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Empowering Communities in Bontoala District through Digital Transformation of Operational Management in AI-Based Start-ups

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A B S T R A C T

This community service initiative in Bontoala, Makassar, empowers local communities through digital transformation in AI-based start-up management. It integrates empowerment with digital innovation by equipping youth and aspiring entrepreneurs with essential digital and operational skills. The PKM concept is grounded in participatory empowerment and technology-based entrepreneurship, supporting Indonesia's digital economy vision. The program applied workshops, mentoring, and simulations over three months, involving 30 participants from students, micro-entrepreneurs, and unemployed youth. Results show improved knowledge of AI start-up operations, digital tools, and business strategies. The initiative reduces digital illiteracy, promotes local innovation, and fosters inclusive economic growth, offering a model for community empowerment in underserved urban areas.

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INTRODUCTION

The digital era has brought profound transformations across all sectors, redefining how businesses operate, how people communicate, and how communities develop. Digital transformation, particularly in the context of start-ups, is now recognised as a key driver of economic growth and social inclusion (Vial, 2019). In Indonesia, the government has identified digital innovation and start-up development as national priorities under the "Making Indonesia 4.0" roadmap, encouraging youth and micro-enterprises to adopt technology-based solutions (Ministry of Industry, 2018). Artificial Intelligence (AI), in particular, plays a crucial role in improving business efficiency and scalability by enabling automated decision-making, smart data processing, and adaptive customer experiences (Bughin et al., 2018). However, while these opportunities are rapidly growing, their access remains unequal.

Bontoala Subdistrict, located in the heart of Makassar City, illustrates a microcosm of urban communities facing digital marginalisation. Despite its proximity to urban centres, the area suffers from limited access to structured digital training, a lack of entrepreneurial mentoring, and a digital divide that separates many residents—especially youth and informal workers—from the benefits of the Fourth Industrial Revolution (UNESCO, 2021). Initial qualitative observations and pre-program interviews revealed that many residents are eager to engage in digital entrepreneurship, yet they lack the operational knowledge and exposure to navigate AI-based start-up systems. This mismatch between opportunity and capability represents a pressing issue in Indonesia's urban digital development agenda (Sulaiman, 2020).

Phenomenologically, this community service initiative is grounded in the real-life struggles of aspiring entrepreneurs who seek to elevate their livelihood through technology but face systemic exclusion. Logically, the intervention is timely and necessary, as studies have shown that digital skills training and exposure to innovation ecosystems can significantly increase entrepreneurial success and community resilience (World Bank, 2020). Therefore, this PKM (Pengabdian Kepada Masyarakat) aims to address these gaps by introducing a targeted, structured program on digital transformation in the operational management of AI-based start-ups.

The contribution of this program is twofold. Practically, it empowers a niche population youth, students, and micro-entrepreneurs from Bontoala—with critical knowledge and hands-on skills relevant to AI start-up management, digital tools, and data-driven operations. Theoretically, it enriches academic discourse on inclusive digital transformation by contextualising high-level AI applications within grassroots environments, creating a model of technological empowerment that is socially and culturally responsive (Yun et al., 2020). Unlike general ICT training, this initiative focuses on operational workflows, decision support systems, and scalable digital practices, making it a rare convergence of local wisdom and advanced technology.

The methodology is grounded in participatory learning, simulation-based workshops, and mentoring tailored to the socio-economic realities of the participants. A total of 30 individuals were selected, ranging from unemployed youth and home-based micro-entrepreneurs to vocational students. The program content includes modules on business model design for AI-based enterprises, introduction to AI tools, basic data handling, and digital customer engagement strategies. This practical curriculum ensures that the community does not merely consume digital tools but learns to operate, innovate, and sustain digital businesses.

Preliminary assessments indicate that participants are not only gaining new digital competencies but also developing confidence, critical thinking, and collaborative skills essential for entrepreneurship. In the long term, the program envisions the emergence of a community-driven digital ecosystem, wherein local innovation becomes a tool for economic mobility and inclusive growth. In summary, this PKM project stands as an innovative and contextually grounded response to urban digital inequality. By embedding AI start-up knowledge in the heart of a traditionally underserved area like Bontoala, the program contributes directly to Indonesia's vision of an inclusive digital economy. Moreover, it provides a replicable framework for similar communities to adopt, adapt, and thrive in the era of intelligent technology.

IMPLEMENTATION AND METHODS

Implementation of the Activities

The implementation of this community service program was carried out in Bontoala Subdistrict, one of the most densely populated areas in Makassar City, South Sulawesi, Indonesia. This subdistrict is characterised by a large number of informal workers, unemployed youth, and micro-entrepreneurs who are increasingly exposed to digital content, but lack structured access to formal digital education and entrepreneurial mentorship. Bontoala was selected not only due to its socio-economic challenges, but also due to its strategic location and the potential enthusiasm of its residents toward innovation and self-development.

This program will be implemented in June 2026, This flexible implementation model allowed for greater inclusivity, accommodating participants who had limited access to internet connectivity or digital devices. Offline sessions were held at the Youth Creative Space of Bontoala, a community hub supported by local authorities and youth volunteers.

A total of 30 participants were involved in the program. These individuals were selected through an open registration process, with support from local leaders and school coordinators. The participant pool was diverse:

a. 40% were senior high school and vocational school students,
b. 30% were young micro-entrepreneurs engaged in online or informal business, and
c. 30% were unemployed youth who showed a strong motivation to explore digital entrepreneurship.

Before the program started, a baseline needs assessment was conducted through simple digital literacy tests and short interviews. This allowed the facilitators to design appropriate learning modules that matched participants' starting level of understanding. The results showed that while many were familiar with using smartphones and social media, few had in-depth knowledge of digital business operations, much less AI-based start-up models.

Method of Service

The method of service was designed to align with community-based and experiential learning principles. It integrated participatory, skill-based, and reflective learning approaches, ensuring that the content was accessible and relevant to the participants' daily realities. The service method followed the logic of Kolb's Experiential Learning Cycle (1984), which includes concrete experience, reflective observation, abstract conceptualisation, and active experimentation.

To ensure a structured yet adaptive learning journey, the program was divided into three main stages:

1. Capacity Building through Interactive Workshops

Participants joined a series of interactive workshops which introduced them to:

a. Fundamentals of Artificial Intelligence (AI): What AI is, how it works in daily life and business, with simple examples such as recommendation systems and chatbots.
b. Digital Business Models: Exploring how start-ups operate, how they generate value through innovation, and the difference between traditional and AI-driven business models.
c. Operational Management Tools: Introduction to tools like Google Workspace, Trello for task management, and simple CRM (Customer Relationship Management) systems.
d. Customer Engagement in Digital Environments: Understanding how to use digital platforms for marketing, engagement, and retention.

The workshops were delivered in a blended learning format using slides, video content, hands-on exercises, and discussion-based learning. This allowed participants to absorb theoretical concepts while immediately applying them in their context.

2. Mentoring and Simulation Projects

In the second phase, participants were divided into small groups and guided to simulate managing a simple AI-based start-up. Each group was asked to:

a. Define a business problem or social issue relevant to their context.
b. Propose a digital or AI-enabled solution (e.g., an app, chatbot, or digital service).
c. Design an operational flow using templates and tools introduced in workshops.

Mentors consisting of digital business practitioners and academic facilitators provided personalised feedback during weekly mentoring sessions. These sessions fostered critical thinking, problem-solving, and collaborative skills.

3. Presentation and Reflection Phase
   In the final phase, participants presented their projects in a mini digital exhibition, where each group showcased their concept, workflow, and lessons learned. This session was attended by local stakeholders, including school principals, community leaders, and business mentors. A reflective discussion followed each presentation, allowing participants to share insights, challenges, and future aspirations. This process also encouraged peer learning and built participants' confidence in public communication.

Educational Materials and Tools Used

To support inclusive access and active participation, the following tools and resources were used:

a. Google Workspace (Docs, Slides, Meet) for collaborative work.
b. Canva for visual content creation and business proposal design.
c. Open-source AI tools like Teachable Machine and chatbots for demonstration purposes.
d. Printed learning handouts and reflection journals for offline participants.

All materials were designed to be visually friendly, simple, and action-oriented, accommodating participants with varying educational backgrounds.

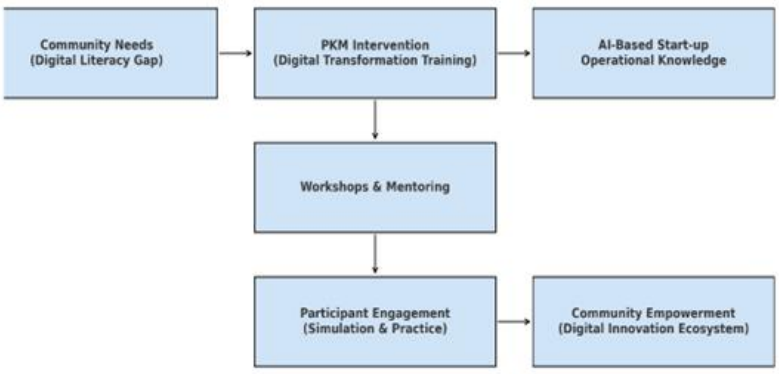

Figure 1. Conceptual Framework

The conceptual framework of this PKM program illustrates how community needs are transformed into digital training interventions and AI-based startup operational management, which then results in community empowerment in the form of a local digital innovation ecosystem.

RESEARCH RESULTS AND DISCUSSION

The implementation of this Community Service Programme (PKM) was successfully carried out through a series of systematic stages designed to enhance the digital and entrepreneurial capacities of the community in Bontoala Subdistrict. The programme aimed not only to deliver knowledge but also to shape a new, adaptive mindset towards the digital transformation era, particularly through a participatory, hands-on learning approach.

Stages of Implementation and Delivered Materials

1. Initial Assessment and Needs Identification
   The first step involved collecting baseline data from participants using a self-assessment questionnaire and brief interviews. This instrument measured five key indicators: (1) basic digital literacy, (2) understanding of digital business models, (3) general knowledge of AI, (4) operational skills in using digital tools, and (5) confidence in initiating a digital enterprise.
   Findings from this initial assessment revealed that most participants were only familiar with basic smartphone and social media use, with minimal understanding of how technology could be used for productivity or entrepreneurship. The average baseline score was below 2.5 on a 5-point scale. This highlighted a significant digital literacy gap, which formed the basis for the programme curriculum design.
2. Interactive Training (Capacity Building)
   Training was delivered through interactive workshops encompassing four core modules:
   a. Introduction to AI and Its Relevance in Business.
   b. Digital Business Models and Value Proposition.
   c. Digital Operational Management Tools.
   d. Digital Marketing and Customer Engagement Strategies.

The training sessions combined interactive lectures, local case studies, digital tool simulations, and group work. Each module was designed to allow participants to immediately apply what they learned through a learning by doing approach, fostering confidence and ownership of their learning process.

3. Mentoring and Business Simulation Projects
   Participants were divided into small groups and guided to design digital start-up simulations using AI-based concepts, including problem identification, idea development, business modelling, and operational planning. Some examples of group projects included:
   a. An educational chatbot service promoting local MSMEs.
   b. A location-based homemade food ordering app.
   c. A simple financial tracking system using Google Sheets and Forms.

Mentors provided structured guidance and weekly feedback to help participants integrate technology in practical, problem-solving ways. This phase played a critical role in fostering creativity, systematic thinking, and teamwork.

4. Project Presentation and Evaluation
   Each group presented their project during a "Digital Demo Day" in front of facilitators, local stakeholders, and fellow participants. Presentations were supported by simple visual tools such as Canva slides and mock-up prototypes. After the demo, participants completed a reflective evaluation outlining their insights and future plans.

Programme Impact and Measurement

To evaluate the impact, a pre- and post-programme self-assessment was conducted using the same five indicators. Scores were recorded using a 1–5 Likert scale, and the results are presented in the figure below.

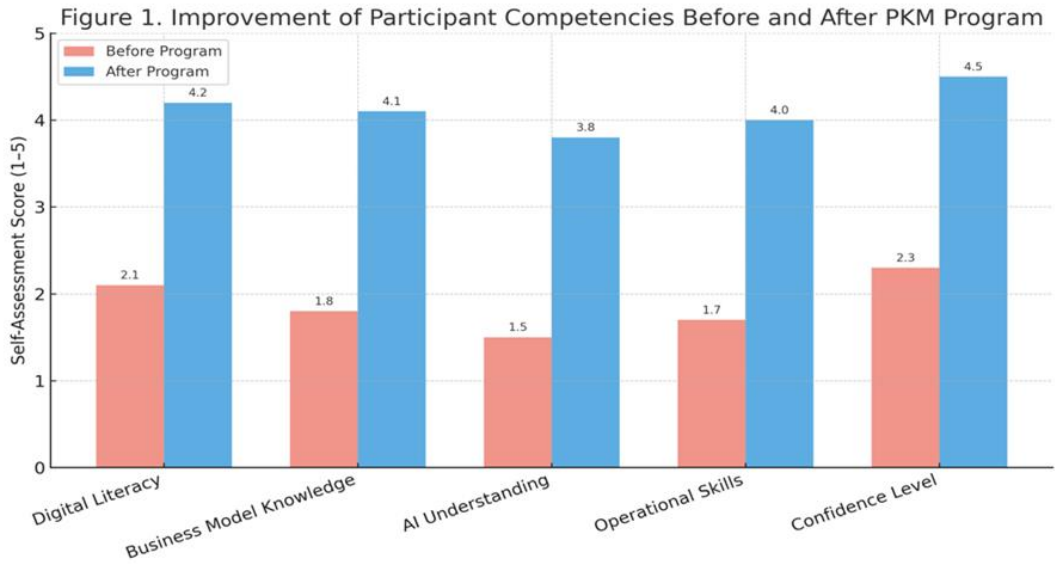

Figure 2. Improvement of Participant Competencies Before and After PKM Programme

Explanation of Figure 1:

a. Digital Literacy improved from an average of 2.1 to 4.2.
b. Business Model Understanding increased from 1.8 to 4.1.
c. AI Knowledge rose from 1.5 to 3.8.
d. Operational Skills improved from 1.7 to 4.0.
e. Confidence Level increased from 2.3 to 4.5.

These results clearly demonstrate that participants not only acquired new knowledge but also underwent a transformation in attitude and confidence toward digital entrepreneurship.

Figure 3. Documentation with PKM Partners

Figure 4. Documentation of PKM Activities

These findings confirm that a community-based and experiential learning approach is highly effective for digital empowerment. Participants displayed greater independence in learning, confidence to experiment, and the ability to think critically, which had not emerged in the initial assessment. By creating a safe and supportive learning environment, even participants with limited prior exposure to technology were able to thrive. More than just technical training, this PKM initiative has generated a paradigm shift among participants from passive users of technology to creators of community-based digital solutions. This aligns with existing literature, which asserts that digital technology can only be impactful when coupled with inclusive learning and context-aware facilitation (Vial, 2019; Yun et al., 2020; World Bank, 2020).

CONCLUSIONS AND RECOMMENDATIONS

This community service programme successfully demonstrated the transformative potential of digital education and operational management training for youth and micro-entrepreneurs in Bontoala Subdistrict, Makassar City. Through a structured series of interactive workshops, mentoring sessions, and simulation projects, the participants experienced significant improvements in digital literacy, understanding of AI-based business models, and confidence in managing digital operations.

The results indicate that:

a. Participants showed measurable progress in five key competency areas: digital literacy, business model understanding, AI knowledge, operational management skills, and entrepreneurial confidence.
b. The hands-on, experiential learning approach was effective in stimulating active engagement and critical thinking.
c. The hybrid implementation format (online and offline) helped improve accessibility and participation among community members with diverse backgrounds.

This initiative not only filled a digital knowledge gap but also empowered participants to become more self-reliant, creative, and prepared to engage in the digital economy. Most importantly, it laid the foundation for the creation of a local innovation ecosystem in urban community settings.

Based on the outcomes and observations during the programme implementation, the following recommendations are proposed:

a. Scale and Replication.Similar PKM programmes can be replicated in other urban subdistricts with comparable socio-economic conditions. It is recommended to customise content based on local digital readiness and economic opportunities.
b. Continuous Mentorship and Community Building. Establishing a post-programme mentorship group or community of practice can help sustain momentum and ensure continued skill development and peer learning.
c. Involvement of Local Government and Schools. For long-term impact, collaboration with local government and educational institutions should be strengthened. Formal inclusion of digital entrepreneurship modules into school extracurricular programmes could accelerate the mainstreaming of these skills.
d. Monitoring and Evaluation System. Implementing a simple digital-based M&E tool to track participants' progress after the programme can help refine future interventions and document community success stories.
e. Encouraging Local Start-up Ecosystem. Participants with promising ideas should be connected with local incubators, funding opportunities, or competitions to foster the realisation of their digital innovation projects.

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REFERENCES

Bughin, J., Seong, J., Manyika, J., Chui, M., & Joshi, R. (2018). Notes from the AI frontier: Modeling the impact of AI on the world economy. McKinsey Global Institute.

Füller, J., Hutter, K., Wahl, J., Bilgram, V., & Tekic, Z. (2022). How AI revolutionizes innovation management—Perceptions and implementation preferences of AI-based innovators. Technological Forecasting and Social Change, 178, 121598.

Holmström, J. (2022). From AI to digital transformation: The AI readiness framework. Business Horizons, 65(3), 329–339. https://doi.org/10.1016/j.bushor.2021.03.006.

Kementerian Perindustrian Republik Indonesia. (2018). Making Indonesia 4.0: Peta Jalan Masa Depan Industri Indonesia.

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Prentice Hall.

Kraus, S., Durst, S., Ferreira, J. J. M., Veiga, P., Kailer, N., & Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. International Journal of Information Management, 63, 102466. https://doi.org/10.1016/j.ijinfomgt.2021.102466.

Lapuz, M. C. M. (2023). The role of local community empowerment in the digital transformation of rural tourism development in the Philippines. Technology in Society, 74, 102308. https://doi.org/10.1016/j.techsoc.2023.102308.

Ministry of Industry, Republic of Indonesia. (2018). Making Indonesia 4.0: A roadmap for Indonesia's industrial future.

Roberts, D. L., & Candi, M. (2024). Artificial intelligence and innovation management: Charting the evolving landscape. Technovation, 136, 103081. https://doi.org/10.1016/j.technovation.2024.103081.

Sulaiman, R. A. (2020). Digital literacy and the digital divide in Indonesia: A policy analysis. Indonesian Journal of Communication Studies, 13(2), 123–137.

UNESCO. (2021). Promoting digital inclusion for the urban poor: Policy and practice. UNESCO Publishing.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. The Journal of Strategic Information Systems, 28(2), 118–144.

World Bank. (2020). Boosting skills for the digital economy in developing countries. Washington, DC: World Bank Group.

Yun, J. J., Won, D., Park, K., & Yang, J. (2020). Dynamics from open innovation to evolutionary change. Journal of Open Innovation: Technology, Market, and Complexity, 6(3), 52.

Zainuddin, M., & Habibi, A. (2021). Community digital empowerment: A case study of urban youth in Makassar. Jurnal Pengabdian Kepada Masyarakat Indonesia, 3(1), 45–53.