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How is the digital maturity level of MSMEs in Sigi Regency analyzed using the Digital Capability Maturity Model (DCMM)?

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ABSTRACT

This study aims to analyze the digital maturity level of Micro, Small, and Medium Enterprises (MSMEs) in Kabobona Village, Sigi Regency, using the Digital Capability Maturity Model (DCMM) framework. A descriptive qualitative approach was employed to examine the implementation of digital marketing and the factors influencing digital transformation in rural areas. Data were collected through in-depth interviews, observations, and documentation involving MSME actors who actively use social media platforms such as Facebook and WhatsApp. The findings indicate that most MSMEs are at the Emerging and Established levels, primarily using social media as a promotional tool. However, their efforts are not yet integrated into a comprehensive digital strategy. Key enabling factors include ease of access, low cost, and community support, while the main barriers are limited infrastructure, low digital literacy, and inadequate human resource capacity. These findings underscore the relevance of the DCMM framework for mapping MSMEs' digital readiness and highlight its applicability in Indonesia's rural economy. The study also emphasizes the importance of social capital, local innovation, and institutional support in accelerating digital maturity. The results are expected to serve as a foundation for policymakers and stakeholders in designing strategies to strengthen digital capacity and infrastructure, thereby promoting an inclusive and sustainable digital economic transformation.

1. Introduction

Digital transformation has become essential for enhancing the competitiveness of Micro, Small, and Medium Enterprises (MSMEs) in a technology-driven economy. Shifting consumer behavior, the integration of online platforms, and changes in global business models compel MSMEs not only to adopt digital technologies but also to develop mature and sustainable digital capabilities. In Indonesia, MSMEs contribute more than 60% to the national Gross Domestic Product (GDP) and absorb over 97% of the workforce. However, digital adoption remains suboptimal, particularly in rural areas. Therefore, assessing digital maturity is a crucial step in understanding the extent to which MSMEs can effectively and sustainably undergo digital transformation amid resource constraints.

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How is the digital maturity level of MSMEs in Sigi Regency analyzed using the Digital Capability Maturity Model (DCMM)?

Previous studies have developed various models and assessment tools to measure digital maturity using the Digital Capability Maturity Model (DCMM) approach. (L. Li, 2022; Lulaj et al., 2023; Tegethoff et al., 2023) Evaluated digital transformation in small and medium enterprises using a multicriteria framework focused on digital strategy, operational technology, and organizational culture. (Aisya et al., 2023; C. Chen, 2025; Syamsu et al., 2025) Integrated the Analytic Hierarchy Process (AHP) and fuzzy synthesis to assess digital capability through resource collaboration and environmental awareness. Meanwhile, (Krulčić et al., 2025; Sofyan et al., 2023) Proposed a Multi-Criteria Decision Analysis (MCDA)-based model to measure the gap between actual and expected digital maturity levels in the manufacturing sector. Other approaches include the entropy-based weighting method by (Ali et al., 2023; Bánhidi & Dobos, 2025; Evdokimova et al., 2023; Ivanova, 2023) for determining a digital maturity index, and the use of linguistic variables and fuzzy integrals by (C.-T. Chen et al., 2022; Komulainen & Nätti, 2023; J. Li et al., 2023; Palau-Pinyana et al., 2023; Straub et al., 2023) To capture the subjective nature of expert evaluations. Overall, these studies demonstrate that the DCMM is effective in assessing digital readiness and performance.

Nevertheless, existing research has predominantly focused on large enterprises and manufacturing industries in urban areas, while empirical studies on community-based MSMEs in rural regions remain limited. MSMEs in rural settings face distinct challenges, including inadequate internet infrastructure, low digital literacy, and a shortage of technologically skilled human resources. This creates a significant research gap, as few studies have contextualized and applied the DCMM framework to rural MSMEs. Furthermore, most previous studies employ quantitative methods based on numerical indicators, whereas the social, cultural, and behavioral dimensions of MSME digitalization remain underexplored. These factors play a critical role in the success of digital marketing implementation and technology adoption, especially in communities with strong social cohesion, like those in rural areas.

Addressing this gap, the present study offers a new perspective by applying the Digital Capability Maturity Model (DCMM) to MSMEs in Kabobona Village, Sigi Regency, Central Sulawesi Province. This approach not only evaluates the digital maturity levels of rural MSMEs but also examines the social, economic, and cultural factors that influence the successful implementation of digital marketing strategies. The novelty of this study lies in applying the DCMM in a rural Indonesian setting—an area rarely explored—through a descriptive qualitative approach that highlights social dynamics and business behavior in the digital adoption process. Moreover, integrating the DCMM framework with the local economic context provides a practical tool for mapping digital maturity in rural MSME development. Therefore, this study aims to extend the applicability of DCMM within rural MSME sectors and contribute practical insights for policymaking focused on inclusive and sustainable digital capacity enhancement.

2. Literature Review

The **Digital Capability Maturity Model (DCMM)** is a framework for assessing an organization's readiness and digital maturity in navigating digital transformation. It evaluates the extent to which digital technologies are integrated into business strategy, operational processes, and organizational culture. (L. Li, 2022) and (C. Chen, 2025) Emphasize that digital maturity assessment goes beyond technological infrastructure, encompassing human factors, resource collaboration, and environmental awareness. Approaches such as the Analytic Hierarchy Process (AHP), Multi-Criteria Decision Analysis (MCDA), and fuzzy synthesis have been utilized to evaluate digital readiness across multiple interrelated dimensions.

Several studies have shown that the DCMM provides a comprehensive overview of MSMEs' digital positioning and readiness. (Bánhidi & Dobos, 2025) developed a digital maturity index using entropy-based weighting to assess the use of digital tools and infrastructure, while (Q. Chen et al., 2022) Incorporated subjective dimensions through linguistic variables and fuzzy integrals to capture expert perceptions of digitalization. Findings by (Jeanneret Medina et al., 2024) and (Armijos-Buitrón et al., 2024) Indicate that most MSMEs in developing countries remain at low to moderate digital maturity levels, primarily due to infrastructure limitations, low digital literacy, and constrained human resources.

However, most existing studies remain focused on industrial sectors and urban areas, while the application of DCMM in rural MSMEs remains limited. Rural social and economic contexts exhibit distinct dynamics, including a heavy reliance on social networks and limited digital access. Therefore, applying the DCMM to MSMEs in Kabobona Village, Sigi Regency, is crucial for mapping context-specific digital maturity levels. This study aims to enrich the literature on MSME digitalization and to provide an empirical foundation for strategies to strengthen digital capabilities in rural Indonesia.

3. Methodology

This study employs a descriptive qualitative approach to analyze the digital maturity of Micro and Small Enterprises (MSEs) in Kabobona Village, Sigi Regency, using the Digital Capability Maturity Model (DCMM) framework. This approach was chosen for its ability to provide in-depth insights into the implementation of digital marketing and the socio-economic dynamics influencing digital transformation in rural MSMEs (Bánhidi & Dobos, 2025; L. Li, 2022). Data were collected through in-depth interviews, participatory observation, and documentation of MSME actors actively using digital platforms such as Facebook and WhatsApp. (Mittal & Soriya, 2025). Informants were selected purposively, targeting micro- and small-business owners who had been engaged in digital marketing for at least 6 months. Village officials were also included as supporting informants to provide the institutional and policy context. (Jeanneret Medina et al., 2024).

Data analysis was conducted using the interactive analysis model by (Miles & Huberman, 1994), which includes data reduction, data display, and conclusion drawing. Each finding was categorized according to the five DCMM digital maturity levels: Initial, Emerging, Established, Optimized, and Leading. (Bánhidi & Dobos, 2025). Data validity was ensured through source and method triangulation by comparing interview results, observations, and official documents such as village reports and MSME profiles. (Armijos-Buitrón et al., 2024). The analysis aims to map the digital maturity positioning of MSMEs in Kabobona Village and to identify the enabling and constraining factors affecting the success of digital marketing implementation in enhancing business competitiveness in the era of digital transformation. (Q. Chen et al., 2022; Krulčić et al., 2025).

4. Results and Discussion

4.1 Implementation of Digital Marketing Practices among MSMEs

The findings reveal that MSME actors in Kabobona Village have undergone a fundamental shift from conventional marketing systems to digital media—particularly Facebook and WhatsApp—as their primary channels for promotion and customer communication. Based on interviews with five business owners, such as Ms. Lulu Umar (*Semprong Lumer*) and Ms. Hikmah Yusuf (*Kedai FatihNay*), most MSMEs employ simple strategies, including appealing product photos, humorous and interactive captions, and seasonal promotions to attract consumer attention. While most have not yet mastered advanced digital marketing strategies, this pattern indicates a spontaneous adaptation to changes in digital market behavior.

This phenomenon reflects the early stages of digital transformation as outlined in the Digital Capability Maturity Model (DCMM) by (Bánhidi & Dobos, 2025; L. Li, 2022), which emphasizes that digital maturity begins with technological awareness and behavioral shifts within organizations before achieving full system integration. In the Kabobona context, the adoption of social media functions as a form of digital embracement at the community level, driven by ease of use, accessibility, and low cost. These findings are consistent with (Armijos-Buitrón et al., 2024), who noted that MSMEs in developing countries tend to adopt social media platforms earlier than formal e-commerce systems due to better alignment of resource capacities and levels of digital literacy.

However, this study also found that most MSMEs have not yet utilized advanced features such as ad targeting, social analytics, or marketplace integration. This suggests that digital adoption remains operational rather than strategic, thus limiting the full potential of digital productivity. This condition echoes the findings of (Mittal & Soriya, 2025), who identified low technological literacy as a significant barrier to digital transformation among MSMEs in India. Nevertheless, simple innovations such as *"Jumat Berkah"* (free shipping Fridays) and seasonal discounts reflect locally-rooted digital creativity that remains underrepresented in the global literature. This supports the argument by (Jeanneret Medina et al., 2024) Local socio-cultural contexts significantly influence the direction and form of digital transformation at the micro level.

Beyond individual factors, institutional support from the village administration also plays a vital role. The Kabobona Village Government has provided basic training and established digital forums, such as Info Desa Kabobona (IDK), to facilitate online promotion among business actors. This initiative highlights the role of local government as an enabler in fostering community-based digital collaboration. It aligns with the ecosystem enabler model proposed by (Bánhidi & Dobos, 2025), which posits that the successful digitalization of MSMEs is strongly influenced by a supportive ecosystem comprising government, community, and digital infrastructure.

4.2 Digital Maturity Assessment Based on the DCMM Framework

Analysis based on the Digital Capability Maturity Model (DCMM) indicates that most MSMEs in Kabobona Village fall into Levels 2 (Emerging) and 3 (Established). At the Emerging level, business actors have begun using social media for promotion but lack systematic digital planning. At the Established level, some MSMEs—such as *Semprong Lumer* and *Kedai FatihNay*—

demonstrate consistent content posting, seasonal promotional strategies, and active customer engagement. This reflects a shift from digital adoption to digital adaptation, where technology becomes an integral part of business operations.
These findings align with (Krulčić et al., 2025), who noted that digital maturity in MSMEs typically progresses from digital operations and marketing capabilities to data-driven innovation. In Kabobona's context, digital maturity is evidenced by increased revenue and market reach. For example, Ms. Lulu Umar reported a rise in income from IDR 1 million to IDR 10–15 million per month after leveraging social media as a promotional channel. This substantiates the assertion by (Q. Chen et al., 2022) That digital maturity significantly contributes to business performance and customer engagement.

However, no MSMEs have yet reached Level 4 (Optimized) or Level 5 (Leading) within the DCMM. The main barriers include limited use of digital analytics, insufficient integration with e-commerce platforms, and limited human resource capacity. These findings reinforce those of (Armijos-Buitrón et al., 2024) and (Mittal & Soriya, 2025), who emphasized that structural challenges—such as poor internet infrastructure and low digital competence—are key obstacles to advancing digital maturity in rural areas. In Kabobona, unstable internet connectivity and inconsistent electricity supply further hinder the pace of digitalization, leaving MSMEs reliant on basic social media-based promotional methods.

Theoretically, these findings affirm the relevance of the Digital Capability Maturity Model in the rural Indonesian context. The model not only assesses digital readiness but also maps the social and cultural dimensions that influence technology adoption. This study expands understanding of how digital maturity is shaped not only by technological capacity but also by social capital, local innovation, and institutional support. This supports the conceptual framework by (Jeanneret Medina et al., 2024), which positions community digital literacy and local collaboration as key catalysts for inclusive digital transformation.

Furthermore, this research provides new empirical evidence that DCMM can be adapted to rural economic contexts, where digitalization unfolds more organically and is community-driven rather than corporate-led. The case of Kabobona demonstrates that despite resource limitations, successful digital adoption can be achieved through social innovation and strong local support. Hence, this study contributes to the development of the contextual digital maturity theory—an understanding that digital maturity varies according to local socio-economic characteristics rather than solely on enterprise size or technical capability.

5. Conclussion

This study concludes that the Digital Capability Maturity Model (DCMM) is effective for assessing the digital maturity of MSMEs in Kabobona Village, Sigi Regency. Most business actors fall within the Emerging and Established levels, where social media serves as the primary promotional tool, although comprehensive digital strategies are not yet fully integrated. Key enabling factors include ease of access and community support, while significant barriers consist of infrastructure limitations and low digital literacy. Theoretically, this study extends the applicability of the DCMM framework to rural MSME contexts, emphasizing the critical role of social capital and local innovation in the digitalization process. In practice, the findings provide a foundation for village governments and stakeholders to strengthen digital capacity through training, infrastructure support, and collaborative strategies to promote an inclusive and sustainable digital economic transformation.

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