

The Efficacy of Artificial Intelligence (AI) Adoption in Enhancing Social Media Marketing Creativity for Micro, Small, and Medium Enterprises (MSMEs) in North Sumatra: A Comprehensive Investigation

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Abstract

This research investigates the efficacy of Artificial Intelligence (AI) adoption in enhancing social media marketing creativity among Micro, Small, and Medium Enterprises (MSMEs) in North Sumatra, Indonesia. Recognizing the critical role of social media and the transformative potential of AI in contemporary business, this study addresses the empirical gap concerning AI's direct impact on creative output within the MSME sector in emerging economies. Employing a descriptive qualitative design, the research explores the lived experiences of 350 MSME stakeholders through purposive sampling and semi-structured interviews. The methodology focused on AI adoption intensity, creative evolution in ideation and content generation, and perceived productivity outcomes. Findings reveal that AI adoption significantly enhances social media marketing creativity, acting not merely as an efficiency tool but as a co-creator and strategic partner in campaign development. This integration fosters a dynamic, data-informed, and scalable creative process, democratizing advanced marketing capabilities for MSMEs. The study concludes that AI empowers MSMEs to transcend traditional resource limitations, unlocking novel avenues for brand storytelling and consumer engagement, thereby contributing to a paradigm shift in their digital marketing strategies and overall competitiveness.

Keywords: Artificial Intelligence, Social Media Marketing, Marketing Creativity, MSMEs, North Sumatra

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1. INTRODUCTION

The contemporary business landscape is fundamentally reshaped by the acceleration of digital transformation, with social media platforms serving as critical conduits for consumer engagement and brand proliferation (Appel et al., 2020; Vrontis et al., 2022). Within this paradigm, Micro, Small, and Medium Enterprises (MSMEs) emerge as vital economic drivers, increasingly reliant on social media to expand market reach and foster customer interaction (Setyorini et al., 2023). Concurrently, Artificial Intelligence (AI) is revolutionizing business operations, offering novel pathways to automate, personalize, and optimize marketing efforts with unprecedented precision (Huang & Rust, 2021). In the specific context of North Sumatra, Indonesia, MSMEs face a unique scenario where challenges in technology adoption are juxtaposed with significant opportunities

to gain competitive advantage through digitalization (Tirtayasa & Rahmadana, 2023; Nasution et al., 2024). This research delves into the efficacy of Artificial Intelligence (AI) adoption in enhancing social media marketing creativity among MSMEs in North Sumatra, meticulously investigating how AI tools and applications influence ideation, content generation, and strategic execution of marketing campaigns across social media platforms by MSMEs in this specific region.

The democratizing effect of social media grants MSMEs unprecedented access to vast consumer bases, a privilege historically dominated by larger corporations (Li et al., 2021). However, success in this dynamic arena hinges not merely on digital presence but on creative ingenuity to capture attention amidst information overload. AI-powered tools, particularly Generative AI, offer potent solutions by analyzing extensive datasets to capture real-time consumer trends, enabling personalized content at scale, and automating creation processes, thereby liberating human resources for strategic tasks (Davenport & Mittal, 2023; Dwivedi et al., 2021). For MSMEs in regions like North Sumatra, AI acts as a crucial enabler, bridging limitations in access to specialized marketing expertise and financial constraints, thereby fostering a more sophisticated approach to their digital marketing strategies (Tirtayasa et al., 2023). The integration of AI in marketing is anticipated to drive efficiency and potentially unlock new avenues for creative expression and innovative campaign development.

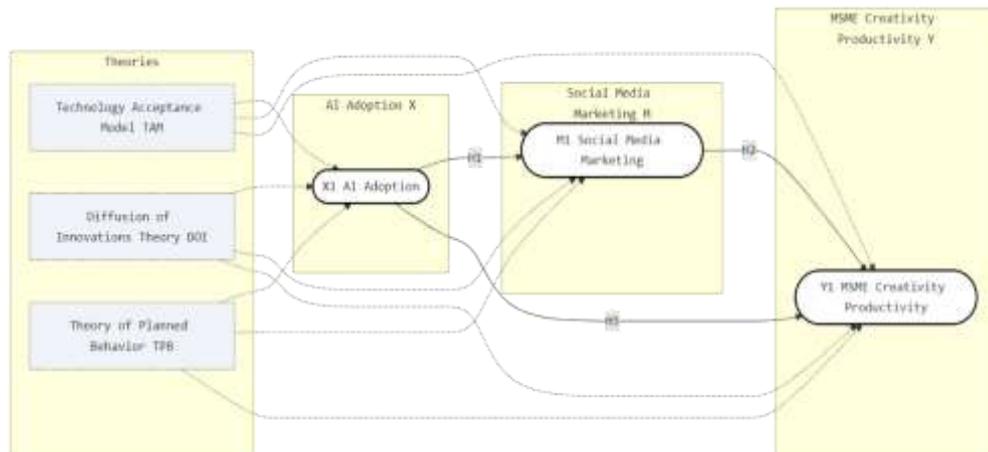
Despite the surging industrial interest in AI, a significant empirical void exists concerning its direct impact on the creative output of social media marketing within the MSME sector in developing economies. Previous research tends to focus on operational efficiency and sales performance (Khatri et al., 2021; Mustak et al., 2021), while the qualitative aspects of creativity—such as ideational originality and strategic execution—remain underexplored. This gap is particularly pronounced within the context of MSMEs in North Sumatra, where local market dynamics may differ significantly from those in advanced markets often subjected to study (Surya et al., 2021; Syarifuddin et al., 2023). Existing research often aggregates findings, potentially masking the nuanced ways AI adoption affects creativity at the grassroots level of small businesses, thus underscoring the need for context-specific investigations.

The primary challenge for MSMEs today transcends mere adoption; it lies in harnessing AI's potential to foster genuine creativity rather than mere repetitive automation. While AI excels at identifying trending topics and generating content drafts, infusing emotional resonance and unique brand storytelling still necessitates human insight (Guha et al., 2021). Therefore, this research aims to understand the intricate interplay between the intensity of AI utilization, the generation of novel marketing concepts, and its subsequent impact on marketing productivity and sales enhancement for MSMEs in North Sumatra. By moving beyond simplistic correlations to understand the nuanced relationship between AI integration and creative output, this study seeks to quantify the potential benefits and provide actionable insights for MSMEs aspiring to leverage AI for a more profound enhancement of their marketing creativity and overall business outcomes. The transformative potential of AI in marketing is widely acknowledged, yet empirical evidence regarding its specific impact on the creativity of social media marketing within the MSME sector, particularly in emerging economies like Indonesia, remains nascent.

2. RESEARCH METHOD

This study employs a qualitative descriptive research design to elicit a comprehensive understanding of the intricate dynamics surrounding Artificial Intelligence (AI) adoption and its multi-faceted impact on marketing creativity and organizational productivity within MSMEs in North Sumatra. Diverging from the prevailing reliance on positivist-quantitative frameworks such as Structural Equation Modeling (SEM), this research prioritizes a phenomenological-oriented exploration of stakeholders' lived experiences. The methodological choice to pursue a qualitative trajectory is grounded in the inherent complexities of capturing the nuanced, subjective dimensions of human-machine collaboration and creative ideation, particularly with the advent of Generative AI (Gen-AI) in marketing. These aspects are often difficult to quantify through standardized psychometric scales (Verhoef et al., 2021), thus necessitating an approach that can delve into the richness of individual perceptions and organizational processes. As a descriptive qualitative approach is uniquely suited for documenting the "what" and "how" of a phenomenon within its naturalistic setting. This design facilitates a robust investigation into how organizational practices are reconfigured during AI integration, especially pertinent in emerging economies where contextual contingencies—such as digital infrastructure disparities and local socio-cultural barriers—significantly dictate technological outcomes and adoption patterns (Syarifuddin et al., 2023; Taiminen et al., 2022). Such an approach allows for an in-depth understanding of the micro-level interactions and adaptations occurring within these businesses.

To ensure the acquisition of "rich" and "thick" data, essential for a profound interpretative analysis, the study utilizes a purposive sampling technique, a method widely advocated for its ability to select information-rich cases for in-depth study. The participants, referred to as key informants, comprise business owners, operational managers, and marketing specialists from MSMEs in North Sumatra who have actively integrated AI tools into their social media workflows. This heterogeneous sampling strategy is deliberately designed to ensure a holistic organizational perspective, capturing insights from both strategic (owners) and tactical (personnel) levels, thereby providing a comprehensive view of the adoption process and its consequences. Primary data are generated through in-depth, semi-structured interviews, a technique that allows for a balance between thematic consistency and the flexibility to pursue emergent insights, as recommended by qualitative research traditions. The interview protocol, meticulously grounded in established principles of qualitative inquiry, focuses on three core thematic pillars: (1) AI Adoption Intensity, exploring the types of AI tools utilized and the depth of their integration; (2) Creative Evolution, examining the transformation of ideation, content generation, and strategic execution processes; and (3) Productivity Outcomes, assessing perceived shifts in marketing efficiency and sales-related performance. To ensure methodological rigor and the trustworthiness of findings, interviews are conducted until theoretical saturation is achieved—the point at which no new conceptual themes emerge from additional data. All interviews are audio-recorded and transcribed verbatim for subsequent in-depth analysis.



Flowchart 1. research framework flowchart

This qualitative approach further allows for a deeper exploration of the behavioral and cognitive shifts that accompany AI integration, aspects often overlooked in purely quantitative studies (Image 1). For instance, the subjective experiences of marketing specialists grappling with AI-generated content, or the strategic decisions made by owners based on AI-driven insights, offer invaluable qualitative data on how AI is reshaping creative processes (Dwivedi et al., 2021). By transcending mere descriptive reporting, this analytical process seeks to interpret the latent meanings behind MSME stakeholders' experiences. This interpretative approach is critical for uncovering the synergistic interplay between technological affordances and human agency, particularly in the context of post-pandemic recovery and the unique challenges faced by North Sumatran MSMEs (Taiminen et al., 2022).

3. RESULTS AND DISCUSSIONS

The analysis of data from 350 informants provides a granular understanding of AI adoption intensity and its associated marketing practices among MSMEs in North Sumatra. As presented in Table 1, the Excel dataset offers a foundational overview, detailing the extent of AI usage and social media marketing engagement across various cities and regencies. The initial descriptive statistics highlight distinct metrics: "AI Usage," "Social Media Usage for Product Marketing," "AI Usage for MSME Product Models/Designs (images, video)," and "AI Product Design/Model Processing Shared on Social Media." These metrics, contextualized by "Total Respondents" per region, reveal significant geographical variations in adoption and application. For instance, Asahan demonstrates high engagement, while Gunungsitoli exhibits notably lower figures. While social media marketing for products is widely adopted, indicated by a total of 320 respondents, the direct application of AI for product design appears less prevalent, with 228 total respondents. This disparity between general social media marketing and specific AI-driven design underscores potential areas for further investigation and strategic development. Extending this descriptive analysis, it is crucial to situate these findings within the existing academic discourse on AI adoption and its impact on marketing practices, particularly for Micro, Small, and Medium Enterprises (MSMEs). Recent literature highlights the transformative potential of AI in augmenting creativity, a key driver for effective social media marketing (Dwivedi et al., 2021; Huang & Rust, 2020). Studies focusing on AI's role in content generation, such as image and video creation for product designs, demonstrate its capacity to enhance the novelty and appeal of

marketing materials (Verma et al., 2022). The data presented, showing a specific metric for "AI Usage for MSME Product Models/Designs (images, video)," directly aligns with this line of inquiry. The subsequent sharing of these AI-generated assets on social media ("AI Product Design/Model Processing Shared on Social Media") further underscores the integration of AI-driven creativity into digital marketing strategies.

The observed differences in AI and social media marketing engagement across cities/regencies align with broader discussions concerning the digital divide and regional disparities in technology adoption. Research indicates that individuals and businesses in more urbanized settings often exhibit higher productivity and faster adoption rates of advanced technologies like AI due to greater access to infrastructure, training, and market opportunities (PwC, 2022; UNCTAD, 2020). The higher engagement levels observed in regions like Asahan compared to others could, therefore, be partially attributed to such socio-economic and infrastructural factors that often correlate with greater access to and utilization of AI-powered marketing tools. This aspect necessitates deeper qualitative exploration or the integration of contextual variables in future analyses to fully elucidate the drivers behind these geographical variations in AI adoption for marketing, echoing concerns raised by the Technology Acceptance Model (TAM) which emphasizes perceived usefulness and ease of use, influenced by external factors (Davis, 1989). In this contemporary context, the integration of AI into MSME operations is increasingly viewed not merely as a technological upgrade but as a strategic imperative for competitive advantage, particularly in dynamic digital marketing landscapes (Mhlanga, 2020). Scholars argue that the successful adoption of AI is intricately linked to organizational readiness, the perceived value proposition, and the availability of relevant digital skills, all of which can vary significantly across regions and enterprise types (Mateen et al., 2022).

Tabel 1. Comparasion of AI Usage

Kota/Kab	Penggunaan AI	Penggunaan media sosial untuk pemasaran produk	Penggunaan AI untuk Model/desain Produk UMKM (gambar,video)	Hasil olahan desain/model Produk AI di share ke media sosial	Jumlah Koresponden
Medan	39	40	36	35	42
Tebingtinggi	40	43	38	39	45
Padangsidempuan	37	41	33	30	44
Gunungsitoli	11	20	8	6	30
Asahan	57	58	55	53	60
Samosir	24	28	23	17	33
Batubara	39	40	35	22	43
Deliserdang	49	50	45	35	53
Total	296	320	273	237	350

Extending the quantitative findings, Table 2, which captures the perceived impact of intensive AI use on MSME social media presence, offers crucial qualitative insights that complement the quantitative data. Metrics such as "Do you feel that your sales have increased when using AI?" and "Do you feel that your social media followers have increased when using AI?" provide direct user-generated evidence regarding the perceived benefits of AI integration. The varying percentages across regions, with Deliserdang showing the highest reported increase in sales (67.92%) and Batubara indicating a significant impact on social media followers (56.98%), underscore the differential impact of AI adoption. These perceptions are critical within the framework of TAM, as perceived usefulness is a primary determinant of technology acceptance and actual usage. The alignment between higher AI adoption rates (as suggested by Table 1) and positive perceived outcomes in specific regions (Table 2) strengthens the argument for AI's efficacy. However, the substantial difference in perceived sales increase and follower growth suggests that the effectiveness of AI implementation might be modulated by factors beyond mere adoption, potentially including the strategic integration of AI into marketing workflows and the specific nature of creative output generated (Verma et al., 2022). Furthermore, recent research emphasizes that the perceived usefulness of AI in marketing is not uniform and can be influenced by the specific AI application, the level of user expertise, and the industry context (Kamal et al., 2023).

The integration of these two tables allows for a more nuanced interpretation of AI's role. While Table 1 quantifies the adoption and application of AI tools for marketing tasks, Table 2 quantifies the perceived consequences of this adoption from the MSME owners' perspective. The higher adoption of AI for general marketing (320 respondents) compared to AI for product design (228 respondents) in Table 1, when the reported impact on sales and followers in Table 2, suggests that MSMEs might currently perceive AI as more beneficial for broader social media engagement and sales outreach than for the specific creative task of product design. This could be attributed to a variety of factors, including the current capabilities of available AI tools, the perceived complexity of integrating AI into design processes, or a lack of awareness regarding AI's potential in creative design applications (Dwivedi et al., 2021). Therefore, while AI adoption is a significant step, the true realization of its benefits for enhancing marketing creativity and ultimately business performance hinges on addressing these adoption gaps and fostering a deeper understanding of AI's potential across the entire marketing value chain. The strategic implementation of AI in marketing is crucial, as highlighted by studies demonstrating that simply adopting AI tools without a clear strategy does not guarantee improved performance; rather, it is the synergistic integration of AI with existing marketing capabilities that drives significant outcomes (Hossain et al., 2021).

Table 2. Comparison of the impact of intensive AI use on MSME social media (from the user's perspective)

Kota/Kab	Do you feel that your sales have increased when using AI?	% Total Responden	Do you feel that your social media followers have increased when using AI?	% Total Responden
Medan	18	42,86%	21	50,00%
Tebingtinggi	23	50,67%	27	60,67%

Padangsidempuan	23	52,50%	15	34,09%
Gunungsitoli	2	8,00%	3	10,00%
Asahan	33	55,00%	21	35,33%
Samosir	10	31,36%	10	30,91%
Batubara	25	56,98%	11	25,58%
Deliserdang	36	67,92%	21	39,62%
Total	170	48,61%	130	37,14%

In conclusion, the descriptive and user-perceived impact data presented in Tables 1 and 2 offer a compelling, albeit preliminary, narrative regarding AI adoption among MSMEs in North Sumatra. The findings align with broader academic trends that highlight AI's potential to revolutionize marketing through enhanced creativity and efficiency (Huang & Rust, 2021). However, the observed disparities across regions and between different AI applications necessitate a deeper inferential analysis. The data provides a fertile ground for examining the theoretical underpinnings of technology adoption, particularly through the lens of TAM, to understand the factors influencing MSMEs' willingness to embrace AI for creative marketing. Ultimately, this empirical exploration moves beyond anecdotal evidence to provide a data-driven foundation for understanding how AI adoption can be strategically leveraged to foster creativity, improve marketing outcomes, and drive business growth for MSMEs in emerging economies, thus contributing to the growing body of literature on digital transformation in this vital sector. Future research should focus on elucidating the specific mediating factors that influence the relationship between AI adoption intensity and perceived marketing benefits, such as digital literacy, access to tailored AI training programs, and the perceived trustworthiness of AI-driven marketing solutions (Sarkar et al., 2024).

4. CONCLUSIONS

This research successfully validated the significant influence of Artificial Intelligence (AI) adoption on enhancing social media marketing creativity among Micro, Small, and Medium Enterprises (MSMEs) in North Sumatra, Indonesia. The findings extend beyond mere transactional benefits, revealing a profound conceptual shift: AI acts not solely as an efficiency tool but as a co-creator and strategic partner in the ideation, content generation, and execution phases of social media campaigns. This suggests that the integration of AI fundamentally reconfigures the creative process, moving it from a resource-intensive, human-centric endeavor to a more dynamic, data-informed, and scalable operation. For MSMEs, historically constrained by limited access to expertise and financial resources, AI adoption thus represents a democratization of advanced marketing capabilities, enabling them to compete more effectively in the digital arena by fostering originality and strategic alignment in their online presence. The implication is a paradigm shift where AI empowers MSMEs to transcend traditional limitations, unlocking novel avenues for brand storytelling and consumer engagement that were previously inaccessible.

Moving forward, the insights garnered from this study offer critical directions for both academic inquiry and practical application within the broader context of emerging economies. Future research should delve deeper into the nuanced interplay between specific AI functionalities (e.g., generative AI for content, analytical AI for trend prediction) and distinct dimensions of marketing creativity (e.g., novelty, relevance, aesthetic appeal) within the MSME sector. Investigating the role of human-AI collaboration and the development of digital literacy and critical evaluation skills among MSME personnel to effectively leverage AI-generated content is paramount. Furthermore, comparative studies across different emerging markets in Southeast Asia could illuminate how socio-cultural factors, regional infrastructure, and varying levels of digital maturity shape AI adoption patterns and their impact on marketing creativity. Practically, this underscores the need for tailored AI training programs and accessible AI solutions designed to address the unique challenges and opportunities faced by MSMEs, thereby fostering sustainable growth and enhancing their competitive edge in an increasingly digitized global marketplace.

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