



Financial and Digital Literacy as Catalysts for MSMEs' Business Sustainability: The Roles of Product Innovation and Creativity

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ABSTRACT

Purpose – This study aims to analyze the influence of financial literacy and digital literacy on the sustainability of Micro, Small, and Medium Enterprises (MSMEs) by positioning product creativity and product innovation as mediating mechanisms that explain the process of transforming knowledge-based literacy into business sustainability.

Methodology – The research used a quantitative approach with a causal design. Data were collected through a structured questionnaire from 95 rattan handicraft MSME actors in Aceh Besar Regency, Indonesia. Data were analyzed using Partial Least Squares Structural Equation Modeling (SEM-PLS) to test the direct and indirect relationships between variables.

Findings – The results showed that financial literacy and digital literacy had a positive and significant effect on product creativity and product innovation. Product innovation was found to have a positive and significant effect on business sustainability and to mediate the relationships between financial literacy and business sustainability and between digital literacy and business sustainability. In contrast, product creativity had no significant effect on business sustainability and did not function as a mediator. These findings indicate that financial and digital literacy do not automatically lead to business sustainability without an implementation process that involves product innovation.

Originality/Novelty – This research contributes to literature by empirically distinguishing the role of creativity as the ideation stage and innovation as the implementation stage. It shows that product innovation is a key mechanism that transforms financial literacy and digital literacy into business sustainability in traditional industry-based MSMEs.

Implications – The findings emphasize the importance of integrating financial literacy and digital literacy programs with efforts to strengthen product innovation capacity. From a practical perspective, the results offer a basis for developing innovation-oriented strategies and policies for MSMEs aimed at fostering long-term business sustainability.

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INTRODUCTION

The sustainability of Micro, Small, and Medium Enterprises (MSMEs) is positioned as a central issue in the business and economic literature due to its role in maintaining economic stability, providing employment opportunities, and promoting inclusive development (Permatasari et al., 2023). However, recent studies have found that the sustainability of MSMEs can no longer be explained solely by structural factors such as business size or access to capital, but rather by internal capabilities that enable sustainable adaptation to market dynamics and technology (Sindhvani et al., 2022).

Within this framework, financial literacy is recognized as a cognitive capability that underpins MSME actors' ability to manage cash flow, assess risks, and make rational long-term investment decisions (Tuffour et al., 2022a). A number of empirical studies have found that a higher level of financial literacy is positively correlated with business stability and sustainable performance of MSMEs (Miswanto et al., 2024). However, the literature has also indicated that financial literacy does not always generate consistent sustainability outcomes when it is not accompanied by strategic implementation capabilities (A. Ferli, 2023). In addition to financial literacy, digital literacy has been widely acknowledged as an important prerequisite for the sustainability of MSMEs in the context of technology-driven economies and digital platforms (Scuotto et al., 2024). Digital literacy allows MSMEs to access a wider market, utilize marketing and production technologies, and respond to changes in consumer preferences more quickly (Rakib, Azis, et al., 2024). However, some studies have reported that digital literacy as a form of knowledge does not automatically increase business sustainability without a transformation process into concrete business practices (S. Zhao et al., 2023).

The inconsistency of these findings means that financial literacy and digital literacy are more appropriately understood as intangible resources with potential rather than direct determinants of business sustainability (Amjad et al., 2025). The Resource-Based View asserts that cognitive resources will only create sustainable advantages when they are converted into operational and strategic capabilities that are difficult to replicate (Malhotra et al., 2025). Thus, the sustainability of MSMEs depends on internal mechanisms that bridge literacy with the creation of economic value. In the entrepreneurial literature, product creativity is often seen as an initial capability in the process of value creation as it relates to the ability to generate ideas, design, and differentiate unique products (Castillo Vergara & García Pérez de Lema, 2021). Several studies have reported that creativity contributes to the attractiveness of MSME products and brand identity (Y. Cao et al., 2023). However, these findings are not consistent because other research has revealed that creativity does not always have a direct impact on business sustainability when it is not supported by adequate innovation and implementation systems (Krasovska et al., 2022).

The debate leads to a conceptual distinction between creativity and product innovation, where innovation represents the process of implementing creative ideas into products that have economic value and are accepted by the market (De Guimarães et al., 2022). The latest literature further confirms that product innovation has a more direct role in MSMEs' sustainability, as it enables adaptation to changing market demand and extends product life cycles (Pasaribu et al., 2024). Thus, creativity can be seen as a prerequisite, but not a guarantee, for business innovation and sustainability (Sokołowski, 2019).

The relationship between literacy, creativity, and innovation is complex when it is associated with business sustainability. Financial literacy provides a basis for innovative investment decision-making and risk management in product development (Miswanto et



al., 2024). Meanwhile, digital literacy accelerates the innovation process by facilitating the use of technology, access to market information, and real-time consumer feedback (Radovanović et al., 2020). The combination of these two forms of literacy is therefore considered a key driver of relevant and sustainable product innovation (Bargavi et al., 2025).

Nevertheless, most previous studies have examined the effects of financial literacy and digital literacy on MSME sustainability directly, or have treated creativity and innovation as separate independent variables (Rahmani et al., 2025; Rakib, Wahyudi, et al., 2024). This approach leads to a gap in understanding the mechanism through which literacy is converted into business sustainability through the internal process of value creation. This gap is even more evident in the context of traditional handicraft-based MSMEs, where the level of creativity is relatively high but business sustainability is often low due to limited capacity to implement innovation (Y. Cao et al., 2023; Hasan et al., 2024). The context of traditional handicraft MSMEs shows that creativity that is not followed by product innovation tends to result in symbolic differentiation without long-term economic impact (Krasovska et al., 2022; Lastri & Marlizar, 2026). On the contrary, product innovation supported by financial and digital literacy allows MSMEs to transform cultural values and creative ideas into competitive and sustainable products (De Guimarães et al., 2022). This suggests that innovation plays a critical role as a central mechanism linking business literacy to sustainability (Zahro et al., 2025).

Based on this rationale, this study develops an integrative model that analyzes the influence of financial literacy and digital literacy on the sustainability of MSMEs, positioning product creativity and product innovation as conceptually distinct mediating mechanisms. The novelty of this research lies in its assertion that financial and digital literacy generate sustainability impacts when they are translated into implementable product innovations, whereas creativity alone is insufficient without support from innovation capabilities and resource management. The theoretical contribution of this research enriches the MSME sustainability literature by explaining the internal process of transforming cognitive resources into sustainable excellence, while its practical contribution provides a basis for formulating MSME development policies and strategies that emphasize the integration of literacy and innovation ecosystems.

Hypothesis Development

The Relationship between Financial Literacy and Digital Literacy with Product Creativity

From the perspective of the Knowledge-Based View, knowledge is the main resource of the organization that shapes cognitive processes such as learning, exploration of ideas, and creativity (Permatasari et al., 2023). Financial literacy and digital literacy, as forms of entrepreneurship-specific knowledge, play a vital role in expanding the cognitive framework of MSME actors in evaluating opportunities and developing new product ideas (Scuotto et al., 2024). Financial literacy is not only related to administrative skills, but also shapes how business actors assess the economic feasibility and risks of the creative ideas they generate (Tuffour et al., 2022a).

MSME actors with a good level of financial literacy tend to be more confident and purposeful in exploring product ideas because they have a more rational understanding of the cost, price, and potential profit implications of those ideas (Adewumi & Cele, 2023; Miswanto et al., 2024). Thus, financial literacy provides an evaluative framework that



enables creativity to develop in a more structured and realistic manner. The latest empirical findings also show that financial literacy contributes to improving product ideation skills, especially for resource-constrained MSMEs (Anisa & Nahda, 2023; O. Ferli, 2023)

On the other hand, digital literacy expands the access of MSME actors to market information, design trends, and consumer preferences, which are the main sources of inspiration for product creativity (Rakib, Azis, et al., 2024). The ability to use digital technology enables MSME actors to explore ideas through social media, e-commerce platforms, and digital networks, which enriches the creative process and product differentiation (Scuotto et al., 2024). Recent studies show that MSME actors with higher digital literacy tend to generate a more diverse and contextually relevant range of product ideas aligned with market needs (K. Zhao et al., 2023). Based on the theoretical and empirical synthesis, the following hypotheses were formulated:

H1: Financial literacy has a positive effect on the creativity of MSME products.

H2: Digital literacy has a positive effect on the creativity of MSME products.

The Relationship between Financial Literacy and Digital Literacy with Product Innovation

Unlike creativity, which focuses on ideation, product innovation represents the implementation ability to convert ideas into products that have economic value and can be commercialized (De Guimarães et al., 2022). In the framework of the resource-based view, innovation is seen as a strategic capability that allows MSMEs to use knowledge-based resources to create a sustainable competitive advantage (Rodrigues et al., 2021).

Financial literacy plays an important role in product innovation by enabling MSME actors to plan innovative investments, allocate resources efficiently, and manage risks inherent in the development of new products (Miswanto et al., 2024). MSME actors with strong financial literacy tend to make measured and sustainable innovation decisions, rather than experimental decisions (Tuffour et al., 2022b). Recent empirical studies reveal that financial literacy has a direct effect on the intensity and success of product innovation in MSMEs (Pasaribu et al., 2024).

Meanwhile, digital literacy accelerates and expands the innovation process by using digital technologies in product design, marketing, and the integration of consumer feedback (Radovanović et al., 2020). Digital literacy enables MSMEs to rapidly modify their products in response to changing market preferences, thereby improving product relevance and competitiveness (Rakib, Wahyudi, et al., 2024). Recent research shows that digital literacy is an important determinant of market-oriented and sustainable product innovation (Bargavi et al., 2025). Based on these arguments, the following hypotheses are proposed:

H3: Financial literacy has a positive effect on MSME product innovation.

H4: Digital literacy has a positive effect on MSME product innovation.

The Impact of Financial and Digital Literacy on Business Sustainability

The sustainability of MSME businesses reflects their capability to maintain economic performance and market relevance over the long term (Sindhvani et al., 2022). Financial literacy contributes to sustainability by improving financial management efficiency, cash flow stability, and resilience to business risks (A. Ferli, 2023). MSME actors with strong financial literacy tend to have healthier financial structures and strategic decisions that are adaptive to changes in the business environment (Miswanto et al., 2024).



Digital literacy is also seen as an important factor in MSME sustainability because it allows MSME actors to access digital markets, improve operational efficiency, and build long-term relationships with consumers (Helmi Amba et al., 2025; Rakib, Wahyudi, et al., 2024)(Helmi Amba et al., 2025; Rakib, Wahyudi, et al., 2024). However, empirical findings indicate that the direct influence of digital literacy on MSMEs sustainability remains inconsistent, particularly when it is not accompanied by adequate innovation capabilities (Qosim, 2025). This means that literacy is essential but not sufficient to maintain business sustainability. Based on this synthesis, the following hypotheses are proposed:

H5: Financial literacy has a positive effect on the sustainability of MSME businesses.

H6: Digital literacy has a positive effect on the sustainability of MSME businesses.

The Impact of Product Creativity and Product Innovation on Business Sustainability

Product creativity is often assumed to contribute to sustainability by fostering product differentiation and generating symbolic value (Y. Cao et al., 2023; Maccioni et al., 2021). However, recent literature has found that creativity without innovative implementation rarely results in sustainable economic impacts, particularly in traditional resource-based MSMEs (Krasovska et al., 2022; Shafi et al., 2022). Creativity functions as an initial input in the value creation process, rather than as a direct determinant of business sustainability (Ahmed et al., 2025; Sokołowski, 2019).

In contrast, product innovation has consistently been found to be a key determinant of MSME sustainability because it allows adaptation to changing demand, enhancement of added value, and extension of the product life cycle (De Guimarães et al., 2022). Recent empirical studies suggest that MSMEs that actively engage in innovation exhibit a higher level of sustainability than MSMEs that rely solely on creativity (Pasaribu et al., 2024). Accordingly, the following hypothesis is formulated:

H7: Product creativity has a positive effect on the sustainability of MSME businesses.

H8: Product innovation has a positive effect on the sustainability of MSME businesses.

The Mediating Role of Product Creativity

From the perspective of the Knowledge-Based View, product creativity is considered an initial mechanism for the transformation of knowledge into potential value (Fu, 2022; Rodrigues et al., 2021). Financial literacy and digital literacy enrich the knowledge base of MSME actors, stimulating the product ideation process (Meldona et al., 2023; Scuotto et al., 2024). However, the literature shows that the mediating role of creativity is often weak because limited resources and inadequate innovation support systems hinder the realization of creative ideas into economic value (Krasovska et al., 2022; Nareswari et al., 2023). Therefore, although creativity theoretically has the potential to mediate the relationship between literacy and sustainability, the effectiveness of such mediation remains debatable. Based on these arguments, the following hypotheses are formulated:

H9: Product creativity mediates the influence of financial literacy on the sustainability of MSME businesses.

H10: Product creativity mediates the influence of digital literacy on the sustainability of MSME businesses.



The Mediating Role of Product Innovation

Within the framework of dynamic capability theory, product innovation is the main mechanism enabling organizations to convert knowledge into sustainable market solutions (Biazzo & Filippini, 2021; De Guimarães et al., 2022). Financial literacy and digital literacy provide knowledge inputs when they are implemented through product innovation and increase the competitiveness and sustainability of MSMEs (Bargavi et al., 2025; Isnaeny & Susilowati, 2023; Pasaribu et al., 2024). The empirical literature shows that product innovation consistently acts as a strong mediator between literacy-based capabilities and business sustainability, especially in MSMEs operating in a competitive and dynamic environment (Rakib, Azis, et al., 2024; Wijjayanti et al., 2025). Therefore, the following hypothesis is formulated:

H11: Product innovation mediates the influence of financial literacy on the sustainability of MSME businesses.

H12: Product innovation mediates the influence of digital literacy on the sustainability of MSME businesses.

Based on the preliminary findings and theoretical review, existing literature suggests that the relationship between financial literacy, digital literacy, and the sustainability of MSME businesses has not been fully explored in an integrated framework that explains the internal mechanisms underlying their formation. In particular, the role of product creativity and product innovation as simultaneous mediation pathways is relatively underexplored, especially in the context of traditional handicraft-based MSMEs in developing countries. The novelty of this study lies in examining two different mediation mechanisms, product creativity as the ideation stage and product innovation as the implementation stage, to explain how financial literacy and digital literacy affect business sustainability, both directly and indirectly. This study aims to analyze how financial literacy and digital literacy contribute to the sustainability of MSMEs by strengthening their creative and innovative capabilities. Thus, the conceptual model presented in Figure 1 provides the theoretical foundation underlying the analytical approach of this research and explains the process of transforming knowledge-based literacy into sustainable business excellence.

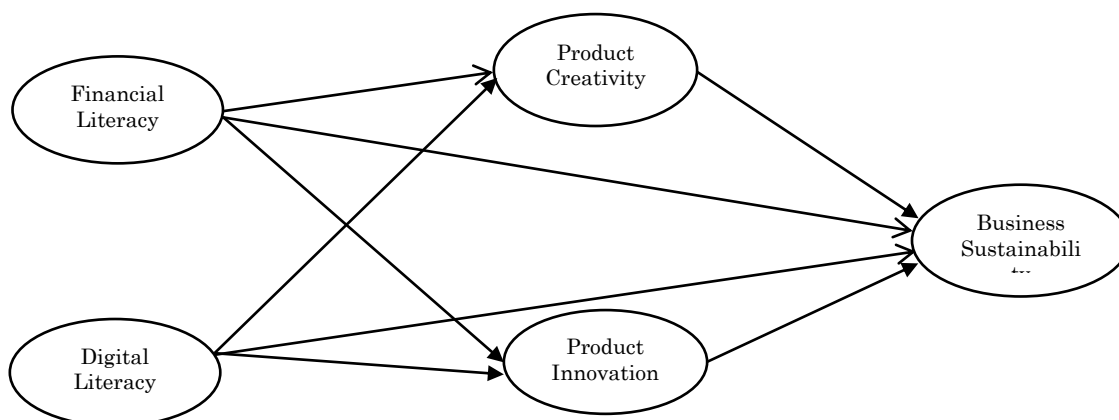


Figure 1. Conceptual Research Model



METHOD

Research design and approach. This study used a quantitative approach with a causal design to assess the cause-and-effect relationship between financial literacy, digital literacy, product creativity, product innovation, and MSME business sustainability. The quantitative approach was chosen because this study aimed to test hypotheses derived from the integration of the Resource-Based View, Knowledge-Based View, and Dynamic Capability Theory, which emphasized structural relationships and mediation mechanisms between latent variables (Hair et al., 2021; Sarstedt et al., 2022).

Research setting and timeline. The research was conducted on rattan handicraft MSMEs operating in Aceh Besar Regency, Indonesia. Data collection was carried out from June to July 2024. The selection of the research location was based on the characteristics of traditional handicraft-based MSMEs that have high creativity potential but face limitations in innovation and business sustainability. Therefore, the context was appropriate to test the mechanism of transforming literacy into sustainable excellence.

population and sample. The population consisted of all rattan handicraft MSME actors who were actively operating in Aceh Besar Regency. The research sample consisted of 95 MSME actors who served as the primary owners or managers of their businesses and were directly involved in strategic decision-making. This sample size was considered adequate for SEM-PLS analysis, which is particularly recommended for research models with structural complexity and predictive orientation (Hair et al., 2021; Sarstedt et al., 2022).

Population and sample. The sample size consisted of 95 respondents, and it met the minimum criteria for the Partial Least Squares analysis because this method does not require a large sample size and remains robust in studies with latent variables and mediating pathways. Thus, this sample size was considered adequate to produce a stable parameter estimate. The sampling technique was purposive sampling. This technique was selected to ensure that respondents had relevant experience and understanding of business management, product development, and utilization of financial literacy and digital literacy in business activities, as recommended in capability-based MSME research.

Data collection. Primary data were collected using a structured questionnaire, which was self-administered and completed by respondents. The survey method was used because it is effective in collecting quantitative data from MSME actors and is commonly used in entrepreneurship and business sustainability research.

Instrument validity and reliability test. The quality of the instrument was evaluated using validity and reliability tests as part of the measurement model. The convergent validity was considered achieved if the outer loading value was ≥ 0.70 and the Average Variance Extracted (AVE) ≥ 0.50 . The reliability of the construct was assessed using Cronbach's alpha and composite reliability with a value of ≥ 0.70 (Hair et al., 2021; Sarstedt et al., 2022).

Data analysis technique. Data analysis was carried out using Structural Equation Modeling based on Partial Least Squares (SEM-PLS) with SmartPLS software. The technique was chosen because it is able to assess structural relationships and mediating influences simultaneously and is suitable for studies with abnormal data distribution and moderate sample sizes (Sarstedt et al., 2022).

Outer model. Evaluation of the measurement model was conducted to ensure that the indicators were able to represent the latent construct validly and reliably. Discriminant validity was assessed using the Heterotrait Monotrait Ratio (HTMT) with a threshold value of < 0.90 , as the recommended limit in the SEM-PLS study (Hair et al., 2021).



Inner model. The evaluation of the structural model was carried out by assessing the coefficient of determination (R^2), path coefficient, and significance of the relationship between latent variables. Significance was tested using a bootstrapping procedure with a 5% significance level. A relationship was considered statistically significant when the t-statistic value ≥ 1.96 or the p-value ≤ 0.05 (Hair et al., 2021; Sarstedt et al., 2022)

RESULTS AND DISCUSSION

Respondent Characteristics

The characteristics of the respondents are presented in Table 1. The table shows that the majority of respondents were rattan handicraft MSME owners or main managers who were directly involved in business decision-making. The large proportion of respondents who served as key actors in business management suggested that the collected data reflected actual business conditions in financial management, the use of digital technology, and product development. Thus, the characteristics of the respondents in Table 1 supported the validity of the information used for testing the research model.

Table 1. Respondents' Characteristics

Characteristics of Respondents		Total	Percentage
Gender	Male	15	0.16
	Female	80	0.84
	Total	95	1.00
Age	20 - 30 years old	11	0.12
	30 - 40 years old	22	0.23
	40 - 50 years old	44	0.46
	>50 years old	18	0.19
	Total	95	1.00
	Educational Level	Senior High School	57
Diploma		7	0.07
Bachelor's Degree		31	0.3
Master's Degree		0	0
Doctoral Degree		0	0
Total		95	1.00
Monthly Revenue of MSMEs	<Rp2.000.000	28	0.29
	IDR2.000.000 - IDR5.000.000	21	0.22
	IDR5.000.001 - IDR10.000.000	22	0.23
	IDR10.000.001 - IDR20.000.000	24	0.26
	>Rp20.000.000	0	0
	Total	95	1.00

Evaluation of Measurement Models (Outer Model)

The results of the evaluation of the measurement model are given in Table 2. The table presents the values of outer loading, Average Variance Extracted (AVE), Cronbach's alpha, and composite reliability for each construct. The outer loading values of the majority of indicators were above the recommended lower limit. This indicated that the indicator was able to adequately represent latent constructs. Indicators with loading values below the threshold were eliminated to improve the quality of construct measurements.



Table 2. The Result of the Measurement Model

Construct/Item	Loading	Cronbach' alpha	Dijkstra- Henseler's rho (ρ)	CR	AVE
Financial Literacy		0.864	0.865	0.917	0.786
LTRKEU_1	0.880				
LTRKEU_3	0.898				
LTRKEU_5	0.882				
Digital Literacy		0.893	0.894	0.949	0.903
LTRDIG_3	0.949				
LTRDIG_4	0.952				
Product Creativity		0.949	0.950	0.961	0.831
KRV_2	0.895				
KRV_3	0.916				
KRV_4	0.899				
KRV_5	0.910				
KRV_6	0.938				
Product Innovation		0.963	0.964	0.969	0.819
INV_1	0.880				
INV_2	0.916				
INV_5	0.887				
INV_6	0.909				
INV_7	0.877				
INV_8	0.943				
INV_9	0.922				
Business Sustainability		0.893	0.894	0.933	0.823
KBU_1	0.922				
KBU_2	0.915				
KBU_3	0.886				

The AVE value of all constructs shown in Table 2 exceeded the minimum value, indicating the fulfillment of the convergent validity. Additionally, Cronbach's alpha and composite reliability values displayed in the table also presented a good level of internal consistency. These results confirmed that the research instrument was reliable for use in structural model analysis.

Discriminant validity was evaluated using the Heterotrait Monotrait Ratio (HTMT) criteria, presented in Table 3. HTMT values lower than the recommended limit indicated that each construct had clear conceptual differences and there was no overlap of measurements between variables. Overall, the results in Table 2 and Table 3 confirmed that the measurement model met the criteria for validity and reliability.

**Table 3.** Discriminant Validity

	INV	KBU	KRV	LTR_DIG	LTR_KEU
INV	0.905				
KBU	0.969	0.907			
KRV	0.980	0.950	0.912		
LTR_DIG	0.913	0.912	0.921	0.951	
LTR_KEU	0.970	0.957	0.961	0.902	0.887
INV					
KBU	1.044				
KRV	1.024	1.031			
LTR_DIG	0.984	1.021	1.000		
LTR_KEU	1.063	1.088	1.060	1.025	

Evaluation of Structural Models (Inner Model)

Structural model evaluation was conducted to assess the model's predictive ability and the strength of the relationships between latent variables. The results of the analysis showed that financial literacy and digital literacy demonstrated a strong ability to explain the variance in product creativity and product innovation. The coefficient of determination indicated that 94.0% of the variance in product creativity ($R^2 = 0.940$) and 94.9% of the variance in product innovation ($R^2 = 0.949$) could be explained by financial literacy and digital literacy. These findings indicated that financial literacy and digital literacy played a dominant role in shaping the creative and innovative capabilities of MSMEs. Furthermore, the combination of financial literacy, digital literacy, product creativity, and product innovation was able to explain 94.7% of the variation in MSME business sustainability, indicating a very strong explanatory power of the model. These findings confirmed that the proposed model demonstrated excellent predictive capabilities in the context of traditional handicraft MSMEs. It also supported a theoretical framework that positions knowledge-based literacy as a foundational factor in the development of creative and innovative capabilities contributing to business sustainability.

Hypothesis Testing

The results of the hypothesis testing presented in Table 4 showed that financial literacy and digital literacy had a positive and significant effect on product creativity and product innovation. These findings indicated that financial understanding and the ability to utilize digital technology encourage MSME actors to explore product ideas and convert them into product innovation. Furthermore, the results showed that product innovation had a positive and significant effect on business sustainability. Meanwhile, product creativity did not show a significant effect. This emphasized that creative ideas need to be accompanied by innovative implementations in order to contribute to business sustainability. In addition, although financial literacy and digital literacy had a direct influence on business sustainability, the magnitude of these influences was relatively small compared to indirect influences through product innovation, which confirmed the important role of mediation variables in the research model.

**Table 4.** Hypothesis Testing

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Decision
H1: Fin_Literacy → Creativity	0.789	0.789	0.062	12.704	0.000	Supported
H2: Fin_Literacy → Innovation	0.696	0.696	0.064	10.801	0.000	Supported
H3: Fin_Literacy → business Sust	0.263	0.266	0.084	3.136	0.002	Supported
H4: Dig_Literacy → reativity	0.201	0.201	0.064	3.125	0.000	Supported
H5: Dig_Literacy → Innovation	0.294	0.294	0.064	4.220	0.001	Supported
H6: Dig_Literacy → business Sust	0.163	0.165	0.068	2.413	0.017	Supported
H7: Creativity → business Sust	-0.154	-0.159	0.144	1.070	0.280	Not Supported
H8: Innovation → business Sust	0.715	0.716	0.144	4.948	0.000	Supported
H9 Fin_Literacy -> Creativity -> Business Sust	-0.107	-0.109	0.099	1.084	0.273	Not Supported
H10: Dig_Literacy → Innovation -> Business Sust	-0.045	-0.049	0.047	0.954	0.338	Not Supported
H11: Fin_Literacy → nnovation -> Business Sust	0.564	0.565	0.122	4.604	0.000	Supported
H12: Dig_Literacy → Innovation → business Sust	0.144	0.144	0.055	0.627	0.008	Supported

The results of the mediation analysis in Table 4 showed that product innovation significantly mediated the relationship between financial literacy and digital literacy and the sustainability of MSME businesses. These findings confirmed that product innovation served as the main mechanism through which knowledge-based literacy is converted into business sustainability. In contrast, product creativity did not mediate the relationship, meaning that creativity functions more as an initial step of ideation, and it does not hold a sustainable economic impact without the support of applicable product innovation.

The structural relationships among tested variables are presented in Figure 1 Conceptual Research Model. The figure shows that the dominant pathway explaining business sustainability is the indirect path through product innovation, whereas the path through product creativity plays a weaker role. The visualization in Figure 2 reinforces the empirical finding that financial literacy and digital literacy need to be transformed through innovative capabilities in order to generate business sustainability among MSMEs.



Figure 2. Measurement Model

Discussion

The Effects of Financial and Digital Literacy on Creativity, Innovation, and Sustainability

The findings showed that financial literacy and digital literacy contributed significantly to the increase of creativity and product innovation, and are positively related to the sustainability of MSME businesses. These findings are consistent with the Knowledge-Based View perspective, which positions literacy as a form of entrepreneurship-specific knowledge that expands the cognitive framework of business actors in evaluating opportunities and responding to market dynamics. Previous studies have supported the view that financial literacy improves the quality of strategic decision-making, resource management efficiency, and the readiness of MSMEs to carry out product development (Adewumi & Cele, 2023; Miswanto et al., 2024; Tuffour et al., 2022a). However, some studies have suggested that the impact of financial literacy is contextual and it is strongly influenced by the institutional structure and access to available financial sources (A. Ferli, 2023).

In the context of rattan handicraft MSMEs in Aceh Besar, financial literacy is more than a mere administrative ability. Many artisans rely on informal financial systems with limited record-keeping practices. Enhancing financial literacy therefore has the potential to facilitate access to non-cash payment systems, formal financial institutions, and financial technology, thereby strengthening their financial inclusion and business sustainability. This aligns with the findings of Junianto & Kohardinata, (2021) study which showed that financial literacy encourages fintech adoption and improves transaction efficiency in MSMEs. However, financial literacy without adequate institutional support will not be



effectively utilized, particularly in areas with limited infrastructure and financing access (O. Ferli, 2023).

Digital literacy has also been shown to have a positive effect on product creativity and innovation, thereby supporting the dynamic capability theory, which emphasizes that digital capabilities increase MSME actors' ability to sense and identify market opportunities. These findings support previous research that showed digital skills such as online marketing, e-commerce, and social media utilization contributed to microenterprise innovation and sustainability (Rakib, Wahyudi, et al., 2024; Satjहारuthai & Lakkhongkha, 2023) Some studies, however, have reported more cautious results, emphasizing that digital literacy does not always lead to better performance in the presence of network limitations, low technology adoption among older generations of entrepreneurs, and limited policy support (K. Zhao et al., 2023).

Role of Creativity and Innovation in Business Sustainability

Our study confirmed that there was a difference in the role of creativity and innovation in explaining business sustainability. Product innovation had a significant effect on business sustainability, while product creativity did not show a significant direct influence. These findings support the resource-based view, which emphasizes that sustainable competitive advantage is achieved when resources and ideas are transformed into valuable capabilities that are difficult to replicate (De Guimarães et al., 2022; Pasaribu et al., 2024).

In the context of rattan handicraft MSMEs in Aceh Besar, many business actors possess high creativity rooted in local traditions and wisdom. However, limitations in technology, capital, and market access often hinder the realization of these creative ideas into sustainable innovations. These findings are supported by Krasovska et al., (2022), who argued that creativity requires support systems, structured training, and organizational resources to generate economic value. In other words, creativity is necessary but not sufficient for business sustainability (Zainurossalamia et al., 2024).

However, the literature also presents a more nuanced perspective. Some studies argue that creativity, particularly in culture-and heritage-based industries, contributes to sustainability through the formation of brand identity, consumer loyalty, and symbolic differentiation (J. Cao et al., 2023; Darma et al., 2024). In the context of Aceh Besar rattan crafts, traditional creativity is able to strengthen the position of products in niche markets that value authenticity and cultural identity. This kind of contribution is long-term in nature and may not always be reflected in short-term performance indicators, which may explain why the influence of creativity does not appear statistically significant in this model.

Mediating Role of Innovation and Creativity in Literacy Driven Sustainability

The findings showed that product innovation was a significant mediator in the relationship between financial literacy, digital literacy and business sustainability. However, creativity was not a significant mediator. These findings support the Dynamic Capability Theory, which suggests innovation as the main mechanism in transforming knowledge-based resources into competitive advantage and business sustainability. Previous research has also confirmed that innovation serves as a bridge between cognitive capabilities and business performance, especially in the context of MSMEs (Bargavi et al., 2025; Salmela-Aro & Motti-Stefanidi, 2022). In the Aceh Besar rattan MSMEs, innovations such as product diversification, modular design development, the use of



environmentally friendly materials, and digital marketing allow business actors to increase added value and reach out to a wider market. On the other hand, the non-significant mediating effect of creativity indicates a gap between ideation and execution. These findings are consistent with (Ahner et al., 2023), who emphasize that creativity generates value when supported by an adequate organizational context and innovation ecosystem.

However, a critical view in the literature also suggests that quantitative measurement frameworks are often less sensitive in capturing the contribution of culture-based creativity to long-term sustainability (Yan & Li, 2023). In the heritage-based craft and culinary industries, creativity plays a role in preserving cultural narratives and symbolic differentiation, the impact of which is not always directly captured by financial metrics. This suggests that the relationship between creativity and sustainability is more complex and contextual than the linear relationship examined in this research model.

Managerially, the findings indicate that efforts to improve financial and digital literacy should be focused on implementable capabilities, particularly strengthening product innovation. MSME actors are encouraged to integrate financial management practices, digital technology utilization, and innovation strategies simultaneously. From a policy perspective, these results emphasize the importance of developing an integrated MSME innovation ecosystem, including market-based training, access to innovative financing, digital infrastructure, business incubation and mentoring programs. A stand-alone literacy policy without structural support is likely to yield limited impact.

This study has several limitations. First, focusing on one MSME cluster and one geographic area limits the generalizability of the findings. Second, the use of cross-sectional data does not capture the long-term dynamics between literacy, creativity, innovation, and business sustainability. Further research should employ a longitudinal design, broaden the industrial scope, and combine quantitative and qualitative approaches to more comprehensively examine the contribution of culture-based creativity.

CONCLUSION

This study showed that financial literacy and digital literacy played an important role in enhancing MSMEs' product creativity and innovation. However, only product innovation exerted a direct effect on business sustainability. Product creativity did not have a direct impact and did not function as a mediator, suggesting that creative ideas must be transformed into implementable and market-oriented innovations to generate sustainable business outcomes. These findings confirmed that knowledge-based literacy functioned as a supporting factor that must be translated into innovative capabilities to create sustainable economic impact.

Theoretically, this study contributes by integrating the Resource Based View, the Knowledge Based View, and Dynamic Capability Theory to clarify the mechanism underlying MSME sustainability, while empirically distinguishing the role of creativity as the ideation stage and innovation as the implementation stage. Practically, the findings emphasize the importance of aligning financial and digital literacy programs with innovation capability development rather than focusing solely on improving basic knowledge. Further research is suggested to broaden the sectors and regional scope and employ a longitudinal or mixed-method approach to gain a deeper understanding of the long-term contribution of culture-based creativity to innovation and business sustainability performance.



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