

Accelerating Digital Maturity in MSMEs: Challenges and Opportunities

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ABSTRACT

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The processing subsystem plays a crucial role in strengthening food security and enhancing economic independence in rural areas. Through this subsystem, villages can transform into more advanced and prosperous agriculture-based economic centers. To achieve this, it is undeniable that Micro, Small, and Medium Enterprises (MSMEs) must align with technological developments, including those in rural areas. This article examines the digital readiness of rural MSME actors and the challenges they face in the Society 5.0 era using a literature review method. Although the path toward digital maturity for rural MSMEs presents various challenges, the synergy between MSMEs and digital technology development can help them better adapt to market dynamics, increase productivity, and strengthen their market position.

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1. Introduction

The processing industry plays a crucial role in fostering regional economic independence and competitiveness in the Society 5.0 era. Although operating on a micro, small, or medium scale, Micro, Small, and Medium Enterprises (MSMEs) have a significant capacity to empower local communities. The Society 5.0 era offers substantial opportunities for MSMEs, as digital technologies enable rural communities—often distant from urban centers and limited in communication infrastructure—to develop and expand MSME activities [1].

Society 5.0 is closely associated with continuous innovation and rapid technological advancement, which simultaneously present major challenges for business actors [2]. MSMEs are required to survive amid increasingly intense competition. Creativity, product innovation, marketing capabilities, product packaging, human resource development, and technological adoption have become unavoidable challenges for MSMEs [3].

However, data from E-Commerce Statistics indicate that 58.49% of businesses in Indonesia are still operated conventionally. The highest concentration of e-commerce users is on Java Island (75.04%), while regions such as Bali and Nusa Tenggara account for only 3.65% of businesses utilizing e-commerce platforms [4]. These data demonstrate that the adoption of digital technology in business activities—particularly in marketing—remains uneven across regions. This condition is driven by various challenges faced by business actors, which limit the optimal use of digital technologies.

Several studies have examined the challenges and opportunities for MSMEs in adopting digital marketing. Research findings indicate that digitalization through e-commerce platforms and digital literacy programs has the potential to significantly increase MSME income by expanding market reach and reducing operational costs [5][6]. Despite these positive impacts, digital marketing adoption among MSMEs remains relatively low, with usage largely limited to instant messaging

applications such as WhatsApp Business [7]. In addition, persistent challenges include limited digital infrastructure and low digital literacy among MSME actors, highlighting the need for investment in training programs to enhance digital skills [8].

Numerous digital marketing training programs have been conducted across Indonesia to support MSME development, including in Samarinda City [9], Bogor Regency [10], South Denpasar District [11], Mojorejo Village in Mojokerto Regency [12], Plamongansari Subdistrict in Semarang City [13], Montong Beter Village in East Lombok Regency [14], and Kupang Regency [15]. Evaluations of these programs show improvements in MSMEs' understanding of digital marketing strategies, although further assistance is still required, particularly in content management and advertising performance evaluation. These initiatives demonstrate that, with appropriate approaches, local MSMEs possess substantial potential to advance through digital transformation [15].

Enhancing MSMEs' digital maturity through training and mentoring is a strategic effort to improve competitiveness, income generation, and food security. By expanding market reach and optimizing the use of digital technologies for marketing, MSMEs can strengthen their business performance. Given the strategic role of MSMEs in the national economy, their ability to adopt and integrate digital marketing practices is a determining factor in achieving higher levels of digital maturity and competitiveness [16]. Therefore, this article aims to examine MSME actors' readiness to implement digital marketing and to identify the challenges they face. The findings are expected to provide recommendations for accelerating digital maturity for policymakers and business practitioners.

2. Method

This study employed a qualitative descriptive approach using a literature review method to identify MSMEs' readiness for digital marketing adoption and the challenges encountered. A literature review involves systematically collecting, reading, recording, and analyzing relevant academic sources. Appropriate theoretical references are required to ensure alignment with the research issues addressed [17].

A total of 23 academic publications published between 2021 and 2025 were selected from Scopus, Google Scholar, and the Directory of Open Access Journals (DOAJ). The keywords used included "digital maturity SMEs," "digital marketing in rural SMEs," and "challenges and opportunities of digital adoption in SMEs." Relevant articles were analyzed, and their findings were synthesized to draw comprehensive conclusions.

3. Results and Discussion

Based on the analysis of 23 selected studies, this section elaborates on the extent of MSME readiness in implementing digital marketing and discusses the challenges associated with digitalization.

3.1. MSMEs' Readiness for Digital Marketing Adoption

In the digital era, MSMEs are required to rapidly adapt to technological changes. MSMEs' ability to utilize digital technologies reflects both their readiness and willingness to advance their businesses. Digital readiness is influenced by intrinsic motivation and technological knowledge [18].

For example, MSMEs in Pringsewu Regency exhibit a medium level of readiness for digitalization based on the Technology Readiness Index. While MSME owners demonstrate optimism and willingness to innovate, they experience difficulties in the learning process and express concerns regarding digital transaction security [19]. A study conducted in West Java involving 113 MSMEs revealed that overall digital readiness remains low. Key assessment variables included people, process, strategy, technology, and integration. Although most respondents were aware of digitalization trends, they were not yet prepared to fully adopt and implement digital innovations in their businesses [20]. Similar findings were reported in Riau Province, where MSMEs' readiness to face the digital era remained low, necessitating greater attention from government and relevant stakeholders [21].

Other studies similarly indicate that low digital literacy remains a primary factor limiting MSMEs' readiness to adopt digital technologies. Strategies to improve readiness include support

from central and local governments through appropriate regulations, digital literacy programs, and improved access to financial resources [22].

In contrast, some research highlights that MSMEs are not technologically ready due to inadequate equipment to support digital marketing activities. However, in terms of innovation, human resources, and self-development, MSMEs demonstrate a relatively higher level of readiness, although further improvements are required for optimal digital marketing implementation [23].

Conversely, other studies categorize Indonesian MSMEs within the “Learning” stage (87%), with the textile and food sectors exhibiting higher readiness for digitalization. MSMEs actively involved in government programs tend to show greater preparedness for adopting digital technologies [24]. A similar pattern was observed in Palembang City, where 100 MSMEs demonstrated a digital readiness level of 3, indicating partial adoption of digital technologies to support business development [25].

3.2. Challenges of Digitalization for MSMEs

Digital transformation is an ongoing process that creates opportunities for innovation and reshapes communication between sellers, buyers, and business partners. Despite these opportunities, MSMEs often struggle to keep pace with technological advancements. MSMEs tend to lag behind larger enterprises that possess greater adaptive capacity, primarily due to limited technological skills among human resources, weak business management, and low levels of technological investment [26].

In developing countries such as India, government initiatives like the Uzhavan application aim to support rural farmers and MSMEs by providing up-to-date agricultural commodity information. However, implementation challenges persist, including limited smartphone access, weak networking, and low digital literacy [27][28]. Other studies identify both internal and external factors affecting digital adoption among rural MSMEs. Internal factors include business culture, capabilities, resources, organizational structure, operational environment, trade environment, and product characteristics, while external factors relate to consumers and competitors [29].

In Indonesia, government programs such as UMKM Go Digital, the National Digital Literacy Movement, and various regional initiatives aim to encourage MSMEs to scale up. However, their impacts have not been evenly distributed due to infrastructure disparities, limited program coverage, and institutional capacity constraints. MSMEs located near urban areas tend to benefit more from these initiatives [30][31][32].

MSMEs predominantly utilize platforms such as Instagram, WhatsApp Business, Shopee, and Tokopedia for product marketing. These platforms are popular due to features such as influencer marketing, live selling, and short-form video content. Despite increasing social media adoption, MSMEs face critical challenges, including limited digital literacy, inadequate rural infrastructure, and constrained financial resources that hinder the sustainability of digital marketing strategies [33][34]. Limited budgets often prevent MSMEs from investing in paid advertising, marketing automation tools, or hiring skilled digital marketing personnel [35].

These findings are supported by a study in the Greater Jakarta area involving 15 MSMEs, which reported that 80% of MSMEs rely on social media as their primary promotional tool due to its effectiveness in increasing sales and facilitating customer communication. Nevertheless, MSMEs remain in the learning phase of social media optimization, indicating that technical capability limitations remain a major challenge [36].

Other studies further identify key challenges in digital marketing adoption, including limited technical skills, security concerns, lack of organizational support, financial constraints, infrastructure gaps, slow internet connectivity, outdated technology, and uncertainty regarding return on technology investment [37][38]. To support MSME development, recommended measures include improving access to capital, providing business development services, offering skill-enhancement training, introducing new technologies, and formulating policies aligned with MSME advancement objectives [39].

Based on the reviewed literature, the most frequently cited digitalization challenges include inadequate technical skills among human resources and limited capital, followed by infrastructure

disparities. Low digital literacy and uneven government program implementation are mentioned less frequently. These findings are summarized in Table 1.

Table 1. The Challenges of Digitalization of MSMEs

Common Challenges	Authors	Frequency
Low digital literacy	Ravi, S., & Rajasekaran, S. R. C. (2023) Wiweko, A., & Anggara, A. W. (2025) RS, W., MD, M., Syamsu, N., Nuriatullah, N., AR, R., Nurfitriani, N., ... & Safar, A. M. (2025)	3
Infrastructure gaps	Ravi, S., & Rajasekaran, S. R. C. (2023) Wiweko, A., & Anggara, A. W. (2025) Amalia, R., Aini, R. Q., Paradita, J., & BR, A. D. M. (2025) Shaikh, D. A. A., Kumar, M. A., Syed, D. A. A., & Shaikh, M. Z. (2021) Shaikh, D. A. A., Kumar, M. A., Syed, D. A. A., & Shaikh, M. Z. (2021)	5
Insufficient technical skill	Setkute, J., & Dibb, S. (2022) Shaikh, D. A. A., Kumar, M. A., Syed, D. A. A., & Shaikh, M. Z. (2021) RS, W., MD, M., Syamsu, N., Nuriatullah, N., AR, R., Nurfitriani, N., ... & Safar, A. M. (2025) Kljajić Borštnar, M., & Pucihar, A. (2021) Shaikh, D. A. A., Kumar, M. A., Syed, D. A. A., & Shaikh, M. Z. (2021) Hidayat, A. R., Alifah, N., Astuti, A. W., Cahya, M. N., & Lutfia, L. (2025)	6
Limited funding	Wiweko, A., & Anggara, A. W. (2025) D. Susanti, Y. Nugroho, B. Prasetyo. (2023) Shaikh, D. A. A., Kumar, M. A., Syed, D. A. A., & Shaikh, M. Z. (2021) RS, W., MD, M., Syamsu, N., Nuriatullah, N., AR, R., Nurfitriani, N., ... & Safar, A. M. (2025) Kljajić Borštnar, M., & Pucihar, A. (2021) Shaikh, D. A. A., Kumar, M. A., Syed, D. A. A., & Shaikh, M. Z. (2021)	6
Lack of widespread government programs	Amalia, R., Aini, R. Q., Paradita, J., & BR, A. D. M. (2025) Shaikh, D. A. A., Kumar, M. A., Syed, D. A. A., & Shaikh, M. Z. (2021)	2

Based on the data presented above, the following diagram illustrates the frequency of common challenges appearing across several pieces of literature:

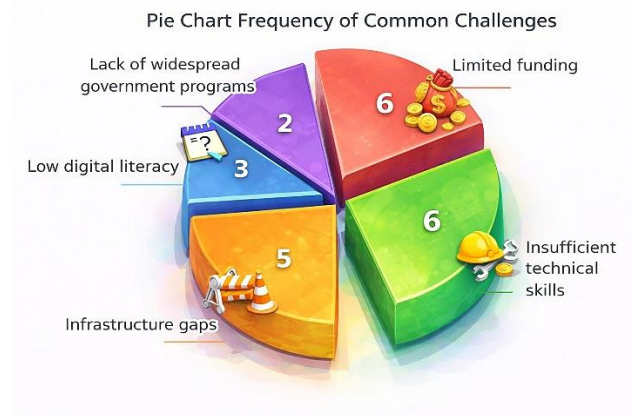


Fig. 1. Common Challenges Based on Literature

4. Conclusion

MSMEs' readiness to face the digital era varies across regions and sectors. Motivation, digital literacy levels, technological capacity, and innovation capability significantly influence MSMEs' digital readiness. Differences in readiness are closely linked to the various challenges faced by MSMEs, highlighting the need for greater support from governments and stakeholders to enhance competitiveness and facilitate MSMEs' progression toward higher levels of digital maturity.

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