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Transformation of Micro-Enterprise Marketing Strategies through Artificial Intelligence Training in Semarang City

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Abstract: *This community service program aims to transform the marketing strategies of micro-enterprises through training on the utilization of Artificial Intelligence (AI) in Semarang City. The program was designed using a capacity-building approach that emphasizes hands-on practice and structured mentoring, employing the Demonstration–Practice–Feedback–Revision (DPFR) model. The training materials covered the use of text-to-text AI for generating content ideas, captions, storytelling, and calls to action; text-to-image AI for creating promotional visual materials; and an introduction to text-to-video AI as an option for content development. Evaluation was conducted using pre-tests and post-tests to measure improvements in participants' knowledge, as well as content output assessment rubrics to evaluate skill development. The results indicate an increase in participants' understanding of AI applications in digital marketing and an improvement in the quality of promotional content, particularly in message structure, clarity of value propositions, strength of calls to action, and visual consistency. Initial impacts were also observed in the form of improved posting consistency and increased audience interaction, serving as indicators of early lead formation. Overall, this program demonstrates that practice-based AI training is effective in accelerating the adoption of marketing technologies among micro-enterprises and has the potential to sustainably enhance their competitiveness through continued mentoring.*

Keywords: *Artificial Intelligence, digital markeing, micro-enterprises, mentoring, Semarang*

Introduction

Digital transformation has become a key factor in enhancing the competitiveness of micro-enterprises amid increasingly digitalized consumer behavior. Advances in information technology, particularly in digital marketing, enable business actors to reach wider markets with relatively efficient costs and more measurable strategies. Nevertheless, micro-enterprises still face various limitations in optimally adopting digital technologies, especially in terms of digital literacy, human resources, and the utilization of intelligent technologies in marketing activities (OECD,

2021; Vrontis et al., 2022).

Artificial Intelligence (AI) is one of the technologies with significant potential to transform digital marketing strategies. AI enables the automation of content creation, analysis of consumer behavior, personalization of marketing messages, and faster, more accurate data-driven decision-making (Davenport et al., 2020; Huang & Rust, 2021). Numerous studies indicate that the application of AI in marketing can significantly enhance customer engagement, campaign effectiveness, and overall operational efficiency (Dwivedi et al., 2021; Verma et al., 2021).

In the context of micro-enterprises and MSMEs, AI adoption remains relatively low despite its considerable potential. Previous studies reveal that most MSMEs have not yet utilized AI due to limited technical understanding, insufficient training opportunities, and the perception that AI technologies are complex and costly (Ribeiro-Navarrete et al., 2021; Khin & Ho, 2019). However, the emergence of various cloud-based generative AI platforms, such as text-to-text, text-to-image, and text-to-video, has reduced adoption barriers, making these technologies more accessible to micro-enterprises (Kaplan & Haenlein, 2019; Chatterjee et al., 2023).

Several international studies emphasize that enhancing MSMEs' digital capabilities through practice-based training has a significant impact on marketing performance and business sustainability (Bresciani et al., 2021; Kraus et al., 2022). Training programs focused on the application of AI in digital marketing have been shown to improve content creativity, branding consistency, and micro-entrepreneurs' ability to engage consumers more effectively (Mariani & Borghi, 2021; Syam & Sharma, 2018).

In Indonesia, numerous community service initiatives aimed at MSME digitalization have been implemented; however, most still concentrate on conventional social media usage and have not yet specifically integrated AI as a strategic marketing tool (Putri et al., 2022; Wibowo et al., 2023). In fact, integrating AI into digital marketing aligns with the national agenda for digital economic transformation and the strengthening of MSMEs as the backbone of the national economy.

Semarang City, as one of the economic growth centers in Central Java, has a dynamic micro-enterprise ecosystem but continues to face challenges in adapting to digital marketing technologies. Micro-entrepreneurs in this area generally rely on traditional promotion methods and basic digital marketing without data-driven or automated strategies. Therefore, community service interventions are needed that not only provide conceptual understanding but also deliver practical and applicable training on the use of AI in marketing.

Based on this context, the community service program was designed to transform micro-enterprise marketing strategies through training on the utilization of Artificial Intelligence. The program was implemented by the PLUT KUMKM (Integrated

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Service Center for Cooperatives and Micro, Small, and Medium Enterprises) of the Semarang City Cooperative Office in collaboration with the Faculty of Economics and Business, Universitas PGRI Semarang (UPGRIS). The program focused on enhancing the capacity of micro-entrepreneurs to use AI for marketing content creation, digital media optimization, and the sustainable strengthening of business competitiveness in Semarang City.

Method

This community service program employed a capacity-building approach based on hands-on training combined with structured mentoring. The training model was organized using the Input–Process–Output–Outcome (IPOO) framework, enabling the transformation process of micro-enterprise marketing to be systematically mapped from improving AI literacy to the implementation of AI-based marketing content.

The program was conducted in Semarang City and targeted micro-entrepreneurs (business owners or managers) who had actively marketed products and possessed at least a smartphone. Participant selection criteria included:

1. Having a social media or marketplace account, or being willing to create one;
2. Having products ready for promotion (photos, variants, and pricing); and
3. Willingness to participate fully in the training and complete pre- and post-activity evaluations.

The implementation of the community service program was carried out through four main stages:

1. Needs Analysis and Baseline Assessment (Pre-Activity)
   The team conducted a needs assessment through brief observations and an initial questionnaire to map participants' digital literacy levels, promotional practices, marketing challenges, and device readiness. At this stage, baseline promotional materials (such as captions, posters, or videos commonly used by participants) were also collected as a comparison prior to the intervention.
2. Development of Training Modules and Practice Scenarios
   Training materials were developed in the form of concise modules and practical worksheets focused on the use of AI for marketing, including:
   1. Text-to-text AI for content ideas, captions, storytelling, and calls to action (CTAs);
   2. Text-to-image AI for product visuals, posters, and feed content; and
   3. Text-to-video AI (optional) for short script-based promotional videos.
   The modules were designed using case studies tailored to participants' business types to ensure contextual relevance.
3. Training Implementation (Main Intervention)
   The training applied a blended learning model (brief theoretical explanations

combined with practice-dominant activities), with approximately 30% theory and 70% practice. The training sessions included:

1. Introduction to AI for micro-enterprise marketing and ethical considerations in its use;
2. Prompting practice to generate value propositions, customer personas, and promotional messages;
3. Content creation practice, including captions (AIDA/PAS), simple content calendars, and CTAs;
4. Practice in developing promotional visual materials (poster and product templates); and
5. Content publishing simulations and basic optimization (hashtags, posting timing, and initial response evaluation).

4. Mentoring and Implementation (Post-Training)
   After the training, participants were mentored to implement at least one campaign content package (e.g., three feed posts and three stories, or one poster, one caption, and one short video). Mentoring aimed to ensure that the content met standards of brand consistency, message clarity, and alignment with the target market.
5. Training Model
   The training adopted the Demonstration–Practice–Feedback–Revision (DPFR) model:
   1. Demonstration: trainers presented examples of AI-based content creation relevant to MSME cases;
   2. Practice: participants conducted independent practice using the provided prompt templates;
   3. Feedback: the team provided feedback on caption quality, visuals, and CTAs;
   4. Revision: participants revised their content until it was suitable for publication.

   This model was selected because it is effective in enhancing practical skills and accelerating the transfer of competencies from trainers to participants.

Result

Participants

This community service program was attended by micro-entrepreneurs in Semarang City operating in various sectors, including culinary, fashion, handicrafts, and services. Most participants had already used social media as a promotional medium; however, their activities were still sporadic and lacked a structured content strategy. Based on initial observations, the majority of participants had never utilized Artificial Intelligence technology in their marketing activities, particularly for creating promotional content. This finding reinforces previous studies indicating that the adoption level of intelligent technologies among micro-enterprises remains relatively

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low, even though basic digital infrastructure is already available.

Figure 1. Digital Marketing Workshop

Results of Participants' Knowledge Evaluation

The results of the pre-test and post-test evaluations indicate an improvement in participants' understanding of Artificial Intelligence–based digital marketing concepts. Prior to the training, most participants only understood digital marketing in general terms, such as using social media to upload product content without structured content planning. After the training, participants were able to explain the functions of text-to-text AI for creating captions and storytelling, text-to-image AI for promotional visuals, and the ethical principles of using AI in marketing.

This increase in knowledge demonstrates that practice-based training can accelerate the understanding of new technologies among micro-entrepreneurs. These findings are consistent with those of Davenport et al. (2020) and Dwivedi et al. (2021), who emphasize that AI literacy is a key factor in the success of digital marketing transformation.

Results of Content Production Skills Evaluation

Skills evaluation was conducted by analyzing the quality of promotional content produced by participants before and after the training. The assessment results show a significant improvement across almost all rubric indicators, particularly in message clarity, the strength of hooks, and the presence of persuasive calls to action.

Before the training, participants' promotional content tended to be simple and informative, with limited emphasis on the unique value of the products. After the training, participants were able to produce more structured captions, highlight product benefits, and use persuasive language appropriate to their target audience. In addition, the quality of promotional visuals also improved as participants were able to utilize

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text-to-image AI to generate more attractive and visually consistent designs.

These results support the findings of Bresciani et al. (2021) and Mariani and Borghi (2021), which state that the use of digital technologies and AI can enhance creativity and improve the quality of marketing content, particularly for small and micro-enterprises.

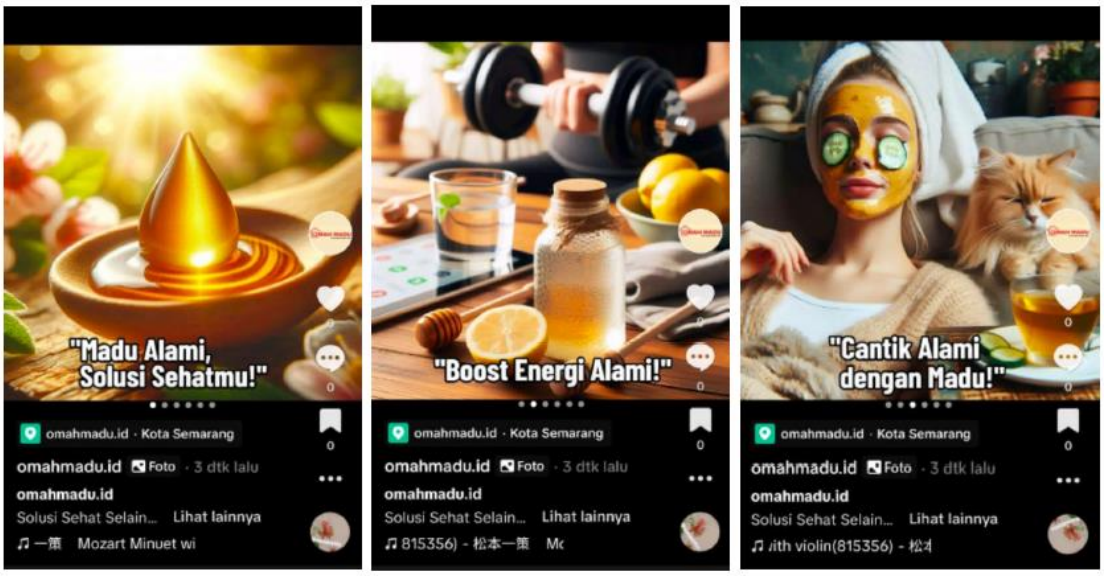

Figure 2. AI Prompting Output

Initial Impact on Digital Marketing Activities

The initial impact of the program was evaluated through changes in participants' digital marketing activities during the post-training implementation period. Monitoring results indicate that most participants experienced improved consistency in uploading promotional content. In addition, there was a tendency toward increased audience interaction, such as likes, comments, and product inquiries via direct messages.

Although sales growth was not quantitatively measured in the short term, positive audience responses indicate that AI-based content is more effective in capturing consumer attention. These findings align with Verma et al. (2021) and Huang and Rust (2021), who highlight the important role of AI in increasing customer engagement in digital marketing.

Discussion of the Training and Mentoring Model

The Demonstration–Practice–Feedback–Revision (DPFR) training model proved effective in improving participants' practical skills. Participants not only received conceptual material but also directly practiced content creation according to the context of their respective businesses. Feedback provided during the mentoring process helped participants identify common mistakes and make continuous

improvements.

This approach reinforces the findings of Kraus et al. (2022), which emphasize the importance of practice-based and real-context training in the digital transformation of MSMEs. Moreover, the use of relatively accessible AI tools helped reduce barriers to technology adoption, as noted by Kaplan and Haenlein (2019).

Implications of the Community Service Program

Overall, the results of this community service program demonstrate that Artificial Intelligence training can serve as an effective strategy for transforming micro-enterprise marketing practices. The program not only enhanced participants' digital literacy and technical skills but also encouraged a shift in mindset toward more structured, creative, and data-driven marketing approaches.

The practical implication of this activity is the need to integrate AI training on a sustainable basis into MSME empowerment programs, particularly at the regional level. Meanwhile, the academic implication suggests that AI-based community service initiatives have strong potential as an intervention model that aligns with the demands of the digital economy era.

Discussion

The results of the program confirm that practice-based Artificial Intelligence (AI) training combined with mentoring is capable of driving tangible changes in micro-enterprise marketing strategies, particularly in improving AI literacy, content production skills, and the consistency of digital promotion. The increase in participants' knowledge indicates that the main barriers to technology adoption are not merely the availability of devices, but rather limited conceptual understanding and the lack of contextualized application examples. When AI was introduced as a practical tool for daily needs, such as generating captions, content ideas, posters, and video scripts, perceived technological complexity decreased and participants' motivation to experiment increased.

From a skills perspective, the improvement in content quality demonstrates that AI functions as a catalyst for creativity rather than merely an automation tool. Participants who previously produced simple, informative content became capable of developing more structured promotional messages that emphasize value propositions, differentiation, and clear calls to action (CTAs), along with visuals that are more consistent with product identity. This effectiveness is strongly influenced by the Demonstration–Practice–Feedback–Revision (DPFR) learning model, which emphasizes repeated practice and concrete feedback, making it more aligned with the operational needs of micro-entrepreneurs than lengthy theoretical instruction.

Initial impacts were reflected in improved posting consistency and a tendency

toward increased audience interaction. Although sales growth cannot yet be claimed within a short implementation period, the increase in comments and direct messages indicates the formation of early leads, which in digital marketing typically precede stable conversion growth. AI implementation also varied due to differences in digital literacy, time availability, and product content readiness; participants with prepared content assets progressed more rapidly, while those lacking basic brand foundations required additional marketing reinforcement. Challenges related to content originality and potential dependency on AI highlight the importance of ethical AI use, verification of promotional claims, and adaptation of AI-generated outputs to ensure authenticity. Program sustainability should therefore be strengthened through continued mentoring, structured content calendars, simple metric-based evaluations, and periodic content clinics or mentoring sessions.

Conclusion

This community service program successfully enhanced the capacity of micro-entrepreneurs to understand and apply Artificial Intelligence (AI) in digital marketing activities. Practice-based training combined with structured mentoring improved participants' knowledge of AI applications, including text-to-text, text-to-image, and text-to-video technologies, and strengthened their skills in producing promotional content that is more well-planned, persuasive, and visually consistent. Initial impacts were also observed in improved consistency of content production and a tendency toward increased audience interaction across the digital channels used by participants. Therefore, AI training can serve as an effective approach to accelerating the transformation of micro-enterprise marketing practices and strengthening their competitiveness in the digital economy era.

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