



SHE-AI PRENEUR: EMPOWERING WOMEN MSME ENTREPRENEURS THROUGH ARTIFICIAL INTELLIGENCE TRAINING FOR DIGITAL MARKETING AND SUSTAINABLE BUSINESS NETWORKING

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Abstract

Digital transformation presents opportunities for women-led micro, small, and medium enterprises (MSMEs) but persistent gaps in AI literacy and networked collaboration limit their competitiveness. Prior empowerment programs emphasized basic digital skills without integrating Artificial Intelligence (AI) as a core marketing instrument or fostering sustainable business networks. This study evaluated the SHE-AI Preneur intervention designed to increase AI literacy, AI-based digital marketing competence, content production quality, and business networking among women MSME entrepreneurs in Serang Regency, Indonesia. A three-month participatory program was implemented with 30 purposively sampled women entrepreneurs; the mixed-methods evaluation employed pre- and post-tests, structured surveys, observation checklists, semi-structured interviews, and activity documentation. Quantitative data were analyzed using descriptive statistics and percentage change of competency scores, while qualitative data underwent thematic analysis. The results showed marked improvements across all measured domains: AI literacy, digital marketing skills, content creation, and business networking increased substantially after the intervention, attendance and engagement rates were high, and participants produced AI-generated promotional materials independently. The program also yielded emergent collaborative practices and a sustained digital community for ongoing exchange. Theoretically, the study advances empowerment and digital transformation frameworks by demonstrating how practice-based AI training plus mentoring and network formation convert digital skills into applied entrepreneurial capacity. Practically, the SHE-AI Preneur model offers a scalable template for inclusive AI adoption among women MSMEs, with implications for policy, incubator design, and future longitudinal impact assessments.

Keywords: Artificial Intelligence, women entrepreneurs, MSMEs, digital marketing, capacity building, community empowerment, digital transformation

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) constitute a central pillar of the Indonesian economy, contributing substantially to job creation, income distribution, and national economic growth. Within the MSME ecosystem, women play a strategic role as entrepreneurs who not only enhance household welfare but also drive community-based economic development. Women's participation in entrepreneurial activities has been increasing alongside the expansion of digital economic opportunities that enable broader market access unconstrained by time and location. Consequently, women entrepreneurs in the MSME sector have become key actors in promoting inclusive and sustainable economic development (Al et al., 2026; Nuraisyiah et al., 2025).

Nevertheless, the rapid pace of digital transformation presents new challenges for women-led MSMEs. Shifts in consumer behavior toward digital dependence require businesses to utilize Internet-based marketing platforms effectively. However, many women-owned MSMEs continue to face limitations in digital skills, particularly in leveraging Artificial Intelligence (AI) technologies to

support marketing and business development. This digital literacy gap may impede business competitiveness amid intensifying competition in digital markets (Nuraisyiah et al., 2025; Candello et al., 2024).

Needs-assessment findings among partner groups indicate that most women entrepreneurs still rely on conventional marketing methods and simplistic use of social media without measurable strategies. Promotional content is commonly produced manually, lacks appeal, and fails to reach target markets optimally. Moreover, the use of marketplaces, digital analytics, and AI-based marketing support remains very limited. These conditions are exacerbated by weak business networks among women entrepreneurs, which constrain opportunities for collaboration, information exchange, and joint market development. As a result, many enterprises experience difficulties increasing product visibility and expanding market share (Ma'rifat et al., 2024).

Recent developments in Artificial Intelligence have created new opportunities for MSMEs to enhance the effectiveness of digital marketing. AI-based platforms such as ChatGPT, Gemini, Canva AI, Microsoft Copilot, and other generative applications can assist entrepreneurs in producing promotional content, formulating marketing strategies, analyzing consumer behavior, and optimizing customer interactions. The use of AI enables marketing processes to be faster, more efficient, more personalized, and more cost-effective, which is particularly relevant for resource-constrained MSMEs. Empirical studies have shown that integrating AI into digital marketing activities can significantly improve productivity, content quality, and business competitiveness (Suarantalla, 2025; Syafitri, 2023).

Prior empowerment programs for MSMEs have typically focused on conventional digital marketing training, social media use, marketplace management, and basic digital literacy. These approaches have yielded positive effects on participants' knowledge, but they have not specifically integrated Artificial Intelligence as a core instrument in marketing and business development. In addition, most programs emphasized individual capacity building without sufficiently strengthening sustainable business networks. Consequently, the sustainability of program impacts often depended on each participant's ability to develop their business independently ((Rany et al., 2025; Ma'rifat, I Made Suraharta, 2024b, 2024a).

To address these limitations, the SHE-AI Preneur program was developed as an innovative empowerment model that integrates AI training, implementation assistance for AI in digital marketing activities, and the development of a collaborative womenpreneur business network. The program provides not only conceptual understanding of AI but also hands-on practice with various AI tools for daily business needs, including promotional content creation, copywriting, visual design, campaign planning, and customer communication management. In addition, the program fosters a digital community of women MSME entrepreneurs as a platform for collaboration, knowledge exchange, and sustainable joint business development (Mutoharoh et al., 2026).

The novelty of the SHE-AI Preneur program lies in its combined focus on improving AI literacy, accompanying the implementation of AI in digital marketing, forming technology-based womenpreneur communities, and developing sustainable business networks within a single integrated empowerment model. This approach expands the MSME empowerment paradigm from individual capacity enhancement to strengthening an entrepreneurial ecosystem that is adaptive to digital transformation. The model also aligns with the sustainable development agenda that prioritizes gender equality, technological innovation, and inclusive economic growth (Mutoharoh et al., 2026).

Given the situation described above, this community service program aims to: (1) increase AI literacy among women MSME entrepreneurs; (2) enhance AI-based digital marketing skills; (3) improve the quality and effectiveness of promotional content; (4) develop women's MSME business networks through a technology-based collaborative community; and (5) promote business sustainability through innovative and adaptive digital transformation. Through the SHE-AI Preneur program, it is expected that women MSME entrepreneurs will become more competent, more competitive, and better able to utilize Artificial Intelligence as an instrument for sustainable business development.

METHOD AND PROCEDURES

A. Location and Participants

The SHE-AI Preneur community service program was implemented in Serang Regency, Banten Province, an area characterized by growing women-led MSMEs that nevertheless faced challenges in applying digital technologies for business development. The program ran for three months and included preparation, training, mentoring, and evaluation phases.

Participants were women entrepreneurs operating micro, small, and medium enterprises across sectors such as culinary, fashion, handicrafts, processed household products, and creative services. Thirty participants actively engaged in all program activities. Inclusion criteria were: active women MSME owners, business operating for at least one year, willingness to attend the full program, possession of a smartphone or laptop capable of running digital applications, ownership of a social media or marketplace account for product marketing, and agreement to participate in mentoring and program evaluation. Participant characteristics included productive age (20–55 years), minimum one year business operation, basic use of social media for promotion, limited prior use of Artificial Intelligence (AI) for digital marketing, and predominantly secondary-level education with no previous AI training.

B. Program Implementation Design and Phases

The program employed a need-based, participatory empowerment design that combined capacity building in digital technology, hands-on practice, and the strengthening of sustainable

business networks. Activities followed a systematic five-stage sequence: needs analysis, AI training, practice and mentoring, sustainable business network development, and monitoring and evaluation.

Stage 1 - Needs Analysis

A mixed qualitative–quantitative needs assessment was conducted using a structured survey, semi-structured interviews, and field observation. The survey measured digital literacy levels, current marketing practices, and prior experience with digital technologies. Purposive sampling identified interviewees for in-depth exploration of barriers to digital marketing and business management. Findings indicated predominant reliance on conventional marketing, absence of structured digital marketing strategies, and limited knowledge about AI applications. These results informed curriculum development and training materials.

Stage 2 - AI Training

A structured training module aimed to improve participants' understanding of AI for MSME digital marketing. Instructional methods included interactive lectures, live demonstrations, case studies, and practical exercises. Core topics covered AI fundamentals for MSMEs, basic prompt engineering, AI for marketing copywriting, AI for digital design, and AI for video production. Trainers introduced accessible AI platforms relevant to MSMEs, including ChatGPT (idea generation, captions, copywriting), Gemini (information retrieval, strategy development), Canva AI (promotional design), and CapCut AI (promotional video production). Training emphasized effective and ethical AI use in routine business activities.

Stage 3 -Practice and Mentoring

Following training, participants engaged in intensive applied practice and one-on-one/group mentoring. Mentors supported implementation of AI tools for participant-specific marketing tasks. Activities included AI-based promotional content creation, caption and narrative development, design production using Canva AI, video production using CapCut AI, content calendar development, and formulation of simple digital marketing strategies. Mentoring was provided face-to-face and via online communication groups to enable ongoing consultation during implementation.

Stage 4 -Sustainable Business Network Development

This stage aimed to strengthen collaboration and program sustainability through business matching, discussion forums, and peer-sharing sessions. Business matching sought to connect participants with complementary products or services for joint marketing, distribution, or digital promotion collaborations. The SHE-AI Preneur community was established as a digital platform for communication, knowledge exchange, and joint venture development, intended to function as a continuous learning community supporting long-term digital transformation.

Stage 5 - Monitoring and Evaluation

Monitoring and evaluation activities measured program outcomes and identified areas for improvement. Evaluations were conducted at baseline and program completion using multiple

instruments: pre- and post-tests to assess knowledge gains, participant satisfaction questionnaires, observation checklists to assess AI skill performance, and documentation of activities as implementation evidence. Evaluation results informed assessment of program effectiveness in improving AI literacy, AI-based digital marketing skills, promotional content quality, and business networking outcomes.

C. Instruments and Data Collection

Instruments included a structured survey questionnaire (digital literacy and marketing practices), pre- and post-knowledge tests, semi-structured interview guides, observation checklists for practical skills assessment, participant satisfaction questionnaires, and activity documentation (photos, reports, examples of produced content). Data collection occurred at three points: baseline (needs analysis and pre-test), during implementation (observation and mentoring records), and endline (post-test, satisfaction survey, and final documentation).

D. Data Analysis

Quantitative data were analyzed using descriptive statistics to summarize participant characteristics, participation rates, and outcome indicators. Knowledge gain was calculated as the percentage change between pre-test and post-test scores. Satisfaction and skill assessment scores were summarized using mean scores and frequencies. Qualitative data from interviews and open-ended feedback were analyzed using thematic analysis to identify recurring challenges, perceived benefits, and barriers to AI adoption. Program outcomes were interpreted descriptively by comparing observed results against predefined objectives and indicators to evaluate effectiveness and inform recommendations for future iterations.

RESULTS

Results

A. Participant Profile

The findings revealed that 30 women MSME entrepreneurs participated in the SHE-AI Preneur program. Participants represented diverse ages, business durations, sectors, and educational levels, which supported a collaborative and adaptive learning ecosystem.



B. Participant Profile of the SHE-AI Preneur Program

Characteristic	Category	Frequency (n)	Percentage (%)
Age	20–30 years	8	26.07.00
	31–40 years	12	40.00.00
	41–50 years	7	23.03
	>50 years	3	10.00
Business duration	1–3 years	10	33.03.00
	4–6 years	12	40.00.00
	>6 years	8	26.07.00
Business type	Culinary	12	40.00.00
	Fashion	6	20.00
	Handicraft	5	16.07
	Processed products	4	13.03
	Creative services	3	10.00
Education	High school or equivalent	16	53.03.00
	Diploma	5	16.07
	Bachelor's degree	9	30.00.00

The analysis indicated that the largest age group was 31–40 years (40.0%). Most participants had operated their businesses for 4–6 years (40.0%), and the culinary sector was the most represented (40.0%). Educational attainment was dominated by high-school graduates (53.3%).

Tabel 2. Program Implementation

The results demonstrated that the three-month participatory program combined training, hands-on practice, mentoring, and network development. Training topics included AI fundamentals for digital marketing, basic prompt engineering, copywriting with ChatGPT and Gemini, promotional

design with Canva AI, and video production with CapCut AI. Instruction was delivered via interactive lectures, demonstrations, and practical exercises.

Attendance data indicated high engagement, with an overall attendance rate of 96.7%. The findings revealed strong participant interest in exploring AI features. Several participants who had not previously used AI produced promotional designs, marketing captions, and product videos independently during the program. Documentation showed increased participation in discussions, application simulations, and end-of-program business matching activities.

C. Competency Improvement

The analysis indicated improvement across all measured competencies based on pre-test and post-test comparisons.

Table 3. Participant Competency Before and After the Program

Aspect	Before (%)	After (%)	Increase (% points)
AI Literacy	35.4	84.7	49.3
Digital Marketing	52.1	86.8	34.7
Content Creation	48.7	88.2	39.5
Business Networking	45.8	79.6	33.8

The findings revealed substantial gains in AI literacy (from 35.4% to 84.7%), digital marketing (from 52.1% to 86.8%), content creation (from 48.7% to 88.2%), and business networking (from 45.8% to 79.6%). The analysis indicated that participants acquired the ability to utilize AI applications for autonomous product marketing following the training.

D. Program Impact on Women-Led MSMEs

The results demonstrated several positive program impacts. Time required for promotional content production decreased markedly after AI adoption; prior to the program, participants required several hours to produce promotional materials, whereas post-training processes were completed in substantially less time with improved quality. Participant self-efficacy in using digital technologies increased; interview responses indicated a shift from perceiving AI as complex to viewing it as a practical business tool.

The analysis indicated enhanced online visibility for participants' businesses: more attractive, consistent, and professional content increased customer interaction and expanded promotional reach. The findings also showed emergent collaborations among participants, including cross-promotion, joint marketing, and supplier information exchange. Although the program did not measure long-term revenue changes directly, interview data suggested that some participants experienced increases in customer numbers and product demand after implementing AI-based marketing strategies.

D. Development of Sustainable Business Networks

The results revealed the establishment of the SHE-AI Preneur community as a key program output. The community functioned as a platform for experience sharing, business discussion, and ongoing capacity development. Business matching activities facilitated new partnerships; several

participants from the culinary and handicraft sectors formed collaborative marketing arrangements via social media and marketplaces. The analysis indicated that strengthened business networks contributed to competitive advantages among women MSMEs.

Additionally, the findings suggested that the community has potential to evolve into a women-led digital business incubation hub, enabling continued learning, best-practice exchange, and access to broader market opportunities. These results aligned with regional initiatives that emphasize technology-based collaboration for women entrepreneurs.

Discussion

The findings indicate that Artificial Intelligence (AI) substantially enhanced the digital marketing capacity of women-led MSMEs. This finding supports Ma'rifat., (2024b), who argued that AI improves MSME competitiveness through more effective, data-driven marketing strategies.

The observed increase in participants' AI literacy corroborates Suarantalla, (2025), which asserts that AI facilitates digital marketing optimization via content automation, market analysis, and personalized customer communication. Similarly, the results align with Rasdiana et al., (2024), who reported that AI workshops significantly raise MSME marketing capacity. Together, these studies and the present results strengthen the empirical case that targeted AI training produces measurable gains in marketing knowledge and practice.

From a women-entrepreneurship perspective, the program's outcomes demonstrate that women entrepreneurs exhibit high adaptability to technological innovation when appropriate mentoring is provided. This outcome is consistent with Rasdiana et al., (2024), who found that digital and financial literacy positively influence women entrepreneurs' adoption of digital marketing. The present evidence therefore extends that work by showing that hands-on AI training plus mentoring can translate literacy into practical tool use.

The effective use of generative AI platforms (ChatGPT, Gemini, Canva AI, CapCut AI) in this program reinforces Candello et al., (2024), which emphasizes the importance of inclusive, user-friendly AI systems for women entrepreneurs. This finding suggests that accessible AI tools can both increase efficiency and lower technical barriers that have historically limited women's access to digital technologies.

Importantly, the program's results indicate that digital transformation entails more than technology adoption alone. The data show that sustainable benefits also require strengthened social networks and business collaboration to support continuous learning. In this respect, SHE-AI Preneur provides a more comprehensive empowerment model than conventional digital training programs, because it integrates AI literacy, tool implementation, and network development into a single model. This contribution is both practical offering a replicable program model for practitioner use and

theoretical extending empowerment frameworks to incorporate ecosystem and network dimensions in digital transformation for women MSMEs.

Factors that supported program success included high participant motivation to enhance business capacity via digital means, active support from local partners and stakeholders, and the relative usability of the selected AI applications, which allowed rapid uptake without extensive technical backgrounds. These enablers align with prior literature emphasizing motivation, local institutional support, and tool usability as critical to technology adoption.

Nevertheless, several constraints limited implementation. Device limitations (low-specification smartphones) reduced some participants' ability to run AI applications. Heterogeneous baseline digital literacy produced variable learning paces among participants. Uneven internet connectivity impeded access to cloud-based tools. These constraints echo recurring barriers reported in digital inclusion studies and indicate persistent infrastructure and access challenges.

This study's limitations notwithstanding, the intensive mentoring and practice-based pedagogy mitigated many barriers and enabled most participants to adopt AI tools for marketing. Future programs should therefore pair tool training with measures that address device access and connectivity, and consider differentiated instruction to accommodate varying literacy levels.

In sum, the present findings support and extend existing research by demonstrating that a combined approach AI training, hands-on mentoring, and network building can effectively increase AI literacy, digital marketing skills, content quality, and business networking among women MSME entrepreneurs. Theoretically, the study contributes to empowerment and digital transformation literature by foregrounding the role of community networks and practice-based mentoring in converting digital skills into sustained business outcomes. Practically, the SHE-AI Preneur model offers a scalable template for stakeholders aiming to foster inclusive digital transformation among women-led MSMEs.

CONCLUSION

The SHE-AI Preneur program demonstrates that targeted AI training combined with structured mentoring and network building significantly strengthens women MSME entrepreneurs' capacity to use Artificial Intelligence for digital marketing and business development. The program increases AI literacy, digital marketing skills, content production capabilities, and collaborative networking, and it facilitates a shift from conventional to more adaptive, technology-driven marketing practices.

Theoretically, the program extends empowerment and digital-transformation frameworks by showing how practice-based learning and community networks convert digital skills into sustained entrepreneurial capabilities. Practically, SHE-AI Preneur offers a replicable model for stakeholders aiming to foster inclusive digital adoption among women-led MSMEs.

Policy and practice implications include the need for sustained mentoring, development of women-focused digital business incubators, and strengthened multi-sector collaboration (academia,

government, industry, and private sector) to support scaling. Future research should evaluate long-term business outcomes (e.g., revenue, market expansion), assess scalability across diverse local contexts, and examine how infrastructure and access constraints mediate program effectiveness.

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