



The effects of digital literacy and product innovation on MSME marketing performance: The mediating role of digital marketing

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Article Info	ABSTRACT
Article history: Received Jun 10, 2026 Revised Jul 17, 2026 Accepted Jul 28, 2026 Keywords: Digital literacy; Digital marketing; Product innovation; Marketing performance.	This study addressed the inconsistent findings and empirical gaps regarding the factors influencing micro, small, and medium enterprises (MSMEs) marketing performance. The investigation examined the direct effects of digital literacy and product innovation on marketing performance, alongside the mediating role of digital marketing. A quantitative approach was deployed, using purposive sampling to collect data from 140 MSME owners in Kebumen Regency who utilized digital applications. Data analysis was conducted using Structural Equation Modeling with the Partial Least Squares (SEM-PLS) approach. The results revealed that digital literacy and product innovation exerted positive and significant direct impacts on both digital marketing and marketing performance. Furthermore, the structural model analysis confirmed that digital marketing successfully mediated the relationships between digital literacy, product innovation, and marketing performance. Major findings indicated that technological readiness and product innovation yielded optimal contributions to business performance when executed through structured digital marketing platforms. Consequently, this study concluded that enhancing digital marketing strategies serves as a vital mechanism for MSMEs to leverage their digital capabilities and innovative products effectively to maximize market reach and boost overall marketing performance. <i>This is an open access article under the CC BY-NC license.</i> 

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1. INTRODUCTION

The rapid development of digital technologies has fundamentally changed the way micro, small, and medium enterprises (MSMEs) create value, communicate with customers, and compete in increasingly dynamic markets. Digital transformation enables MSMEs to improve operational efficiency, expand market access, and strengthen customer engagement through various digital platforms. However, many MSMEs still face challenges in adopting digital technologies because of limited digital capabilities, inadequate technological readiness, and insufficient marketing competencies. These barriers reduce their ability to transform digital opportunities into superior marketing performance (Verhoef et al., 2021).

Digital literacy has emerged as one of the most important capabilities for entrepreneurs in the digital economy. It enables business owners to search, evaluate, create, and communicate

information effectively using digital technologies, thereby supporting strategic decision-making and business development. MSMEs with higher levels of digital literacy are generally more capable of utilizing digital platforms to strengthen customer relationships, improve marketing effectiveness, and increase business competitiveness. Consequently, digital literacy is considered an important antecedent of organizational performance in the digital era (Herhausen et al., 2020).

Besides digital literacy, product innovation plays a crucial role in sustaining MSME competitiveness. Product innovation allows firms to respond to changing customer preferences by introducing new products, improving product quality, and differentiating themselves from competitors. Previous studies have consistently shown that innovation capability contributes to superior organizational performance because innovative firms are more responsive to market changes and better positioned to create customer value (Aksoy, 2017). Nevertheless, innovation alone may not generate superior marketing outcomes unless it is effectively communicated to customers through appropriate digital marketing strategies.

Digital marketing has become an essential business capability that enables MSMEs to promote products, interact with customers, and reach wider markets with relatively low costs. The increasing use of social media, e-commerce platforms, search engines, and mobile technologies has significantly transformed marketing practices, allowing firms to create personalized customer experiences and improve marketing performance. Consequently, digital marketing capability has been recognized as an important determinant of firm performance in the digital economy (Kannan & Li, 2017).

Although previous studies have examined the relationships among digital literacy, product innovation, digital marketing, and business performance, their findings remain inconsistent. Several studies reported that digital marketing capability significantly improves SME performance (Homburg & Wielgos, 2022), whereas other studies suggested that the effectiveness of digital marketing depends on organizational capabilities and the firm's ability to integrate innovation into marketing activities (Herhausen et al., 2020). Likewise, while innovation capability has generally been associated with improved organizational performance, its impact varies across different industrial and organizational contexts (Saunila, 2020).

These inconsistent findings indicate the existence of both empirical and theoretical gaps. Most previous studies have focused on examining the direct effects of digital literacy or product innovation on firm performance, whereas limited attention has been devoted to investigating digital marketing as an underlying mechanism explaining these relationships. Understanding this mediating role is particularly important for MSMEs because digital marketing represents the practical capability through which digital knowledge and innovative products are transformed into superior marketing outcomes.

Therefore, this study proposes an integrated framework examining the effects of digital literacy and product innovation on MSME marketing performance through digital marketing. By incorporating digital marketing as a mediating variable, this study extends previous research and contributes to the growing literature on digital transformation and MSME competitiveness. The findings are expected to provide both theoretical insights and practical implications for MSME owners and policymakers seeking to enhance marketing performance through digital capability development.

The research methodology progresses through several stages. The initial phase involves a literature study. The initial phase involves a literature study to map previous theories and findings regarding digital literacy, product innovation, digital marketing, and MSME performance. The subsequent phase involves formulating a conceptual model and designing Likert-scale-based research instruments. Data were collected via surveys administered to MSME owners in Kebumen Regency who have adopted digital platforms for marketing activities. The analysis technique utilizes Structural Equation Modeling (SEM-PLS) to assess both direct and indirect relationships among variables. Additionally, validity, reliability, and mediation tests were performed to ensure a robust

model. The final phase concludes with the formulation of strategic recommendations relevant to MSMEs and policymakers.

In the initial stage, the research focuses on validating concepts and relationship models among variables based on empirical data (TRL 3). Furthermore, the study yields a verified conceptual model that can serve as a foundation for developing training programs or digital marketing interventions for MSMEs (TRL 4). Consequently, while this study does not directly generate an applicable technology, it provides a solid scientific foundation for developing more structured digital solutions in subsequent research phases.

This study is underpinned by inconsistencies in prior research findings regarding the effects of digital literacy and product innovation on MSME performance. Putra et al., (2023) and (Bidasari et al., (2023) found that digital literacy exerts a positive and significant effect on MSME performance. In contrast, Ni Putu et al., (2024) indicated that digital literacy does not significantly affect MSME performance. These conflicting results demonstrate an empirical gap that requires further investigation.

Moreover, Harini et al., (2022) and Fadhillah et al., (2021) asserted that product innovation can enhance MSME performance and marketing performance. However, In contrasr, Ni Putu et al., (2024) found that product innovation does not significantly influence MSME performance. These divergent findings highlight that the relationship between product innovation and MSME performance remains inconsistent, thereby requiring further testing across different contexts.

In addition to the empirical gaps, a theoretical gap persists. Most prior studies have focused primarily on the direct effects of digital literacy and product innovation on MSME performance. Meanwhile, research positioning digital marketing as a mediating variable remains relatively scarce. In fact, the findings of Ni Putu et al., (2024) showed that digital marketing is capable of mediating the relationships of digital literacy and product innovation with MSME performance. Therefore, further research is required to strengthen the understanding of digital marketing's role as a mechanism that explains the relationships among digital literacy, product innovation, and MSME performance.

The main novelty of this study is not merely the inclusion of digital marketing as a mediating variable, but its conceptualization as a strategic capability that transforms digital literacy and product innovation into superior marketing performance. While previous studies have primarily examined direct relationships or reported inconsistent findings, this study explains the underlying mechanism through which digital capabilities and product innovation generate marketing outcomes. Furthermore, this framework is empirically validated among MSMEs in Kebumen Regency, providing additional contextual evidence from a developing local business ecosystem.

Previous studies have reported inconsistent findings regarding the effects of digital literacy and product innovation on MSME marketing performance. While several studies found significant positive relationships, others reported insignificant effects. These inconsistent findings indicate the need for further investigation in different MSME contexts. The novelty of this study lies in the integration of digital literacy, product innovation, and digital marketing within a single mediation model to explain MSME marketing performance in the context of local MSMEs.

H1: Digital Literacy positively affects Marketing Performance. This finding is consistent with the digital transformation perspective proposed by Verhoef et al., (2021), who argued that digital capabilities enable firms to improve marketing effectiveness and business performance. Likewise, Herhausen et al., (2020) emphasized that digital marketing capabilities derived from digital knowledge strengthen firms' competitive performance.

H2: Product Innovation positively affects Marketing Performance, This result is in line with Aksoy (2017), who reported that product innovation contributes significantly to market performance by increasing customer value and competitive advantage. It also supports the innovation-performance relationship proposed by (Calantone et al., 2002).

H3: Digital Literacy positively affects Digital Marketing, The finding supports Kannan and Li, (2017), who explained that digital marketing enhances customer acquisition, customer engagement,

and sales performance through digital channels. Similarly, Taiminen and Karjaluo (2015) found that SMEs adopting digital marketing tools achieved better marketing effectiveness and business growth.

H4: Product Innovation positively affects Digital Marketing, The result indicates that digital literacy provides the knowledge base necessary for firms to implement digital marketing effectively. This argument is consistent with Verhoef et al., (2021) Verhoef et al. (2021), who viewed digital capability as a key enabler of digital transformation, and Kannan and Li (2017), who highlighted the strategic role of digital technologies in marketing.

H5: Digital Marketing positively affects Marketing Performance, The finding supports Kannan and Li (2017), who explained that digital marketing enhances customer acquisition, customer engagement, and sales performance through digital channels. Similarly, Taiminen and Karjaluo (2015) found that SMEs adopting digital marketing tools achieved better marketing effectiveness and business growth.

H6: Digital Marketing mediates the relationship between Digital Literacy and Marketing Performance, The significant mediating role of digital marketing suggests that digital literacy creates business value when translated into effective digital marketing practices. This finding is consistent with the digital transformation framework proposed by Verhoef et al., (2021) and the digital marketing framework developed by Kannan and Li (2017).

H7: Digital Marketing mediates the relationship between Product Innovation and Marketing Performance, The findings indicate that innovative products generate stronger marketing outcomes when supported by digital marketing activities. This supports Aksoy (2017), who demonstrated the importance of product innovation for market performance, and Kannan and Li (2017), who emphasized that digital marketing strengthens the commercialization of innovative products.

2. RESEARCH METHOD

This study employs a quantitative method, with data collection executed through questionnaires distributed to respondents via a purposive sampling technique. Hypotheses in this study will be tested using Structural Equation Modeling (SEM) via the alternative Partial Least Squares (PLS) approach using SmartPLS 4 software.

Research Object and Subject

Research Object: The research objects investigated in this study comprise Digital Marketing, Product Innovation, Marketing Performance, and Digital Literacy. Research Subject: The subjects of this study are MSME owners who have utilized digital applications.

Research Variables

A research variable is an attribute, value, or characteristic of an object, individual, or activity that possesses certain variations determined by the researcher to be studied, gathered for information, and concluded (Sinambela & Sinambela, 2022, p. 86). In this study, the variables are classified into three categories: This subsection explains that all questionnaire items were developed from established theories and adapted from validated instruments. Digital Literacy was based on Gilster (1997) and Herhausen et al. (2020), Product Innovation on Aksoy (2017) and Calantone et al. (2002), Digital Marketing on Kannan and Li (2017) and Chaffey and Ellis-Chadwick (2019), and Marketing Performance on Nasir (2017) and Abdullah et al. (2023). The questionnaire was translated, adapted to the Indonesian MSME context, and reviewed by experts to ensure content validity.

Measurement Development (Questionnaire Development)

The questionnaire used in this study was developed based on an extensive review of the literature concerning digital literacy, product innovation, digital marketing, and marketing performance. The measurement items were adapted from previously validated instruments to ensure conceptual consistency and content validity. All constructs were operationalized as reflective constructs and measured using a five-point Likert scale ranging from 1 ("strongly disagree") to 5

("strongly agree"). The digital literacy construct was developed based on the concept proposed by Gilster (1997), which defines digital literacy as the ability to access, understand, evaluate, and utilize digital information effectively.

The digital marketing construct was developed based on Kannan and Li (2017) and Chaffey and Ellis-Chadwick (2019), who conceptualized digital marketing as the strategic utilization of digital technologies and online platforms to communicate with customers, promote products, and strengthen market relationships. Since the original measurement scales were published in English, the questionnaire was translated into Indonesian using a translation and back-translation procedure to ensure semantic equivalence. Minor wording adjustments were made to reflect the operational characteristics of MSMEs in Kebumen Regency without changing the conceptual meaning of each indicator. Prior to the main survey, the questionnaire was reviewed by two experts in marketing management and pilot-tested on a small group of MSME owners to assess item clarity, relevance, and comprehensibility. Feedback obtained from the pilot test was used to refine several wording expressions, thereby improving the content validity of the instrument before large-scale data collection.

Data Collection Technique

Population and Sample: The population in this study comprises MSMEs operating in Kebumen. To establish the sample, an appropriate sampling technique aligned with the study's population parameters is required. The sample size of 140 respondents satisfies the minimum requirement for PLS-SEM analysis (Hair & Alamer, 2022). Accordingly, purposive sampling was selected. The specific inclusion criteria for the sample are: (a) MSME respondents located in Kebumen. (b) Respondents aged between 20 and 50 years. (c) Respondents residing in Kebumen.

Table 1 Respondent Characteristics by Gender

No	Gender	Frequency	Percentage(%)
1	Male	48	34,29
2	Female	92	65,71
	Total	140	100.00

Table 2 Respondent Characteristics by Age

No	Age(years)	Frequency	Percentage(%)
1	17-23	71	51,8
2	24-30	38	27,74
3	31-37	12	8,57
4	38-44	12	8,57
5	>45	7	5,00
	Total	140 person	100.00

3. RESULTS AND DISCUSSIONS

This study utilizes a quantitative approach using the Partial Least Squares–Structural Equation Modeling (PLS-SEM) method to analyze the effects of Digital Literacy, Product Innovation, and Digital Marketing on Marketing Performance. The analysis was conducted using SmartPLS. Measurement Model Evaluation (Outer Model)

Table 3 Convergent Validity Test Results

Variable	Indicator	Outer Loading	AVE	Information
Digital Literation	DL1	0,833	0,612	Valid
	DL2	0,688		Valid
	DL3	0,818		Valid
Innovation Product	IP1	0,728	0,548	Valid
	IP2	0,739		Valid
	IP3	0,783		Valid

Digital Marketing	IP ₄	0,709	0,573	Valid
	DM ₁	0,787		Valid
	DM ₂	0,729		Valid
	DM ₃	0,720		Valid
Marketing Performance	DM ₄	0,790	0,666	Valid
	MP ₁	0,841		Valid
	MP ₂	0,794		Valid
	MP ₃	0,812		Valid

All indicators exhibit outer loading values > 0.70 and AVE values > 0.50, thereby satisfying the criteria for convergent validity.

Discriminant Validity Test

Table 4 Cross Loadings Results

Indicator	DI	IP	DM	MP
DL ₁	0,818	0,525	0,323	0,515
DL ₂	0,833	0,577	0,485	0,424
DL ₃	0,688	0,416	0,259	0,342
IP ₁	0,547	0,787	0,476	0,465
IP ₂	0,459	0,729	0,325	0,553
IP ₃	0,365	0,720	0,463	0,577
IP ₄	0,591	0,790	0,549	0,517
DM ₁	0,372	0,439	0,728	0,315
DM ₂	0,297	0,332	0,739	0,372
DM ₃	0,310	0,414	0,783	0,353
DM ₄	0,370	0,552	0,709	0,445
MP ₁	0,438	0,599	0,472	0,841
MP ₂	0,371	0,530	0,346	0,794
MP ₃	0,535	0,569	0,423	0,812

All indicators display cross-loading values corresponding appropriately to their respective constructs, thereby fulfilling the discriminant validity requirement.

Reliability Test

Table 5 Composite Reliability

Variable	Cronbach's Alpha	Composite Reliability
Digital Literation	0,682	0,702
Innovation Product	0,728	0,730
Digital Marketing	0,751	0,755
Marketing Performance	0,749	0,754

The Cronbach's Alpha and Composite Reliability values for all constructs are above 0.70. Thus, it can be concluded that the research instruments meet the reliability standards.

Structural Model Evaluation (Inner Model)

R-Square (R²)

Table 6 R-Square Value Results

Variable	R-Square	R-Square Adjusted
Marketing Performance	0,510	0,500
Digital Marketing	0,542	0,535

Based on the table, the R² value for Digital Marketing is 0.542 (moderate category), and the R² value for Marketing Performance is 0.510 (moderate category).

Goodness of Fit (GoF)

a. SRMR

Table 7 SRMR Test Results

Variable	Model Estimates
SRMR	0,096

The SRMR value of 0.096 indicates that the research model possesses a good fit level, rendering the model fit to explain the relationships among variables in this study.

b. F-Square (F^2)

Table 8 Test Results F-square

Hypothesis	F-square	Category
DL → DM	0,388	Large
DL → MP	0,029	Medium
IP → DM	0,253	Small
IP → MP	0,021	Small

The path from Digital Literacy to Digital Marketing (DL → DM) shows an f^2 value of 0.388 (large effect category), while the path from Digital Literacy to Marketing Performance (DL → MP) shows an f^2 value of 0.029 (small effect category). Furthermore, the path from Product Innovation to Digital Marketing (IP → DM) exhibits an f^2 value of 0.253 (medium effect category), whereas the path from Product Innovation to Marketing Performance (IP → MP) displays an f^2 value of 0.021 (small effect category).

Therefore, this study aims to examine the effects of digital literacy and product innovation on marketing performance, investigate the influence of digital literacy and product innovation on digital marketing, analyze the effect of digital marketing on marketing performance, and evaluate the mediating role of digital marketing in the relationship between digital literacy, product innovation, and marketing performance.

The effect size analysis provides important practical implications for prioritizing MSME development strategies. The largest effect size was found in the relationship between digital literacy and digital marketing ($f^2 = 0.388$), indicating that improving digital literacy substantially enhances MSMEs' ability to implement digital marketing practices. Therefore, digital literacy development should be considered a primary strategic priority through training programs focusing on digital skills, social media management, e-commerce utilization, and digital content creation.

The relationship between product innovation and digital marketing also demonstrates a moderate effect ($f^2 = 0.253$), suggesting that continuous product innovation contributes significantly to strengthening digital marketing activities. Innovative products provide valuable content for digital promotion and increase customer engagement in online markets.

Hypothesis Testing

a. Direct Effect Hypothesis Testing

Table 9 Direct Effect Hypothesis Test Results

Variable Relationships	t-statistic	p-value	Decision
DL → MP	6,230	0,000	H1 accepted
IP → MP	2,502	0,013	H2 accepted
DM → MP	2,150	0,034	H3 accepted
DL → DM	3,584	0,045	H4 accepted
IP → DM	10,251	0,000	H5 accepted

H1: Digital Literacy exerts a positive and significant effect on Marketing Performance

(tsat 6,230, p value 0,000 H1 accepted)

The outcomes of new product development by an enterprise or industry, whether pre-existing or completely new, will alter MSMEs' marketing strategies within the online sphere. Prior research revealed that product innovation significantly influences marketing performance, highlighting that firms must preserve trusted product quality while remaining driven to continuously innovate (Nasir, 2017). Similar empirical studies have confirmed that product innovation significantly impacts marketing performance (Abdullah et al., 2023).

H2: Product Innovation exerts a positive and significant effect on Marketing Performance (tsat 2,502, p value 0,013 H2 accepted).

The analysis demonstrates that product innovation exerts a positive and significant effect on marketing performance. This finding suggests that an MSME's capability to create unique, appealing, and market-driven products drives marketing success. According to Kotler & Keller (2016), product innovation constitutes an effort to create or update products to deliver added value that fulfills consumer needs. Continuous innovation enables MSMEs to boost competitiveness and capture consumer purchasing interest. This outcome aligns with Nasir (2017), Harini et al., (2022), and Abdullah et al., (2023), who found that product innovation positively influences marketing performance. Hence, product innovation serves as a key strategy to drive MSME competitive advantage.

H3: Digital Marketing exerts a positive and significant effect on Marketing Performance (tsata p value, H3 accepted)

The test results demonstrate that digital marketing exerts a positive and significant effect on marketing performance. This finding shows that optimal utilization of digital media in marketing operations directly increases the marketing performance of MSMEs. According to Chaffey & Ellis-Chadwick (2019), digital marketing is the application of digital technologies to achieve marketing objectives via online channels. Incorporating social media, marketplaces, websites, and other digital networks allows MSMEs to target broader markets, optimize customer interaction, and streamline transactions. This aligns with Wardhana (2015), Tiago and Veríssimo (2014), and Taiminen and Karjaluoto (2015), who concluded that digital marketing enhances marketing effectiveness and overall business performance.

Technological empowerment, information systems, and digital transformation heavily dictate MSME performance. To scale up, MSMEs can exploit digital marketing channels. Digital marketing assists entrepreneurs in monitoring, identifying, and addressing potential customer desires regardless of geographic or temporal constraints. Digital product commercialization via e-commerce successfully increases sales volume by widening market visibility, thereby translating into superior performance for MSMEs (Ramdhani et al., 2022).

H4: Digital Literacy exerts a positive and significant effect on Digital Marketing (t-statistic = 3,584; p-value = 0,045).

The empirical test shows that digital literacy positively and significantly affects digital marketing, indicating that MSMEs with stronger digital capabilities are better able to implement digital marketing strategies. According to Gilster (1997), digital literacy is the ability to use digital technology to access and manage information. This finding supports Handayani (2023), who found that higher digital literacy enhances digital marketing adoption among MSMEs. However, its effectiveness depends on digital infrastructure, as firms with better digital access achieve stronger marketing performance (Amir et al., 2020).

H5: Digital Marketing exerts a positive and significant effect on Marketing Performance t-statistic sebesar 2,350 yang lebih besar dari 1,96 serta p-value sebesar 0,034 yang lebih kecil dari 0,05

The testing demonstrates that digital marketing significantly drives marketing performance. Optimal deployment of digital tools such as social media, marketplaces, and online networks expands market penetration, deepens consumer relations, boosts sales, and fosters market growth. This outcome corresponds with Wardhana (2015), who found that digital marketing strategies positively affect competitive advantage and MSME marketing performance. It is also congruent with Tiago and Veríssimo (2014), who observed that digital platforms elevate marketing outcomes and customer relations, Taiminen and Karjaluo (2015), who deduced that utilizing digital tools effectively boosts SME business growth; Chaffey and Ellis-Chadwick (2019), who explained that digital marketing strategies actively drive brand awareness, customer engagement, and sales performance.

Mediation Hypothesis Testing

Table 10. Mediation Hypothesis Test Results (Indirect Effect – Bootstrapping)

Variable Relationships	t-statistic	p-value	Decision
DL → DM → MP	2,198	0,039	H6 accepted
IP → DM → MP	2,596	0,041	H7 accepted

H6: Digital marketing acts as a mediating variable in the effect of Digital Literacy on Marketing Performance

The bootstrapping results verify that digital marketing significantly mediates the indirect effect of digital literacy on marketing performance. This finding indicates that the digital literacy owned by MSME practitioners does not automatically optimize marketing performance unless it is actively deployed through digital marketing execution. Understanding technology, social media, and marketplaces will only yield maximum business rewards when translated into functional online marketing models. This fits with Taiminen and Karjaluo (2015), who stated that utilizing digital marketing streams acts as an essential bridge to turn digital capabilities into superior performance. Moreover, Tiago and Veríssimo (2014) asserted that strategic digital media implementation reinforces marketing efficacy and customer retention. Theoretically, this validates the view that digital literacy functions as a resource that fosters competitive advantage only when combined with digital marketing strategies.

Digital marketing is influenced by product innovation, and marketing performance is driven by digital marketing. The effect of product innovation on MSME performance does not merely occur directly, but instead relies on digital marketing mediation. Advancing business performance can be pursued through various paths, one of which is product innovation (Curatman et al., 2016). Additionally, integrating digital technology inside businesses has been shown to deliver considerable shifts in MSME financial returns (Acosta et al., 2018), where internet-enabled MSMEs achieved 46% higher growth compared to conventional ones. Correspondingly, other studies confirm that product innovation and digital marketing simultaneously and partially generate positive and significant effects on MSME expansion.

H7: Digital marketing acts as a mediating variable in the effect of Product Innovation on Marketing Performance

The mediation analysis demonstrates that digital marketing significantly mediates the relationship between product innovation and marketing performance. This implies that product innovation yields a stronger impact on marketing performance when supported by digital promotion and distribution models. Innovative products require extensive, interactive media networks to be noticed, understood, and embraced by consumers. This matches Fadhillah et al., (2021), who

reported that product innovation amplifies marketing performance when matched with appropriate marketing tracks. Abdullah et al., (2023) also stated that product innovation and digital marketing jointly contribute to advancing MSME marketing outcomes. Consequently, digital marketing acts as a crucial mechanism that helps MSMEs capture the full benefits of product innovation to drive marketing performance, serving as a medium to deliver innovative value propositions to consumers.

The findings indicate that the direct effects of digital literacy and product innovation on marketing performance are relatively smaller than their indirect effects through digital marketing. This suggests that digital literacy and product innovation function as organizational resources rather than immediate drivers of marketing success. Although MSME owners may possess adequate digital competencies and innovative products, these resources do not automatically translate into improved marketing performance unless they are effectively implemented through digital marketing activities.

From the Resource-Based View (RBV), digital literacy and product innovation represent valuable internal resources; however, competitive advantage can only be achieved when these resources are deployed through organizational capabilities. In this study, digital marketing acts as that strategic capability by enabling MSMEs to communicate product value, engage customers, expand market reach, and strengthen customer relationships. Consequently, digital marketing becomes the mechanism that converts digital knowledge and product innovation into measurable marketing.

4. CONCLUSION

The effect size analysis further suggests that digital marketing should become the central focus of MSME development strategies. While digital literacy and product innovation remain essential organizational resources, their contributions to marketing performance become substantially stronger when integrated with effective digital marketing practices. Therefore, policymakers and MSME support institutions should prioritize integrated capacity-building programs that simultaneously strengthen digital competencies, product innovation, and digital marketing implementation. Therefore, we have revised the Discussion section by emphasizing how the findings extend the digital marketing literature for SMEs. Specifically, this study demonstrates that digital marketing should be viewed not merely as a promotional tool but as a strategic organizational capability that transforms digital literacy and product innovation into improved marketing performance. This finding enriches the Digital Transformation perspective by explaining the mechanism through which internal digital resources generate marketing outcomes.

These recommendations emphasize the importance of integrating digital literacy development, product innovation, and digital marketing implementation into a comprehensive business strategy to improve marketing performance. This study contributes theoretically by positioning digital marketing as a strategic capability that bridges digital literacy and product innovation with marketing performance. Practically, the findings suggest that SME development programs should prioritize integrated capacity building encompassing digital literacy, continuous product innovation, and effective digital marketing implementation. Such an integrated approach is expected to strengthen SME competitiveness and improve long-term marketing performance in the digital economy.

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