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ASEAN WOMENPRENEURS CONNECT: AI-POWERED MICROBUSINESS COLLABORATION NETWORK

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Abstract
Women's economic empowerment through micro, small, and medium enterprises (MSMEs) constitutes a cornerstone of inclusive growth in the ASEAN region, yet persistent structural barriers such as limited digital literacy, technology access, and cross-border networks hinder women entrepreneurs' participation in the digital economy. While prior initiatives emphasize isolated AI applications or networking, a notable research gap exists in structured models integrating artificial intelligence (AI) with collaborative frameworks to foster sustainable microbusiness ecosystems. This community service study addressed this gap by implementing the ASEAN Womenpreneurs Connect: AI-Powered Microbusiness Collaboration Network at Big Bee Farm, aiming to enhance women micro-entrepreneurs' capacities via technology-driven empowerment and regional collaboration. Employing a Participatory Action Research (PAR) design, the program purposively sampled ASEAN women micro-entrepreneurs facing digital constraints and unfolded through four phases: needs assessment, AI training (e.g., chatbots, content generators), cross-border workshops, and digital network simulations. Data from pre/post-tests, observations, and semi-structured interviews underwent descriptive statistical and thematic analyses. Findings revealed significant gains in digital literacy and AI proficiency for marketing and decision-making, alongside nascent cross-border business networks that spurred product innovation and market expansion; barriers included infrastructure limitations and psychosocial factors. These results imply that integrated AI-collaboration models advance digital entrepreneurship theory and offer practical, replicable tools for women's economic empowerment, informing policy for scalable ASEAN ecosystems.
Keywords: Women entrepreneurship, AI adoption, cross-border collaboration

INTRODUCTION

Women's empowerment in the economic sector stands as a cornerstone of inclusive growth across the ASEAN region. Women make substantial contributions to micro, small, and medium enterprises (MSMEs), particularly in sustaining family and community economies. Nevertheless, their participation in the digital economy encounters persistent structural barriers, including limited access to technology, financing, and broader business networks(Abdurohim, 2023). In this context, enhancing the capacities of women entrepreneurs proves crucial for bolstering regional economic competitiveness.

Women’s entrepreneurship extends beyond economic dimensions to encompass social aspects such as empowerment, autonomy, and improved quality of life (Mutoharoh et al., 2026). Prior studies indicate that women entrepreneurs in the digital era navigate complex challenges, including multitasking across domestic and professional roles ((Kamberidou, 2020), while their business success hinges on social capital, collaboration, and knowledge sharing ((Setini et al., 2020). In Asia, fragmented ecosystems for women’s entrepreneurship demand more integrated, collaborative approaches ((Franzke et al., 2022). Similarly, digital technologies propel digital entrepreneurship,

enabling MSMEs to expand market reach, boost efficiency, and adapt to dynamic business environments ((Laksmanawati & Yuniawan, 2021). However, women-led MSMEs continue to face hurdles in digital literacy and optimal technology utilization amid global competition and digital economic transformation.

Artificial intelligence (AI) emerges as a strategic tool to address these barriers, facilitating business process automation, consumer data analysis, and data-driven marketing strategies. Alateeg & Al-Ayed, (2024) demonstrated that AI enhances innovation and decision-making quality in women-led startups, aligning with findings that it transforms challenges into opportunities by improving efficiency and productivity ((Azis et al., 2025). In practice, AI applications elevate women MSMEs' marketing capacities; for instance, generative AI in content marketing expanded market reach and product communication quality (Ghonisyah & Asyiah, 2025),while AI-based training significantly improved marketing communication skills (Putra et al., 2025). Furthermore, integrating AI with digital networks enhances decision-making and competitiveness in developing countries (Ossai, 2025), 2025).

Cross-border collaboration further strengthens women's entrepreneurship in ASEAN, fostering knowledge exchange, market access, and business networks. Mobile ICT technologies enable such cross-border ties among ASEAN women entrepreneurs (Tanti et al., 2021), a concept reinforced by collective intelligence approaches that leverage mentoring networks for innovation and business sustainability (Jovkić & Miković, 2025). Psychological and social factors also shape these dynamics; emotional resilience proved pivotal for women overcoming digital entrepreneurship challenges during crises like the COVID-19 pandemic (Alhothali & Al-Dajani, 2022), with social media serving as an adaptive strategy for business continuity (Litania et al., 2020). Broader ecosystem development underscores the need for integrated innovation systems in ASEAN, blending technology, knowledge distribution, and policy (Litania et al., 2020).

Despite these insights, a critical research gap persists: the absence of structured, sustainable AI-based collaboration models tailored for women's microbusinesses in ASEAN. Prior studies highlight isolated elements such as AI tools, individual capacities, or networks but fail to integrate them into a cohesive framework for regional implementation. In contrast to fragmented approaches, this community service activity (PKM) addresses this gap through the ASEAN Womenpreneurs Connect program: an AI-Powered Microbusiness Collaboration Network implemented at Big Bee Farm, a community-based education and enterprise hub ideal for technology-driven empowerment.

This initiative tackles three key problems: (1) enhancing women microbusiness owners' AI technology utilization; (2) building digital cross-border business collaboration networks; and (3) assessing the program's impact on women's economic empowerment. Its objective is to develop an AI-based microbusiness collaboration model that elevates competitiveness, innovation, and sustainability for women entrepreneurs in ASEAN.

METHOD AND PROCEDURES

This community service activity employed a Participatory Action Research (PAR) design, integrating empowerment processes, training, and collaborative interventions to enhance women micro-entrepreneurs' capacities through AI-based technologies.

The program was implemented at Big Bee Farm in a structured timeline. Participants were selected via purposive sampling, targeting women micro-entrepreneurs from ASEAN regions who actively ran businesses but faced limitations in digital technology utilization.

Implementation comprised four main phases. First, a needs assessment was conducted through initial observations and semi-structured interviews to identify participants' challenges in digital literacy, market access, and business collaboration. Second, AI training sessions introduced and practiced tools such as chatbots, content generators, and basic data analytics for marketing strategies and decision-making. Third, business collaboration workshops facilitated cross-border networking, idea exchange, and co-development of collaborative business models. Fourth, mentoring and digital network simulation enabled participants to apply AI in real-world business scenarios and establish sustainable digital connections.

Instruments included structured training modules, pre- and post-tests to measure knowledge gains, observation sheets to monitor participation and engagement, and semi-structured interview guides to explore participants' experiences and perceptions.

Data were collected using mixed methods. Quantitative data from pre- and post-tests underwent descriptive statistical analysis to quantify knowledge improvements. Qualitative data from observations and interviews were analyzed via thematic analysis to identify key patterns in skill enhancement, collaboration, and technology adoption.

RESULTS

The implementation of the ASEAN Womenpreneurs Connect: AI-Powered Microbusiness Collaboration Network at Big Bee Farm yielded several key findings reflecting the effectiveness of technology-based and cross-border collaborative interventions. The findings revealed significant improvements in participants' digital literacy and AI utilization. Participants, previously limited in technology use, demonstrated proficiency in operating tools such as chatbots, content generators, and basic data analytics for marketing purposes.

The analysis indicated the formation of cross-border business networks among ASEAN participants. Through workshops and collaboration simulations, participants established business connections, shared experiences, and explored joint opportunities in marketing and product distribution.

The results demonstrated positive impacts on participants' marketing strategies and product innovation. AI tools enabled the creation of more engaging, structured content aligned with market

preferences, alongside data-driven approaches to promotion and consumer segmentation. Cross-cultural interactions fostered novel ideas blending local values with international market demands.

Figure 1. PkM Documentation

Figure 1. Workshop Activity

Supporting factors included practical training design, relevant technology, collaborative approaches, and the conducive learning environment at Big Bee Farm. Barriers encompassed varying digital literacy levels, technology infrastructure limitations, cross-border language challenges, and psychological factors like low self-confidence.

Social, Economic, and Technological Impacts

The findings revealed significant empowerment outcomes, with participants showing enhanced confidence, independence, business management skills, communication, collaboration, and decision-making. Economically, the program expanded market access and income opportunities through sustained cross-border networks.

Technology adoption increased, as participants applied AI concepts to daily business activities, particularly digital marketing.

Outputs

Concrete outputs comprised:

1. A cross-border digital business network on a collaborative platform.
2. AI training modules for women-led MSMEs.
3. Measurable capacity gains via pre- and post-tests.
4. Scientific publications and activity documentation.

A replicable conceptual model for AI-powered microbusiness collaboration networks.

Discussion

The findings align with digital entrepreneurship theory, where technology mastery drives business competitiveness in the digital era (Laksmanawati & Yuniawan, 2021). Significant gains in AI literacy support Alateeg & Al-Ayed, (2024), who demonstrated AI's role in boosting innovation and decision-making in women-led ventures, and reinforce (Putra et al., 2025) on AI training enhancing marketing skills. This finding bridges the digital literacy gap long hindering women micro-entrepreneurs.

Cross-border network formation corroborates collective intelligence concepts (Jovkić & Miković, 2025), which posit that networked collaboration enhances innovation and sustainability, and extends Tanti et al, (2021) on digital tools enabling ASEAN women entrepreneurs' cross-border ties. However, these networks remain nascent, requiring further strengthening for enduring ecosystems a limitation prior studies also noted.

AI-driven marketing improvements and product innovations mirror Ghonisyah & Asyiah, (2025) on generative AI elevating content effectiveness, and Azis et al, (2025) on transforming challenges via technology. Cross-cultural idea generation extends this, highlighting collaboration's broader adaptive benefits. In contrast to fragmented prior approaches, this integration yields comprehensive gains, though barriers like infrastructure and confidence (echoing Alhothali & Al-Dajani, 2022) underscore contextual dependencies.

These outcomes contribute theoretically by validating an integrated AI-collaboration framework for ASEAN women’s entrepreneurship, addressing the literature gap in structured models (Mahfudah et al., 2024;Alhothali & Al-Dajani, 2022). Practically, the replicable model, modules, and networks offer scalable tools for empowerment, aligning with inclusive growth imperatives ((Kamberidou, 2020; Ossai, 2025). Future efforts should prioritize infrastructure equity and resilience-building for sustained impact.

CONCLUSION

The ASEAN Womenpreneurs Connect: AI-Powered Microbusiness Collaboration Network demonstrates that integrating AI-based training with cross-border collaboration effectively enhances women micro-entrepreneurs' capacities. Key outcomes include improved digital literacy for marketing

and decision-making, alongside the formation of ASEAN-wide business networks that expand market access and collaborative opportunities. Strategically, AI drives transformations in marketing and product innovation, while networked approaches build collective strengths, though success hinges on participants' digital readiness, technology access, and psychosocial factors.

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REFERENCES

Abdurohim. (2023). Women ' S Empowerment in Msmes : Analysis of Social. *International Journal of Management and Business Economics (IJMEBE)*, *2*(1), 49–53.

Alan Rakhmat Putra, Nabila Cecilia Marasabesy, Damar Rais, Ratna Ayu Pawestri Kusuma Dewi, & Hizkia Rikcanto. (2025). Chatgpt Socialization in Increasing MSME Market Share in Rural Areas. *Jurnal Pengabdian Masyarakat Dan Riset Pendidikan*, *4*(2), 11929–11934. https://doi.org/10.31004/jerkin.v4i2.3905

Alateeg, S., & Al-Ayed, S. (2024). Exploring the role of artificial intelligence technology in empowering women-led startups. *Knowledge and Performance Management*, *8*(2), 28–38. https://doi.org/10.21511/kpm.08(2).2024.03

Alhothali, G. T., & Al-Dajani, H. (2022). Emotions and Resilience in Saudi Women's Digital Entrepreneurship during the COVID-19 Pandemic. *Sustainability (Switzerland)*, *14*(14). https://doi.org/10.3390/su14148794

Azis, R. A., Mohamed, A., Zamratul, N., & Ahmad, A. (2025). Transforming Challenges into Opportunities: A Conceptual Exploration of AI's Impact on Women Entrepreneurs in Malaysia. *INTERNATIONAL JOURNAL OF RESEARCH AND INNOVATION IN SOCIAL SCIENCE (IJRISS)*. https://doi.org/10.47772/IJRISS

Franzke, S., Wu, J., Froese, F. J., & Chan, Z. X. (2022). Female entrepreneurship in Asia: a critical review and future directions. *Asian Business and Management*, *21*(3), 343–372. https://doi.org/10.1057/s41291-022-00186-2

Ghonisyah, G. A. A., & Asyiah, A. K. (2025). The Amplification of Generative Artificial Intelligence (AI) in Content Marketing For Women Micro-Entrepreneurs: Qualitative Case Study Approach. *Indonesian Journal of Business and Entrepreneurship*, *11*(3), 724. https://doi.org/10.17358/ijbe.11.3.724

Jovkić, M., & Miković, R. (2025). Mentoring Networks as a Form Of Collective Intelligence in Digital Women's Entrepreneurship. *"Collective Intelligence of Professional Project Management,"* 93–100. https://doi.org/10.56889/jcul1027

Kamberidou, I. (2020). "Distinguished" women entrepreneurs in the digital economy and the multitasking whirlpool. *Journal of Innovation and Entrepreneurship*, *9*(1). https://doi.org/10.1186/s13731-020-0114-y

Laksmanawati, J., & Yuniawan, A. (2021). Women and the Digitalization Strategies of Micro, Small, and Medium Enterprises in the New Normal Era. *Petra International Journal of Business Studies*, *4*(1), 55–64. https://doi.org/10.9744/ijbs.4.1.55-64

Litania, A., Ruddy, L., Silka Hapsari, T., Elsyafira, N., Italia Gentajaya, I., Putra Wardhana, D., Gross, J., Maulidina Sabrina, L., Fathiya, S., Irawati, L., Rahayu, N., Phonvisay, A., Ngoy, P., Minh Tan, M., team at CIIECO -Snehil Basoya, the, Verghese, A., Mona, A., Kukreja, S., & Bhatt Giulia Ajmone Marsan, P. (2020). *Building Prolific Entrepreneurship Ecosystems: Shared Lessons from India and ASEAN Technology and Distribution Innovations in Healthtech*.

Mahfudah, S. N., Aulia, R., Kusuma, J. W., Widodo, W., & Komarudin, M. (2024). *Women ' S Empowerment Through Digital Marketing Processed Products Of Amplang Crackers With Payus Fish In The Fishing Village Of Salira Village*. *4*(2), 269–278.

Mutoharoh, M., Yusuf, F. A., Hanafi, S., & Suparna, D. (2026). Integration Of Persuasive Communication And Artificial Intelligence For Optimizing Global Market Penetration In Big Bee Farm Agritourism , Thailand. *International Journal of Engegement and Empowerment*, *6*(1), 38–45.

Ossai, I. O. (2025). Leveraging AI and Digital Networks: Empowering Decision-Making Among Women and Youth Entrepreneurs in Developing Economies. *Advanced International Journal for Research (AIJFR)*, *6*(4).

Setini, M., Yasa, N. N. K., Supartha, I. W. G., Giantari, I. G. A. K., & Rajiani, I. (2020). The passway of women entrepreneurship: Starting from social capital with open innovation, through to knowledge sharing and innovative performance. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*(2). https://doi.org/10.3390/joitmc6020025

Tanti, D. S., Nathan, R. J., Sulistyo, P. B., Soekmawati, Hanim, F., & Sarjuni, V. (2021). Empowering Cross-Border Women Entrepreneurs Via Mobile Ict: Framework For Malaysian And Indonesian Women-Led Msmes. *Journal of Nusantara Studies (JONUS)*, *6*(2), 340–357. https://doi.org/10.24200/jonus.vol6iss2pp340-357