. Financial inclusion expands MSMEs' access to financing sources, thereby reducing financial constraints, enhancing their ability to capitalize on investment opportunities, and ultimately supporting improved business performance (Bhattacharyya et al., 2023; Ma & Jiang, 2024). Previous research findings indicate that financial access is associated with improved business performance. Adomako et al. (2016) show that access to financing is associated with firm growth. Peter et al. (2025) note that the performance of women-owned businesses in India is significantly influenced by both traditional and digital financial inclusion. Therefore, the greater the opportunities for these businesses to increase sales, profits, the number of customers, and assets, the more productive MSMEs are in utilizing financial services, and the better their access to those services.

H_2: Financial inclusion has a positive effect on the performance of MSMEs.

The Impact of Financial Literacy on MSME Performance

Knowledge represents a strategic and valuable intangible asset that strengthens firms' capacity to strengthen their organizational competencies and achieve superior performance (Barney, 1991). Financial literacy enhances MSME owners' ability to maintain effective cash flow management by strengthening their financial knowledge and competencies, plan finances, evaluate financing, and assess risks, thereby supporting decision-making and business performance (Graña-Alvarez et al., 2024; Widjayanti et al., 2025). Previous empirical studies have consistently highlighted the beneficial role of financial literacy in enhancing business performance. Yakob et al. (2021) demonstrated that higher levels of financial literacy contribute positively to the financial performance of SMEs. Similarly, Kurniasari et al. (2025) reported that financial literacy not only improves SME business performance but also facilitates FinTech adoption and access to financial resources, thereby further strengthening business outcomes. Within the RBV framework, financial literacy contributes to MSME performance by enabling business owners to make sound financial decisions, maintain financial stability, manage potential risks, and direct financial resources toward activities that support business growth. Therefore, its direct effect reflects the value created from the capability itself, independent of other external resources.

H_3: Financial literacy has a positive effect on the performance of MSMEs.

The Role of Financial Literacy in Moderating the Impact of the Digital Economy on MSME Performance

The digital economy offers various opportunities for MSMEs, but technology will provide greater value when its use is embedded in business operations and complemented by sufficient financial expertise to support effective decision-making (Li et al., 2024; Matarazzo et al., 2021). Candraningrat et al. (2025) revealed that financial literacy enhances the positive association between FinTech utilization and the financial outcomes of SMEs in Bali. Beyond its independent contribution to firm performance, financial literacy functions as a complementary capability that enables businesses to leverage digital resources more effectively, thereby translating technological advantages into improved business outcomes. From an RBV

perspective, access to digital technologies alone does not guarantee superior performance because firms differ in their ability to evaluate, integrate, and utilize those technologies. Financial literacy enhances the capacity of MSME owners to assess the financial consequences of digital adoption, control digital transaction costs, manage revenues generated through digital channels, and allocate funds more productively. Therefore, higher financial literacy is expected to increase the value derived from digital economy resources, thereby strengthening their positive effect on MSME performance.
H_4: Financial literacy moderates the effect of the digital economy on the performance of MSMEs.

The Role of Financial Literacy in Moderating the Effect of Financial Inclusion on MSME Performance
Financial inclusion provides access to financial resources, but such access does not necessarily yield the same performance benefits for every MSME (Bhattacharyya et al., 2023). Unlike its direct effect on performance, the moderating role of financial literacy reflects its function as a complementary capability that determines how effectively financial resources are selected, allocated, and managed. From the RBV perspective, resources create greater value when they are combined with appropriate internal capabilities. Thus, financially literate MSMEs are better equipped to evaluate financing options, manage borrowing risks and obligations, and allocate funds productively. Consequently, financial literacy is expected to strengthen the positive effect of financial inclusion on MSME performance. Consistent with the RBV perspective, Adomako et al. (2016), drawing on data from 201 SMEs in Ghana, found that financial literacy helps businesses make better use of financial access to support their growth.
H_5: Financial literacy moderates the effect of financial inclusion on the performance of MSMEs.

Methods

PLS-SEM is used in this study because it is considered the most appropriate for the research design with SmartPLS software. The study examines the effects of the Digital Economy (X1) and Financial Inclusion (X2) on MSME Performance (Y), while Financial Literacy (M) is modeled both as a direct predictor of MSME Performance and as a moderating variable. The moderation model includes the interaction terms Financial Literacy × Digital Economy and Financial Literacy × Financial Inclusion. The study population comprises MSME operators in Badung Regency. Based on data from the Badung Cooperative and SME Agency (Diskop UKMP Badung), 58,302 MSMEs were recorded in Badung Regency at the end of 2025. Participants were recruited through purposive sampling, with eligibility determined by the following predefined criteria: MSMEs operating in Badung Regency; respondents serving as business owners or managers; businesses operating for at least one year; and respondents who had used or were familiar with digital services in their business activities. The purposive sampling criteria were designed to select respondents with adequate knowledge and practical experience relevant to the research constructs. In particular, familiarity with digital services was considered important because respondents were asked to assess the role of the digital economy in their business activities. Therefore, respondents with absolutely no exposure to digital services were excluded, as they might not be able to provide informed assessments of digital-related indicators. Nevertheless, this criterion potentially resulted in an underrepresentation of digitally inactive MSMEs. Consequently, the findings are primarily applicable to MSMEs with some exposure to digital services, while potential selection bias is recognized as a study limitation.

An initial sampling target of 170 respondents was established using a conservative ratio of 10 observations per indicator for the 17 indicators employed in the study (17 × 10 = 170) (Hair et al., 2019). In total, 177 valid responses were collected and retained for analysis. To further assess sample-size adequacy beyond the initial rule-of-thumb approach, a retrospective evaluation was conducted using the inverse square root method proposed by Kock & Hadaya (2018). This method estimates the minimum required sample size based on the smallest absolute path coefficient targeted for statistical detection in the structural model. In the present model, the smallest path coefficient was 0.275, representing the moderating influence of financial literacy on the relationship between financial inclusion and MSME performance. With statistical power set at 80% and a significance threshold of 5%, the minimum sample size was estimated to be $N_{min} > (2.486/0.275)^2 = 81.72$, which was rounded up to 82 observations. The final sample comprised 177 respondents, substantially exceeding the minimum requirement of 82 observations. The sample is sufficient for estimating the proposed PLS-SEM model, including the hypothesized moderation relationships. A reflective model is employed for all substantive constructs, as the indicators are representative. Reliability, internal consistency, convergent validity, and discriminant validity are used to evaluate the measurement model.

To address potential common method bias (CMB) arising from self-reported data obtained from a single source, this study employed the full collinearity assessment method introduced by Kock (2015). Latent

variable scores derived from the PLS algorithm were used in auxiliary regression analyses, with each construct alternately treated as the dependent variable and the remaining constructs serving as predictors. The resulting coefficient of determination (R^2) for each regression was converted into a variance inflation factor (VIF) using $VIF = 1/(1 - R^2)$. All full-collinearity VIF values (1.216–3.218) were below the 3.3 threshold proposed by Kock (2015), suggesting that common method bias is unlikely to pose a serious concern in this study.

Operationalization of Variables

Table 1
Operational Variables

Variable	Indicators	Source
Digital Economy (X1)	1. Digital Infrastructure 2. Access to and Use of Digital Technologies and Services 3. Innovation in the Digital Economy 4. Skills Required to Participate in the Digital Economy 5. Trust in the Digital Economy	(Sandeep, 2023)
Financial Inclusion (X2)	1. Access Dimension 2. Usage Dimension 3. Quality Dimension 4. Well-being Dimension	(Nasution et al., 2013)
Financial literacy (M)	1. General financial knowledge 2. Savings and loans 3. Insurance 4. Investments	(Yantis, 2019)
MSME Performance (Y)	1. Profit Growth 2. Growth in the number of customers 3. Sales Growth 4. Growth in total assets	(Dhamayantie & Fauzan, 2017)

There are two stages in conducting an analysis using PLS-SEM. First, the quality of the reflective measurement model is examined by assessing indicator reliability, convergent validity, discriminant validity, and internal consistency. The measurement model was assessed using indicator loadings and composite reliability (> 0.70), AVE (≥ 0.50), and discriminant validity tests involving cross-loadings, Fornell–Larcker, and HTMT. Structural model evaluation covered VIF, R^2, f^2, and Q^2, while hypothesis significance was examined through bootstrapping at $p < 0.05$ and t-statistics > 1.96 for two-tailed tests.

Research Results

Respondent Characteristics

The study involved 177 MSME owners or managers in Badung Regency comprising 54.2% women and 45.8% men. Most were aged 25–44 years (61.0%), followed by 45–54 years (23.2%), 55 years and above (9.6%), and under 25 years (6.2%). For education, 29.4% had completed senior high school or vocational school, 29.4% held a diploma, 23.7% held a bachelor's degree, 11.3% had completed junior high school, 3.4% had postgraduate education, and 2.8% had completed elementary school. Respondents were distributed across all six subdistricts in Badung Regency: Mengwi (32.2%), North Kuta (19.8%), Kuta (17.5%), Abiansemal (11.9%), Petang (9.6%), and South Kuta (9.0%). In terms of business age, 41.2% had operated for 7–10 years, 29.4% for 4–6 years, 17.0% for more than 10 years, and 12.4% for 1–3 years. The business sectors included culinary (28.8%), trade (19.2%), services (18.6%), fashion (16.9%), handicrafts (15.3%), skincare (0.6%), and coffee plantations (0.6%). Based on business scale, 42.4% were small enterprises, 30.5% were medium enterprises, and 27.1% were micro enterprises. Overall, the respondents' characteristics suggest the sample captures MSMEs with varied demographic and business characteristics across Badung Regency.

Descriptive Statistics

Table 2
Descriptive Statistics

Variable	N	Mean	Min	Max	Std. Dev
Financial Literacy	177	3.927	1.250	4.917	0.762
Digital Economy	177	3.877	1.267	4.867	0.765
Financial Inclusion	177	3.909	1.182	4.909	0.818
MSME Performance	177	3.947	2.889	5.000	0.424

Source: Primary data processed by the authors using SmartPLS (2026)

The mean values range from 3.877 to 3.947, indicating relatively high levels across all constructs. MSME Performance shows the highest mean (3.947), followed by Financial Literacy (3.927), Financial Inclusion (3.909), and Digital Economy (3.877). The standard deviations range from 0.424 to 0.818, suggesting acceptable variation in respondents' perceptions. Overall, the results indicate favorable levels of financial literacy, digital economy utilization, financial inclusion, and MSME performance among the respondents.

Evaluation of the Measurement Model

The evaluation of the measurement model is conducted to ensure that the research instrument meets the criteria for reliability and validity through the assessment of indicator reliability, construct internal consistency, as well as convergent and discriminant validity. The results of the PLS Algorithm are presented in Figure 1.

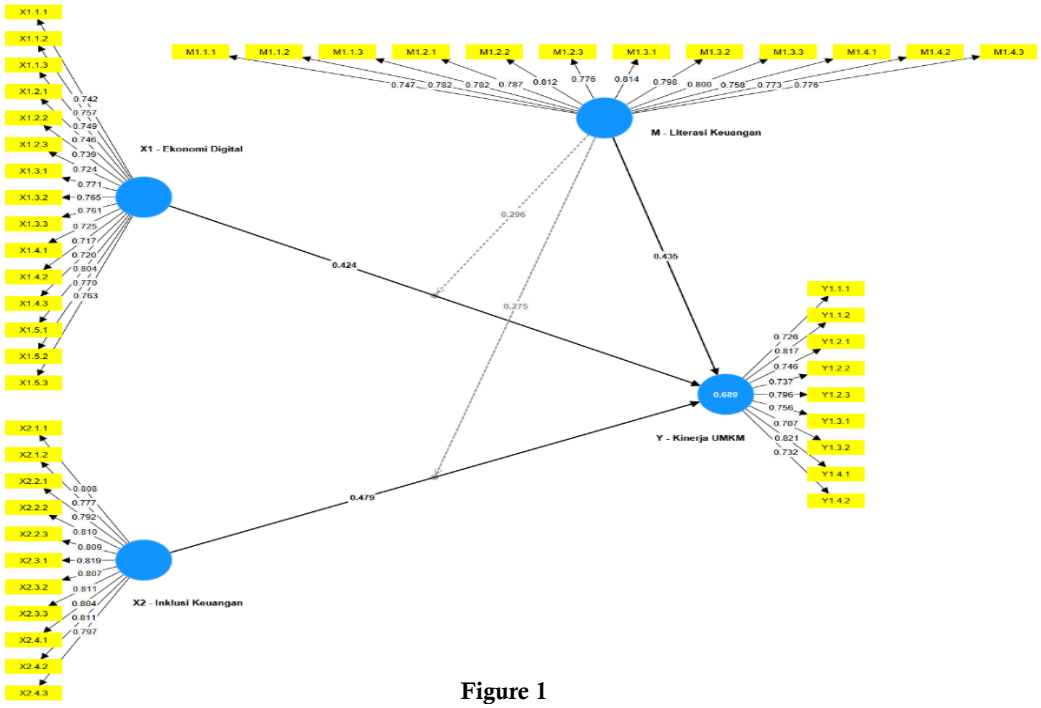


Figure 1
PLS-SEM Algorithm Results

The outer loading test results indicated that all indicators within the constructs of Financial Literacy, Digital Economy, Financial Inclusion, and MSME Performance had values of 0.70 or higher. The outer loading values ranged from 0.747 to 0.814 for Financial Literacy, 0.717 to 0.804 for Digital Economy, 0.777 to 0.819 for Financial Inclusion, and 0.707 to 0.821 for MSME Performance. Consequently, all indicators satisfied the convergent validity criteria and may be maintained in the model.

Convergent validity was confirmed by AVE values of 0.615 for Financial Literacy, 0.563 for the Digital Economy, 0.647 for Financial Inclusion, and 0.579 for MSME Performance, all exceeding the minimum threshold of 0.50. The discriminant validity assessment also showed satisfactory results. Based on *cross-loadings*, each indicator had a higher loading value for the construct it measured than for any other construct. The Fornell-Larcker results also show that the square root of AVE for Financial Literacy (0.784), the Digital Economy (0.751), Financial Inclusion (0.804), and MSME Performance (0.761) is higher than the interconstruct correlations. Furthermore, the HTMT values range from 0.075 to 0.467, and all are below

the 0.85 threshold. Thus, the constructs in the model meet the criteria for discriminant validity. The reliability assessment confirmed satisfactory internal consistency across all constructs. Financial Literacy obtained a Cronbach's Alpha value of 0.943 and a Composite Reliability (rho_c) of 0.950; Digital Economy, 0.945 and 0.951; Financial Inclusion, 0.946 and 0.953; and MSME Performance, 0.909 and 0.925. All values were above 0.70, so all constructs were deemed reliable.

Structural Model Evaluation

The VIF values for all relationships in the model ranged from 1.015 to 1.051, as indicated by an evaluation of multicollinearity. This is evident from the fact that the values are significantly lower than the threshold of 5.00, which implies that the structural model is not affected by multicollinearity. The model's capacity to elucidate MSME performance is illustrated by an R-squared value of 0.689 and an adjusted R-squared value of 0.680. This suggests that the digital economy, financial inclusion, financial literacy, and the interaction term in the model account for 68.9% of the variance in MSME performance, whereas the remaining 31.1% is explained by factors not included in the proposed model.

Based on *the effect size* (f^2) test, Financial Literacy had an f^2 value of 0.599, the Digital Economy had 0.552, and Financial Inclusion had 0.718. These three direct effects fall into the large effect category. Meanwhile, the Financial Literacy × Digital Economy interaction yielded an f^2 value of 0.244 and the Financial Literacy × Financial Inclusion interaction yielded an f^2 value of 0.180, both of which fall into the moderate-effect category. Financial Inclusion showed the greatest contribution to MSME Performance. The *predictive relevance* test yielded a Q^2 value for MSME Performance of 0.384. The positive Q^2 value indicates that the model exhibits predictive relevance for MSME performance, suggesting its ability to predict the endogenous construct.

Hypothesis Testing

The bootstrapping procedure was employed to conduct hypothesis testing, with the criteria of a t-statistic > 1.96 and a p-value < 0.05. The empirical findings provide statistical support for all proposed hypotheses.

Table 3
Hypothesis Test Results

Hypothesis	Relationship	Path Coefficient	t-statistics	p-value	Results
H_1	Digital Economy → MSME Performance	0.424	8.317	< 0.001	Accepted
H_2	Financial Inclusion → MSME Performance	0.479	9.135	< 0.001	Accepted
H_3	Financial Literacy → MSME Performance	0.435	8.301	< 0.001	Accepted
H_4	Financial Literacy × Digital Economy → MSME Performance	0.296	5.368	< 0.001	Accepted
H_5	Financial Literacy × Financial Inclusion → MSME Performance	0.275	5.156	< 0.001	Accepted

Source: Primary data processed by the authors using SmartPLS (2026)

The findings reveal that the digital economy (β = 0.424), financial literacy (β = 0.435), and financial inclusion (β = 0.479) each exert a positive and statistically significant influence on MSME performance. Among these predictors, financial inclusion exhibits the largest path coefficient, suggesting a relatively stronger direct association with MSME performance. The moderation test results indicate that the interaction between the Digital Economy and Financial Literacy has a positive coefficient of 0.296, a t-statistic of 5.368, and a p-value < 0.001. These findings indicate that the positive impact of the Digital Economy on the performance of MSMEs is significantly enhanced by Financial Literacy. In the same vein, the interaction between financial literacy and financial inclusion showed a significant positive effect (β = 0.275; t = 5.156; p < 0.001), indicating that financial literacy strengthens the relationship between financial inclusion and MSME performance. Overall, the findings highlight the significant positive contributions of the digital economy, financial inclusion, and financial literacy to MSME performance. Beyond its direct effect, financial literacy also acts as a moderator, strengthening the relationships between digital economy utilization and MSME performance, as well as between financial inclusion and MSME performance.

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Discussion & Conclusion

Discussion

The Impact of the Digital Economy on MSME Performance

The findings reveal a statistically significant positive relationship between digital economy utilization and MSME performance ($\beta = 0.424$; $t = 8.317$; $p < 0.001$). Thus, the more MSMEs utilize the digital economy, the greater the improvement in their business performance. In this study, the digital economy is reflected through digital infrastructure, the availability and utilization of digital technologies and services, digital innovation, digital skills, and trust in digital transactions. These dimensions enable MSMEs to expand market reach, accelerate transactions, obtain information more efficiently, and improve interaction with customers. Consequently, better utilization of these digital resources can contribute to higher sales, customer growth, profits, and asset development. From RBV, digital resources become valuable when MSMEs are able to integrate them into business processes and use them productively to create efficiency, innovation, and competitive advantage (Barney, 1991). This finding aligns with RBV, emphasizing that superior business performance depends not solely on resource possession but also on how effectively firms leverage their available resources. This finding aligns with the studies of Affandi et al. (2024), Eller et al. (2020), and Savvakis et al. (2024), which show that digital adoption contributes positively to business performance.

The Impact of Financial Inclusion on MSME Performance

The findings indicate that financial inclusion significantly and positively contributes to MSME performance ($\beta = 0.479$; $t = 9.135$; $p < 0.001$). Financial inclusion in this study is reflected through access, usage, quality, and the contribution of financial services to business well-being. Improved access to formal financial services enables MSMEs to secure working capital, facilitate transactions, maintain liquidity, and support business growth. Nevertheless, these benefits depend on the effective utilization of financial services that align with business needs. From an RBV perspective, access to financial services represents an important financial resource that can support value creation when it is allocated productively. Therefore, MSMEs that are better able to access and utilize appropriate financial products have greater opportunities to increase sales, profits, customers, and total assets. This finding is consistent with Bhattacharyya et al. (2023), Li and Sun (2025), and Yanti (2019) who highlight the role of financial access in enhancing MSME performance by reducing financing constraints.

The Effect of Financial Literacy on MSME Performance

The findings demonstrate a statistically significant positive association between financial literacy and MSME performance ($\beta = 0.435$; $t = 8.301$; $p < 0.001$). Financial literacy is reflected in MSME owners' knowledge of general financial concepts, savings and loans, insurance, and investment. These capabilities enable business owners to manage cash flow, evaluate financing alternatives, control borrowing, anticipate business risks, and make appropriate investment decisions. Within the RBV framework, financial literacy constitutes an internal knowledge-based capability that enhances MSMEs' ability to strategically utilize and manage their resources. Therefore, financial knowledge becomes valuable not merely because it is possessed, but because it can be translated into better business decisions that ultimately improve profit, sales, customer growth, and asset accumulation. This result aligns with Anshika and Singla (2022), Mahaini et al. (2022), and Yakob et al. (2021).

The Moderating Role of Financial Literacy in the Relationship Between the Digital Economy and MSME Performance

The moderation analysis reveals a positive and statistically significant interaction between financial literacy and the digital economy ($\beta = 0.296$; $t = 5.368$; $p < 0.001$). These results suggest that financial literacy significantly enhances the positive relationship between digital economy utilization and MSME performance. In other words, the benefits of the digital economy on performance are greater when MSME actors have higher levels of financial literacy. From an RBV perspective, this result reflects a synergy between mutually supportive resources and capabilities: digital resources create opportunities, while financial literacy enables those resources to be used more productively. Thus, financial literacy functions as a capability that strengthens the value of digital resources in generating higher sales, profits, customers, and assets. These results are highly consistent with the findings of Li et al. (2024) in *Finance Research Letters* which found that digital transformation drives entrepreneurial performance and that financial literacy significantly strengthens the relationship between digital transformation and performance. Thus, the mere presence of technology does not necessarily yield optimal benefits if business owners lack the necessary skills to evaluate the costs, benefits, risks, and financial consequences of using technology.

The Moderating Role of Financial Literacy in the Relationship Between Financial Inclusion and MSME Performance

The findings further reveal a statistically significant positive moderating effect of financial literacy on the relationship between financial inclusion and MSME performance ($\beta = 0.275$; $t = 5.156$; $p < 0.001$). The findings suggest that financial literacy positively moderates the relationship between financial inclusion and MSME performance. This implies that access to financial services yields greater benefits when MSME operators are able to understand, select, and manage financial resources appropriately. From an RBV perspective, financial inclusion represents an accessible financial resource, while financial literacy acts as an internal capability that determines how effectively this resource is utilized. This supports the RBV argument that performance differences may arise even among firms with similar access to resources because their capabilities to manage those resources differ. These findings align with the study by Adomako et al. (2016) which demonstrated that financial literacy enhances the positive association between access to finance and business growth. The study by Anshika & Singla (2022) also demonstrates that financial literacy enhances business performance, particularly when funding sources are available. Thus, financial access without adequate management skills may not necessarily be optimal, as the combination of financial inclusion and financial literacy increasingly enables MSMEs to transform access to funds into productive decisions that drive performance.

Although the findings support the proposed relationships, they should be interpreted within the specific context of MSMEs in Badung Regency. The relatively strong effects of financial inclusion, digital economy, and financial literacy may partly reflect the characteristics of the local business environment, where MSMEs increasingly interact with digital payment systems, online platforms, and formal financial services. Therefore, the observed relationships may not solely reflect firm-level resources and capabilities as suggested by the RBV, but may also be influenced by contextual factors such as local digital infrastructure, access to financial institutions, competitive pressure, and differences in business sectors. These contextual conditions may help explain why some MSMEs are better able to translate digital and financial resources into improved performance than others.

Conclusion

This research illustrates that the digital economy, financial inclusion, and financial literacy exert a favorable and substantial influence on the performance of MSMEs. Financial inclusion has the greatest direct impact, followed by financial literacy and the digital economy. Furthermore, financial literacy was discovered to enhance the correlation between the digital economy and MSME performance, in addition to the connection between financial inclusion and MSME performance. Consequently, financial literacy serves a dual purpose: it enhances performance directly and equips MSME operators to maximize the advantages of digitalization and financial service access. Theoretically, this study contributes by clarifying the complementary relationship between financial capabilities, the utilization of the digital economy, and access to financial services in explaining MSME performance. In practical terms, MSME owners in Badung Regency should strengthen their ability to utilize digital and financial resources effectively. Practical priorities include improving digital infrastructure and skills, using digital payments, marketplaces, and financial recording applications, optimizing formal financial services, and strengthening financial knowledge related to savings, loans, insurance, and investment. Financial literacy is especially important because it directly improves MSME performance and strengthens the benefits of the digital economy and financial inclusion. Therefore, local governments and financial institutions should integrate digital capacity building, financial access, and financial literacy programs to support growth in sales, customers, profits, and assets.

Limitations & Future Research

This study acknowledges several limitations, particularly its cross-sectional design, which restricts the extent to which causal relationships can be established. Second, relying on self-reported information may introduce subjective judgments, although the full collinearity results suggest that common method bias is not a major concern. Third, the purposive sampling approach may have excluded MSMEs with limited digital engagement, potentially affecting sample representativeness. Lastly, as the study was confined to Badung Regency, its findings may not fully reflect MSME conditions in other regions or business settings.

Declaration on the Use of Generative AI

The authors use generative AI (ChatGPT, OpenAI) solely for language refinement. The entire process of scientific analysis, interpretation, and conclusion has been carried out and authenticated by the authors.

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