



Effect of Business Digitalization and Social Media on MSME Performance with Digital Competence as a Mediating Variable

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Abstract.

Purpose: The advancement of digital technology has fundamentally transformed the business landscape. Business digitalization and social media utilization have emerged as key drivers in SME strategies to enhance performance. This research aims to assess the effect of business digitalization and social media utilization on SME performance and to examine the role of digital competence as a mediator in this relationship.

Method: This study employed a quantitative approach utilizing SEM-PLS methodology to explore the interrelationships among relevant variables. The study was conducted on 51 SMEs in Lamongan Regency, Indonesia, using an online questionnaire as the data collection tool.

Result: The study findings revealed that business digitalization, social media utilization, and digital competence have a significant and positive effect on SME performance in Lamongan Regency. Moreover, digital competence is a significant mediator between business digitalization, social media utilization, and SME performance. These findings underscore that digital competence enables SMEs to optimize the benefits of business digitalization and social media, thereby enhancing operational efficiency, expanding market reach, and adapting to market changes swiftly and effectively.

Novelty: In particular, the implementation of digital technology in production processes, integration of digital systems in business management, social media utilization for marketing and customer interaction, and the development of digital competence are key factors in enhancing operational efficiency, reducing costs, increasing sales and revenue, and improving customer satisfaction and loyalty among MSMEs.

Keywords: Business digitalization, Social media, Digital competence, MSME performance

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INTRODUCTION

The development of digital technology has fundamentally transformed the business landscape. Business digitalization and the utilization of social media have become primary drivers in business strategies to enhance performance. The Ministry of Cooperatives and Small Medium Enterprises reported that 3.79 million micro, small, and medium enterprises (MSMEs) in Indonesia have already adopted digital technology to improve operational efficiency and optimize market access [1]. This figure represents about 8% of the total 59.2 million MSMEs in Indonesia. This trend aligns with global challenges where MSMEs must leverage technology to maintain competitiveness in an increasingly digitally interconnected business ecosystem. The adaptation of MSMEs to digital transformation is essential for their survival and sustained competitiveness in an increasingly challenging market environment.

Globally, the phenomenon of business digitalization has yielded measurable impacts across various operational and strategic company functions. Data from a McKinsey study indicates that U.S. and European companies embracing digital operations have achieved productivity gains of up to 25% and efficiency improvements of up to 30% [2]. The utilization of digital technology expands market reach and enhances companies' ability to swiftly respond to market changes and customer demands. Additionally, social media plays a crucial role as an effective marketing platform, enabling companies to build direct interactions with customers, enhance brand loyalty, and optimize marketing strategies through data analytics. Amidst

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intensifying global competition, the integration of digital technology and social media is key for companies to remain relevant and competitive in this digital era [3].

In Indonesia, the number of MSMEs reached 8.71 million in 2022. Despite government initiatives such as e-Smart IKM and UMKM Go Online aimed at supporting digital transformation, the majority of MSMEs still struggle to adopt digital technology. Data from the Ministry of Cooperatives and SMEs suggests that most MSMEs still struggle to adapt to digital technology, primarily due to a lack of digital competence among MSME entrepreneurs [4]. For instance, only about 34.25% of MSMEs currently leverage e-commerce platforms to expand their market reach [5]. Nevertheless, social media utilization by MSMEs has shown significant potential for boosting business performance. A survey by Alvara Strategic revealed that MSMEs actively engaged in social media marketing experience revenue growth, with an average of 56.8% of their revenue derived from online platforms and 43.2% from offline sources [6]. Despite its potential, social media is not yet fully optimized to drive overall MSME growth in Indonesia.

Lamongan Regency, located in East Java, presents significant potential for MSME development. Lamongan Regency is home to an estimated 254,206 MSMEs [7]. Furthermore, the economy of Lamongan Regency experienced a growth rate of 5.56% in 2022, compared to 3.43% in 2021. This economic growth has been observed across various sectors, including MSMEs. However, many MSMEs in Lamongan have yet to fully leverage digital technology and social media to optimize sales and profits. This could be attributed to several factors, such as a lack of digital knowledge and skills, limited access to technology, and insufficient support from relevant stakeholders. Therefore, this study investigates how business digitalization and social media utilization can enhance the performance of MSMEs in Lamongan Regency, taking into account the digital competence of MSME entrepreneurs as a determining factor.

Studies on the impact of business digitalization and social media utilization on MSME performance have been extensively conducted both domestically and internationally. However, research gaps still exist that require attention. Previous studies indicate that business digitalization can enhance operational efficiency, reduce production costs, and expand market reach. For instance, studies in the United States and Europe reveal that companies adopting digital technology in their operations experience significant productivity gains [8]–[10]. Digital technology enables process automation, efficient data management, improved system integration, and real-time access to essential information. This enables companies to reduce operational time and costs, enhance decision-making accuracy, and accelerate market responsiveness. Similarly, studies in Indonesia suggest that business digitalization holds immense potential for boosting MSME performance by streamlining operations, expanding market reach through online platforms, and accessing new customer segments. However, implementation challenges persist, such as an underdeveloped digital infrastructure, limited technology accessibility, and a shortage of human resources with the digital skills necessary for effective technology management and utilization [11].

Meanwhile, social media utilization as a marketing tool has also been extensively discussed in the literature. Social media platforms enable direct customer interaction, brand building, and sales growth [12]. Studies from various countries indicate that companies actively using social media tend to have better marketing performance. A study of 143 B2B MSMEs in England investigated the use of social media [13]. The findings indicate that strategic social media utilization can enhance business performance for these enterprises by strengthening market sensing and customer linking capabilities. This improvement is driven by a strong market orientation. Social media utilization not only influences MSMEs' ability to manage customer relationships but also their brand management. Effective brand management through social media significantly contributes to marketing performance, ultimately positively impacting the financial performance of B2B MSMEs.

A study by [14] investigated the impact of social media marketing capabilities on the business performance of 364 Thai companies. The study revealed that among the five dimensions of social media marketing capabilities analyzed, social media product development and social media marketing implementation capabilities were significantly positively correlated with both customer relationships and financial performance. Additionally, social media marketing communication capability was found to positively affect customer relationship performance, while social media planning capability correlated positively with financial performance. This study underscores the importance of Thai firms leveraging social media to enhance their marketing capabilities and effectively integrate them into their overall marketing strategies. In Indonesia, while many Indonesian MSMEs have adopted social media, its impact varies. Studies indicate

that those with effective social media strategies can achieve positive outcomes. However, numerous MSMEs still struggle to optimize their social media utilization due to knowledge and skill deficiencies [15], [16].

However, these studies generally overlook the role of digital competence as a mediating variable between business digitalization and MSME performance, as well as between social media usage and MSME performance. Digital competence, encompassing the ability to use digital applications, master digital technology, and manage and analyze digital data, is crucial for maximizing the benefits of business digitalization and social media utilization. Studies integrating digital competence as a mediating variable can offer deeper insights into enhancing MSME performance through digitalization and social media. However, most existing studies concentrate on urban areas or regions with well-developed digital infrastructure, while MSMEs in regions, including Lamongan Regency, face distinct challenges. Consequently, targeted studies examining the effect of business digitalization and social media on MSME performance in Lamongan Regency, with a focus on the role of digital competence, is essential to provide a more comprehensive and relevant understanding of MSMEs in the region. This study aims to bridge a knowledge gap by examining how digital competence can mediate the relationship between business digitalization, social media utilization, and MSME performance in Lamongan Regency, thus providing more targeted recommendations for enhancing MSME performance in the region.

This study employs key theories and concepts to examine how business digitalization and social media affect MSME performance, with digital competence serving as a mediating variable. Specifically, Kurt Lewin's Theory of Organizational Change is applied to the business digitalization variable, the Organizational Efficiency Concept to the social media variable, and the Digital Competence Concept to the digital competence variable. Each theory, with its distinct background and indicators, provides a foundation for the research analysis.

Organizational Change Theory, pioneered by Kurt Lewin in the 1940s, remains a foundational framework for understanding organizational transformation. Lewin's model posits three essential phases of change: unfreezing, changing, and refreezing. During the unfreezing phase, organizations recognize the need for change and challenge existing practices. The changing phase involves the implementation of new behaviors and processes. Lastly, in the refreezing phase, these changes are solidified and integrated into the organization's routine operations. This theory emphasizes the importance of proactively preparing for change, effectively implementing it, and firmly integrating it into organizational culture. This provides a structured framework for managing organizational transitions [17]. Indicators of this variable include:

- 1) Use of technology in production: This involves adopting new technologies to enhance production efficiency and product quality. This indicator can be measured through increased productivity and reduced production costs.
- 2) Integration of digital systems in management: This refers to the implementation of information technology-based management systems to streamline and optimize business operations. Such systems include the utilization of management software and business process automation.
- 3) Technology for operational efficiency: This encompasses the utilization of technology to enhance day-to-day operational efficiency, such as using software for inventory management and logistics. This indicator can be measured by reduced operational time and increased resource efficiency.

The concept of organizational efficiency, rooted in economic and management theories, is crucial for understanding how organizations can optimally utilize their resources to achieve goals effectively. This concept traces back to early thinkers such as Adam Smith, who introduced the idea of division of labor to enhance productivity and efficiency [18]. Frederick Winslow Taylor, through his principles of scientific management, emphasized the systematic measurement and analysis of work processes to optimize productivity [19]. Max Weber contributed with his theory of bureaucracy, highlighting the importance of formal organizational structures for achieving efficiency. Organizational efficiency encompasses aspects such as productivity, as measured by output relative to input, as well as effectiveness and overall performance. In the context of digitalization, the relevance of this concept has grown as digital tools and social media offer new avenues for enhancing operational and marketing efficiency. The use of digital technologies enables organizations to automate processes, reduce operational costs, and improve data-driven decision-making, digital technologies contribute to higher efficiency in an increasingly competitive business landscape. Indicators of this variable include:

- 1) Social media marketing: This refers to the utilization of social media platforms to promote products and services. The key indicators include the number of followers, interaction rates (likes, shares, comments), and sales increases attributed to social media campaigns.
- 2) Customer interaction: This emphasizes the significance of two-way communication between MSMEs and customers via social media. The key indicators include responsiveness to customer inquiries and complaints, as well as customer satisfaction levels.
- 3) Social media for communication and branding: Using social media as a tool to build and strengthen the company's brand identity. The key indicators include brand recognition, brand image, and customer loyalty.

The Digital Competence Concept, though lacking a single founder, has emerged as a crucial framework in response to the growing need for digital skills in the information and technology era. It has evolved through the collaborative efforts of experts, organizations, and institutions across various sectors, including government agencies, academic institutions, and technology industries. The concept broadly describes the ability of individuals and organizations to effectively utilize digital technologies to perform tasks, solve problems, and make informed decisions [20]. Digital competence encompasses a wide array of skills essential for navigating and adapting to the rapidly evolving digital landscape. This includes technical skills for operating digital tools and platforms, as well as critical thinking and problem-solving abilities essential for leveraging technology in diverse contexts [21]. As digital technologies continue to advance and permeate every aspect of life and work, mastering these competencies has become indispensable for achieving success and maintaining competitiveness in the digital age [22]. The relevance of digital competence is underscored by its role in enabling effective digital communication, collaboration, and innovation, making it a fundamental component of personal and organizational growth in the modern world. Indicators of this variable include:

- 1) Ability to use digital applications: This refers to the ability to operate various relevant digital applications and software that support business operations. The key indicators include proficiency in using productivity apps, business management apps, and other digital platforms.
- 2) Mastery of digital technology: This refers to the level of understanding and technical ability in managing digital technology, including hardware and software. The key indicators include certifications or completed training programs, as well as hands-on experience in using technology.
- 3) Management and analysis of digital data: This involves the ability to collect, manage, and analyze digital data to support business decision-making. The key indicators include the use of data analysis tools, data interpretation, and application of analysis results for business strategies.

The research hypotheses

The research hypotheses in this context are grounded in theories, concepts, and relevant previous studies examining the effect of business digitalization and social media utilization on MSME performance, with digital competence as a mediating variable. Kurt Lewin's Theory of Organizational Change (1940s) posits that adopting technology in production and management processes can enhance organizational efficiency and effectiveness. Studies by [23] found that MSMEs adopting business digitalization experience significant improvements in operational efficiency and productivity, positively affecting their performance. Specifically, digital technology adoption empowers MSMEs to streamline inventory management, optimize supply chains, and enhance responsiveness to evolving market demands.

H1: Business digitalization has a significant effect on MSME performance.

The concept of Organizational Efficiency highlights the significance of leveraging social media to improve communication efficiency and customer interaction. This strategic approach can boost MSME sales and brand exposure. A study by [24] confirms that MSMEs actively utilizing social media for marketing purposes increased customer interactions, brand loyalty, and improved sales of their products or services. Social media empowers MSMEs to engage more readily with potential customers, foster deeper relationships, and expand their market reach on a global scale.

H2: Social media utilization has a significant effect on MSME performance.

The concept of Digital Competence emphasizes the significance of digital skills in enhancing MSME capabilities to manage digital technology, optimize business processes, and enhance innovation adaptation. A study by [25] found that MSMEs with strong digital skills are more innovative in utilizing technology to

enhance efficiency and business performance. Comprehensive digital skills enable MSMEs to effectively adapt to technological changes, understand market needs, and develop more effective marketing strategies.

H3: Digital competence has a significant effect on MSME performance.

A study by [26] found that digital competence plays a crucial role as a mediator between business digitalization adoption and MSME performance. MSMEs with high levels of digital competence can optimize the benefits of digital technology in improving operational efficiency, reducing production costs, and enhancing competitiveness. By understanding and mastering digital technology, these businesses can effectively address the challenges inherent in today's competitive marketplace.

H4: Digital competence mediates the effect of business digitalization on MSME performance.

A study by [27] indicates that the level of digital competence affects MSMEs' ability to leverage social media to enhance customer interaction, build closer relationships, and improve overall business performance. High digital competence facilitates MSMEs to leverage social media more effectively in communicating brand value, increasing product awareness, and enhancing customer loyalty. By understanding digital tools and digital marketing strategies, MSMEs can fully harness the potential of social media to enhance visibility and business growth.

H5: Digital competence mediates the effect of social media utilization on MSME performance.

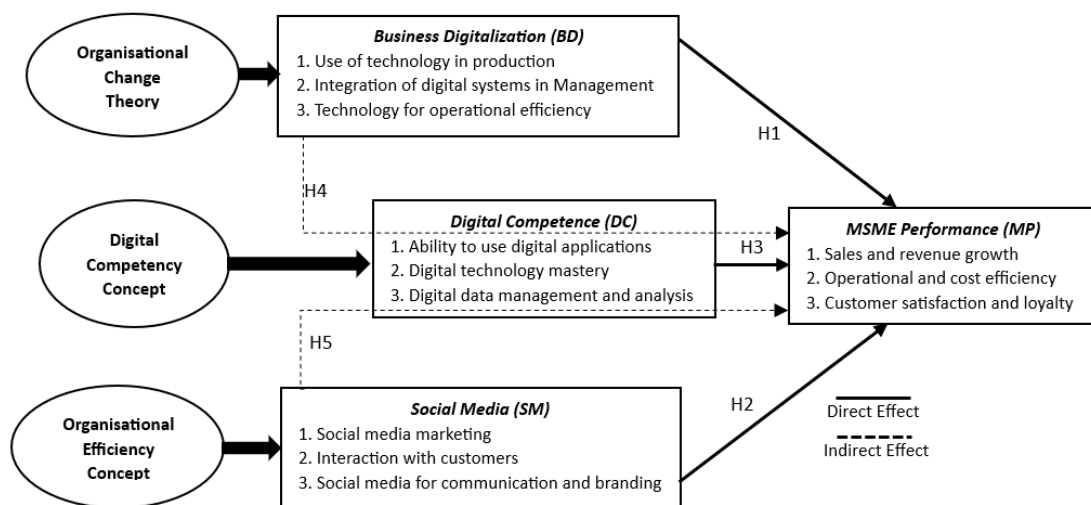


Figure 1. Research framework

This study aims to assess the effect of business digitalization and social media utilization on MSME performance while examining the role of digital competence as a mediator in the relationship, and provide policy and strategy recommendations to enhance MSME performance through digitalization and social media utilization. This study is expected to offer various benefits, including enhancing MSMEs' understanding of the significance of technology adoption and digital competence, providing a foundation for policymakers to formulate supportive policies for MSME digitalization, expanding scholarly literature on this topic, and identifying research gaps, and offering practical guidance for entrepreneurs and practitioners to effectively leverage digital technology and social media.

METHODS

This study employs a quantitative approach, rigorously collecting and analyzing numerical data to ensure empirical objectivity and measurability. The methodology is meticulously designed to provide a robust analytical framework, distinguishing this study from prior studies by introducing innovative techniques and approaches. These methodological advancements aim to offer novel insights and significant contributions to the existing knowledge base. To achieve this, the study integrates established quantitative methods with novel analytical tools, ensuring that the findings are both scientifically valid and practically relevant. This comprehensive methodological approach not only enhances the study's credibility but also positions it as a valuable resource for future studies in the field. The quantitative approach enables researchers to measure

the relationships between the variables under study and gain a deeper understanding of the effect of business digitalization and social media on MSME performance, with digital competence as a mediating variable.

This study employs a survey design, collecting data through an online questionnaire built on Google Forms. A Likert scale format was used to measure MSME owners' perceptions of business digitalization, social media, digital competence, and MSME performance from April to June 2024. The study population comprises MSME owners in Lamongan Regency actively utilizing technology in their business operations. Participants were selected using purposive sampling based on specific criteria relevant to the study's objectives. Inclusion criteria for participants included MSME owners actively utilizing digital technology and social media for their business operations. Exclusion criteria involved owners who did not utilize technology or social media in their business processes. Out of an initial pool of 67 respondents completing the online questionnaire, 51 MSME owners meeting the inclusion criteria were selected as the study sample. This selection was made by reviewing the responses to ensure that only those who fit the research criteria were included in the analysis.

Data analysis was conducted using Structural Equation Modeling-Partial Least Squares (SEM-PLS) with SmartPLS 3.0 software. SEM-PLS was selected due to its suitability for analyzing complex relationships between latent variables and its ability to handle small to moderate sample sizes effectively. This methodology allows for the examination of both the measurement and structural models, making it ideal for testing theoretical frameworks and validating hypotheses. The data collection process involved a structured survey design. Respondents were selected through a stratified random sampling technique to ensure representative coverage of the target population. The survey instrument included meticulously designed questions to capture relevant variables. Data was gathered using both online and face-to-face methods to maximize response rates. SEM-PLS analysis comprises two primary components: the outer model and the inner model. The outer model assesses convergent and discriminant validity, as well as measurement reliability. Convergent validity is established when indicators within a construct exhibit strong correlations, with loading factors exceeding 0.70 as recommended by [28]. Table 2 demonstrates that all indicators meet this criterion, affirming their validity. The inner model is evaluated through R-square and Q-square analyses to measure the explanatory power and predictive relevance of the model. Hypothesis testing is also conducted to validate the proposed relationships and ensure that the theoretical framework is supported by the data. By employing SEM-PLS and SmartPLS 3.0, the analysis provides a robust understanding of the relationships among variables in this study.

Table 1. Demographic respondents

| Demographic | | Frequency | Percentage |
|------------------------------|---------------------------|-----------|------------|
| Firm Age | 1-5 years | 9 | 17.65% |
| | 6-10 years | 19 | 37.25% |
| | 11-15 years | 18 | 35.29% |
| | >15 years | 5 | 9.80% |
| | Total | 51 | 100% |
| Gender | Male | 31 | 60.78% |
| | Female | 20 | 39.22% |
| | Total | 51 | 100% |
| Respondents Age | 15-25 years | 6 | 11.76% |
| | 26-35 years | 34 | 66.67% |
| | 36-45 years | 7 | 13.73% |
| | >45 years | 4 | 7.84% |
| | Total | 51 | 100% |
| MSMEs Sector | Culinary Industry | 21 | 41.18% |
| | Fashion and Accessories | 12 | 23.53% |
| | Agriculture and Fisheries | 6 | 11.76% |
| | Handicrafts | 8 | 15.69% |
| | Technology and Services | 4 | 7.84% |
| | Total | 51 | 100% |
| Social-Media Frequently Used | Instagram | 10 | 19.61% |
| | Facebook | 12 | 23.53% |
| | WhatsApp Business | 16 | 31.37% |
| | TikTok | 12 | 23.53% |
| | YouTube | 1 | 1.96% |
| | Total | 51 | 100% |
| E-commerce Frequently Used | Tokopedia | 10 | 19.61% |
| | Shopee | 15 | 29.41% |
| | Bukalapak | 5 | 9.80% |
| | Lazada | 1 | 1.96% |
| | GoFood | 20 | 39.22% |
| Total | 51 | 100% | |

Based on a survey of 51 respondents, the majority of businesses (72.54%) have been operating for 6 to 15 years, indicating relatively high business stability. The sample leans heavily male (60.78%) compared to female (39.22%) respondents. In terms of age, most participants (66.67%) fall within the productive age range of 26 to 35 years. The culinary industry dominates the MSME sector, accounting for 41.18% of respondents, followed by fashion and accessories at 23.53%. In terms of social media utilization, WhatsApp Business is the most popular social media platform among respondents at 31.37% usage, while Instagram (19.61%), Facebook (23.53%), and TikTok (23.53%) also have significant usage. In terms of e-commerce platforms, GoFood stands out with 39.22% usage, followed by Shopee at 29.41% and Tokopedia at 19.61%.

RESULTS AND DISCUSSIONS

Outer model

In this study, the initial phase of SEM-PLS analysis involves assessing the outer model to ensure convergent validity, discriminant validity, and reliability.

Convergent validity

Convergent validity requires that indicators within each construct demonstrate strong correlations. According to [28], when using SmartPLS 3.2 software to assess the convergent validity of reflexive indicators, each manifest variable should have a loading factor exceeding 0.70. Table 2 displays the results, indicating that all indicators associated with the constructs meet this criterion with loading factor values greater than 0.70, confirming their validity.

Discriminant validity

The assessment of discriminant validity involves comparing the square root of the Average Variance Extracted (AVE) for each construct with the correlations between constructs. If the squared AVE value is higher than the correlation value, it supports discriminant validity [28]. As shown in Table 3, the analysis confirms that the model meets the established criteria for discriminant validity.

Reliability testing

Reliability testing was conducted to assess Cronbach's Alpha and Composite Reliability. Values exceeding 0.60 indicate satisfactory reliability for constructs with reflexive indicators [28]. Table 2 presents the reliability test outcomes, demonstrating that all Cronbach's Alpha and Composite Reliability values exceed 0.60, affirming the reliability of the research constructs.

Table 2. Measurement model analysis

| Variable | Item | Factor Loading | Cronbach's Alpha | Composite Reliability | AVE |
|------------------------------|------|----------------|------------------|-----------------------|-------|
| Business Digitalization (BD) | BD.1 | 0.741 | 0.802 | 0.839 | 0.696 |
| | BD.2 | 0.833 | | | |
| | BD.3 | 0.893 | | | |
| Social Media (SM) | SM.1 | 0.866 | 0.828 | 0.827 | 0.636 |
| | SM.2 | 0.884 | | | |
| | SM.3 | 0.731 | | | |
| Digital Competence (DC) | DC.1 | 0.713 | 0.771 | 0.786 | 0.612 |
| | DC.2 | 0.819 | | | |
| | DC.3 | 0.744 | | | |
| MSME Performance (MP) | MP.1 | 0.813 | 0.755 | 0.792 | 0.618 |
| | MP.2 | 0.797 | | | |
| | MP.3 | 0.730 | | | |

Table 3. Discriminant validity

| Var/Ind | BD | SM | DC | MP |
|---------|--------------|--------------|--------------|--------------|
| BD.1 | 0.741 | 0.339 | 0.319 | 0.434 |
| BD.2 | 0.833 | 0.381 | 0.331 | 0.463 |
| BD.3 | 0.893 | 0.301 | 0.465 | 0.439 |
| SM.1 | 0.427 | 0.866 | 0.438 | 0.464 |
| SM.2 | 0.334 | 0.884 | 0.471 | 0.492 |
| SM.3 | 0.412 | 0.731 | 0.313 | 0.341 |
| DC.1 | 0.492 | 0.349 | 0.866 | 0.441 |
| DC.2 | 0.310 | 0.382 | 0.884 | 0.459 |
| DC.3 | 0.303 | 0.422 | 0.731 | 0.411 |
| MP.1 | 0.459 | 0.486 | 0.455 | 0.813 |
| MP.2 | 0.434 | 0.472 | 0.328 | 0.797 |
| MP.3 | 0.488 | 0.410 | 0.397 | 0.730 |

Inner model

The next phase of SEM-PLS analysis involves testing the inner model, utilizing R-square, Q-square, and hypothesis testing methodologies.

R-square

R-square assesses the extent to which exogenous constructs contribute to endogenous constructs. As shown in Table 4, an R-square value of 0.533 indicates that variables such as Business Digitalization and Social Media explain 53.3% of the variance in Digital Competence. The remaining 46.7% is attributed to factors outside the scope of this study. Additionally, an R-square value of 0.586 indicates that Business Digitalization, Social Media, and Digital Competence collectively explain 58.6% of the variance in MSME Performance, with 41.4% of the variance accounted for by external factors. According to [28], R-square values exceeding 0.50 signify that SEM models possess acceptable explanatory power, demonstrating moderate-to-strong explanatory capability.

Q² predictive relevance

The assessment of predictive relevance involves calculating the Q² value. A Q² value greater than 0 indicates adequate predictive capability [28]. The formula for Q² computation is as follows:

$$Q^2 = 1 - (1 - R1^2) \times (1 - R2^2)$$

$$Q^2 = 1 - (1 - 0.533) \times (1 - 0.586)$$

$$Q^2 = 1 - 0,0193638$$

$$Q^2 = 0.806$$

A Q^2 value of 0.806 signifies the model's effectiveness in accurately predicting observed values [28].

Hypothesis testing

Hypothesis testing is used to determine whether path coefficients are statistically significant. A P-value threshold of less than 0.05 is typically employed to indicate a positive correlation [28]. The results of these tests are presented in Table 5.

Table 4. R-square test

| No | Variable | R-Square |
|----|----------|----------|
| 1 | DC | 0.533 |
| 2 | MP | 0.586 |

Table 5. Hypothesis testing results

| Hypothesis | Path Coefficient | T Value | P Values | Decision |
|-----------------------------|------------------|---------|----------|-----------------|
| BD -> MP | 0.537 | 7.425 | 0.000 | Accepted |
| SM -> MP | 0.461 | 6.224 | 0.000 | Accepted |
| DC -> MP | 0.359 | 4.323 | 0.000 | Accepted |
| BD -> DC -> MP | 0.244 | 2.628 | 0.005 | Accepted |
| BD -> DC -> MP | 0.217 | 2.544 | 0.025 | Accepted |

The significant relationship between business digitalization and MSME performance

Business digitalization refers to the integration of digital technology into various operational and managerial functions within a business. This transformative process encompasses the adoption of digital tools and systems that fundamentally alter traditional business practices. The initial hypothesis presented in Table 5 underscores the significant effect of digitalization on the performance enhancement of Micro, Small, and Medium Enterprises (MSMEs) in Lamongan Regency. These findings align with previous studies [29], which also highlighted the positive effect of digital technology on business outcomes. This study employs Organizational Change Theory as its research framework, focusing on indicators such as the integration of technology into production processes, the integration of digital systems within management functions, and the utilization of technological tools to enhance operational efficiency. These elements are pivotal in achieving the observed improvements in MSME performance.

The incorporation of digital technology into production processes offers substantial advantages, including increased productivity and operational efficiency. Advanced production technologies, such as automated machinery and digital monitoring systems, contribute to significant reductions in production time and costs. Additionally, these technologies enhance product quality by minimizing errors and variability [30]. Such improvements in production processes directly translate into increased sales and revenue. Moreover, the ability of MSMEs to quickly and accurately respond to evolving market demands through digital technologies results in heightened customer satisfaction and loyalty, further driving business success.

The role of digital systems in business management is equally crucial. The adoption of sophisticated financial management software, Customer Relationship Management (CRM) systems, and Enterprise Resource Planning (ERP) platforms enables MSMEs to streamline their operations effectively. These digital tools facilitate the optimization of workflows, enhance decision-making processes based on data insights, and mitigate the risk of human error [31]. The operational efficiencies derived from such integrations lead to reduced operational costs and increased profitability. Furthermore, CRM technology significantly improves customer relationship management, enabling MSMEs to foster stronger, long-term customer relationships and enhance overall satisfaction.

Additionally, the application of technology to enhance operational efficiency, including e-commerce platforms, business process automation, and advanced data analytics, plays a critical role in MSME performance. E-commerce solutions enable businesses to extend their market reach beyond geographical constraints, while automation of business processes increases operational efficiency and reduces manual

workload. Data analytics provides valuable insights that inform strategic decisions, optimize marketing efforts, and drive revenue growth. Consequently, MSMEs can achieve substantial increases in sales and revenue by leveraging these digital solutions to reach a broader customer base and improve marketing effectiveness. The cost savings associated with automation and data-driven operations further bolster the financial performance of MSMEs [32].

Overall, the evidence strongly suggests that business digitalization significantly enhances the performance of MSMEs in Lamongan Regency. By adopting digital technologies, these businesses can boost sales and revenue, streamline operations, reduce costs, and foster greater customer satisfaction and loyalty. Consequently, continuous digital advancement is imperative for MSMEs to thrive and grow in today's increasingly digital marketplace. Such progress is essential for ensuring long-term business sustainability and a competitive edge in the modern era.

The significant relationship between social media utilization and MSME performance

Social media utilization has emerged as a pivotal strategy for enhancing the performance of Micro, Small, and Medium Enterprises (MSMEs), including those in Lamongan Regency. According to the second hypothesis as outlined in Table 5, social media serves as a multifaceted tool for marketing, customer interaction, communication, and branding, demonstrating a significant and positive effect on MSME performance. This effect is evident through various indicators such as increased sales and revenue, improved operational and cost efficiency, and enhanced customer satisfaction and loyalty. These findings align with previous studies, emphasizing the beneficial effects of social media on business performance [33].

This research framework employs the Organizational Efficiency Concept to examine the relationship between social media utilization and MSME performance. Key indicators within this concept include the application of social media for marketing, customer interaction, and branding. From a marketing perspective, social media platforms offer MSMEs with an opportunity to reach a broader audience at a fraction of the cost associated with traditional marketing methods. Platforms such as Facebook, Instagram, and Twitter enable businesses to promote their products and services to a vast number of potential customers. Engaging and creative marketing campaigns on these platforms can significantly enhance visibility and generate consumer interest, and ultimately drive sales and revenue growth [34].

Customer interaction via social media also plays a crucial role in affecting MSME performance. Social media platforms offer a direct communication channel between MSMEs and their customers, facilitating the resolution of inquiries, addressing complaints, and gathering real-time feedback. Such interactive and personalized engagement contributes to higher levels of customer satisfaction and loyalty. Customers perceiving their needs as being addressed efficiently are more likely to maintain brand loyalty and recommend the MSME's products or services to others [35].

Furthermore, social media serves as a powerful tool for communication and branding. Consistent and strategic communication of brand messages through social media helps MSMEs establish a strong brand identity and elevate brand awareness among their target audience [36]. Effective branding strategies via social media can differentiate MSMEs in a competitive marketplace, attract new customers, and retain existing ones. A robust brand presence and clear communication on social media foster greater consumer trust and contribute to overall business growth.

The benefits of social media also extend to operational and cost efficiency. Leveraging social media for various business functions enables MSMEs to reduce expenses typically incurred through traditional marketing and customer service methods. Accessible and user-friendly social media platforms enable the execution of marketing campaigns, customer interactions, and branding initiatives more efficiently. This efficiency translates into cost savings and enhanced operational performance [37].

Overall, the strategic utilization of social media has a significant positive effect on MSME performance in Lamongan Regency. The tangible outcomes of effective social media engagement include increased sales and revenue, improved operational and cost efficiencies, and heightened customer satisfaction and loyalty. To sustain and drive business growth in the digital era, it is essential for MSMEs to continuously leverage and optimize their social media strategies, ensuring ongoing relevance and competitiveness in the marketplace.

The significant relationship between digital competence and MSME performance

Digital competence encompasses the ability of Micro, Small, and Medium Enterprises (MSMEs) to effectively utilize digital applications, master various digital technologies, and proficiently manage and analyze digital data. According to the third hypothesis outlined in Table 5, digital competence demonstrates a positive and significant effect on the performance of MSMEs in Lamongan Regency. This effect is evident through various performance indicators, including growth in sales and revenue, improved operational and cost efficiency, as well as heightened customer satisfaction and loyalty. These findings align with a previous study that similarly reported the positive effect of digital competence on MSME performance [38]. This study utilizes the Digital Competence Concept, encompassing indicators such as proficiency in using digital applications, mastery of digital technologies, and the management and analysis of digital data, to explore the relationship between digital competence and MSME performance.

Mastery of digital applications enables MSMEs to leverage various digital tools and platforms essential for contemporary business operations. This proficiency facilitates more efficient management of business functions, ranging from marketing to inventory control. For instance, digital accounting software provides MSMEs with real-time financial tracking capabilities, enhancing accuracy in financial reporting and contributing to operational efficiency and cost reduction. Similarly, e-commerce platforms allow MSMEs to access a wider market, thereby driving sales growth and increasing revenue [39].

Proficiency in digital technology further enhances MSME performance by optimizing business processes and increasing productivity. Mastery of technologies such as cloud computing, Customer Relationship Management (CRM) systems, and Enterprise Resource Planning (ERP) systems is critical. CRM technology, for instance, enables MSMEs to manage customer relationships with greater effectiveness, thereby improving customer satisfaction and fostering long-term loyalty [40]. ERP systems integrate various business functions, including production, inventory management, and distribution, thereby enhancing operational efficiency and reducing operational costs. This comprehensive integration allows MSMEs to streamline their operations and improve overall business performance.

The ability to manage and analyze digital data provides MSMEs with invaluable insights that can significantly influence business decisions. Competence in data management allows MSMEs to identify market trends, understand consumer behavior, and evaluate the effectiveness of marketing strategies. Effective data analysis empowers MSMEs to make informed decisions based on accurate and current information, ultimately driving increased sales and revenue [41]. Additionally, a deeper understanding of customer preferences and needs, gained through data analysis, helps MSMEs enhance customer satisfaction and loyalty by tailoring their offerings to better meet customer expectations.

Overall, digital competence exerts a substantial and positive effect on MSME performance in Lamongan Regency. By acquiring the ability to adeptly use digital applications, master technological tools, and effectively manage and analyze data, MSMEs can achieve improved operational efficiency, reduced costs, increased sales and revenue, and enhanced customer satisfaction and loyalty. Consequently, the development of digital competence is crucial for MSMEs to remain competitive and thrive in the increasingly digitalized business landscape in the modern era.

The significant mediation relationship between business digitalization with MSME performance through digital competence

The fourth hypothesis in Table 5 proposes that digital competence serves as a mediating factor in the positive and has a significant effect of business digitalization on the performance of Micro, Small, and Medium Enterprises (MSMEs) in Lamongan Regency. Business digitalization, the integration of digital technology into various operations and management, is crucial for boosting MSME productivity, efficiency, and competitiveness. However, realizing these benefits hinges on sufficient digital competence [42]. Digital competence, encompassing digital application proficiency, digital technology mastery, and data management and analysis skills, is essential for MSMEs to fully leverage the advantages of business digitalization. While digitalization offers tools and technologies to enhance operational efficiency and market reach [43], the extent to which MSMEs can capitalize on these advancements is strongly influenced by their digital competence. Digital competence mediates this relationship by facilitating the effective and efficient utilization of digital technologies.

Digital competence significantly enhances the effect of business digitalization, particularly in production processes. By mastering digital applications and advanced production technologies, MSMEs can automate and streamline production workflows, leading to improved product quality and reduced production costs [44]. These technological capabilities directly contribute to increased sales and revenue, as well as improved operational efficiency and cost management. Without a solid foundation in digital competence, MSMEs may face challenges in adopting and effectively utilizing new production technologies, hindering the potential benefits of business digitalization.

In the realm of business management, the integration of digital systems is fundamentally dependent on digital competence. MSMEs equipped with the skills to manage financial management software, Customer Relationship Management (CRM) systems, and Enterprise Resource Planning (ERP) platforms can significantly enhance their operational workflows, make informed decisions based on data, and minimize human errors [45]. Digital competence ensures that MSMEs can fully exploit these digital management tools to achieve better operational efficiency and cost reduction, thereby augmenting overall business performance.

Furthermore, the utilization of technology to enhance operational efficiency is intricately linked to digital competence. MSMEs proficient in managing and analyzing digital data are better positioned to extract valuable insights that can improve business process efficiency, optimize cost management, and enhance marketing strategies. Effective use of digital solutions, such as e-commerce platforms, business process automation, and data analytics, is crucial for driving sales growth and enhancing customer satisfaction and loyalty [46]. Digital competence enables MSMEs to leverage these technologies more effectively, thereby impacting overall business performance positively.

Overall, digital competence is a crucial mediator in the relationship between business digitalization and MSME performance. It ensures that MSMEs are capable of adopting, operating, and leveraging digital technologies effectively. Without sufficient digital competence, the potential advantages of business digitalization may not be fully realized. Therefore, MSMEs in Lamongan Regency must prioritize the continuous development and enhancement of their digital competencies to fully capitalize on the benefits of business digitalization and achieve optimal performance in the digital age.

The significant mediation relationship between social media utilization and MSME performance through digital competence

The fifth hypothesis outlined in Table 5 suggests that digital competence serves a crucial mediating role in amplifying the positive effect of social media utilization on the performance of Micro, Small, and Medium Enterprises (MSMEs) in Lamongan Regency. Social media utilization encompasses various facets, including marketing, customer interaction, communication, and branding. While social media platforms offer substantial potential to enhance business performance, the extent to which MSMEs can realize these benefits is significantly contingent upon their level of digital competence [47]. Digital competence including the ability to effectively use digital applications, master technological tools, and manage and analyze digital data are essential for optimizing the utilization of social media in business operations.

Digital competence is essential for executing effective social media marketing campaigns. By mastering digital marketing applications, MSMEs can create engaging and impactful content, analyze campaign performance using analytical tools, and adjust strategies based on data-driven insights. This digital proficiency empowers MSMEs to expand their reach, enhance product visibility, and ultimately boost sales [48]. Conversely, inadequate digital competence can hinder MSMEs from fully leveraging available tools and platforms, potentially limiting their growth and revenue generation.

In addition to marketing, digital competence is essential for MSMEs to effectively engage with customers through social media. By proficiently managing social media platforms, MSMEs can quickly and effectively address customer inquiries and complaints, thereby enhancing customer satisfaction and fostering loyalty. These factors positively contribute to overall business performance. Furthermore, data analysis skills allow MSMEs to gain valuable insights into customer preferences and behaviors, allowing them to tailor their interactions and services to better meet customer needs and improve satisfaction [49]. Without these digital capabilities, MSMEs may struggle to effectively engage with customers and achieve desired satisfaction levels.

Moreover, mastery of digital technology is essential for MSMEs to build and maintain a strong brand image on social media. Digital proficiency empowers these businesses to craft robust branding strategies, leverage design tools, and manage content effectively, resulting in cohesive and compelling brand messaging. By effectively managing data, MSMEs can monitor and analyze brand sentiment on social media platforms, enabling them to adapt communication strategies based on customer feedback and enhance overall brand reputation [50]. This data-driven approach fosters increased customer trust and loyalty, ultimately boosting business performance.

Overall, digital competence plays a mediating role in amplifying the positive and significant effects of social media utilization on MSME performance in Lamongan Regency. By leveraging digital applications, mastering technological tools, and effectively managing and analyzing data, MSMEs can optimize their marketing strategies, enhance customer interactions, and strengthen communication and branding efforts through social media. A high level of digital competence ensures that MSMEs can fully exploit the potential of social media to boost sales and revenue, operational efficiency, cost-effectiveness, and customer satisfaction and loyalty. Therefore, the development and enhancement of digital competence are crucial for MSMEs striving to achieve optimal performance and sustain growth in the digital age.

CONCLUSION

This study concludes that business digitalization, social media utilization, and digital competence have a significant positive effect on the performance of MSMEs in Lamongan Regency. The findings indicate that integrating digital technology into production processes, utilizing digital systems in business management, and employing social media for marketing and customer engagement are crucial for enhancing operational efficiency, reducing costs, boosting sales and revenue, and improving customer satisfaction and loyalty among MSMEs. Notably, digital competence plays a mediating role, amplifying the positive effects of business digitalization and social media on SME performance. These findings align with existing literature, emphasizing the transformative potential of digital technologies for small and medium enterprises. For instance, studies by [16] emphasize that digital tools can streamline operations and boost market reach, while [36] confirm that social media enhances customer interaction and brand visibility. Our findings extend these observations by demonstrating how digital competence further enhances these benefits, enabling MSMEs to more effectively leverage digital technologies and social media.

In a broader context, this study underscores the critical role of digital technology in modernizing SMEs and driving business growth. The ability of digital competence to mediate the relationship between business digitalization, social media utilization, and SME performance suggests that investing in digital skills is essential for optimizing the benefits of technological advancements. This finding aligns with broader trends demonstrating a strong correlation between digital literacy and improved business outcomes across various regions and industries.

These findings hold significant implications for MSMEs seeking to maintain competitiveness and growth. To thrive, these businesses must prioritize the adoption and integration of digital technologies, cultivate digital skills, and leverage social media to expand their market reach and streamline operations. By enhancing their digital capabilities, MSMEs can make more informed decisions and swiftly adapt to evolving market conditions.

The findings of this study suggest several practical strategies to enhance the performance of MSMEs in Lamongan Regency. First, MSME owners should prioritize ongoing training and education in digital technologies to stay abreast of advancements and effectively incorporate these tools into their operations. Training should focus on areas such as digital marketing, e-commerce, and data analytics. To foster this digital transformation, government agencies, and relevant institutions support this initiative by providing targeted assistance and incentives, such as financial subsidies for technology adoption, discounted access to digital tools, and organized workshops or seminars. Additionally, policymakers should consider implementing policies that promote digital literacy and facilitate technology adoption among MSMEs. Such policies could include establishing partnerships with technology providers to offer affordable solutions and developing initiatives to encourage innovation. MSMEs should also focus on refining their marketing strategies through social media by creating tailored content, utilizing social media analytics to better understand customer preferences, and engaging in interactive campaigns to build stronger relationships with both existing and potential customers. By adopting these recommendations, MSMEs in Lamongan

Regency can enhance their operational efficiency, improve customer engagement, and boost their performance in a competitive market.

However, this study has limitations, including its focus solely on MSMEs in Lamongan Regency, which may differ in context and characteristics from other regions or larger enterprises. Future studies could benefit from exploring these dynamics in different regions or sectors and considering the evolving landscape of digital technologies. This study provides valuable insights into the effect of business digitalization, social media, and digital competence on SME performance and identifies key areas for further exploration to support the growth and sustainability of MSMEs.

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