

Education on Artificial Intelligence Utilization to Improve Employee Productivity at BUMDES Kamuning Jaya, Lebak Banten

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Abstract

The development of digital technology has significantly influenced various sectors, including village economic management through Village-Owned Enterprises (BUMDES). However, many BUMDES still face challenges related to limited human resources, administrative inefficiency, and low digital literacy. This community service activity aimed to provide education regarding the utilization of Artificial Intelligence (AI) technology to improve employee productivity at BUMDES Kamuning Jaya, Cikamunding Village, Ciligrang District, Lebak Regency, Banten. The implementation methods included needs analysis, AI operational training, mentoring, and evaluation through pre-test and post-test assessments. The results showed a significant increase in participants' understanding and skills regarding AI utilization, especially in prompt creation, information processing, administrative efficiency, and digital-based reporting. The average participant understanding increased from 50% in the pre-test to 73% in the post-test. This program demonstrates that AI-based education can improve employee productivity, support operational effectiveness, and strengthen village economic competitiveness through digital transformation.

Keywords: Artificial Intelligence, Productivity, BUMDES, Digital Technology, Community Service

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1. Introduction

The development of digital technology has brought significant changes to various sectors of society, including village governance and local economic management. Digital transformation is no longer limited to urban industries and large corporations but has also begun to influence village-based economic institutions such as Village-Owned Enterprises (BUMDES). One of the emerging technologies that can support organizational effectiveness is Artificial Intelligence (AI).

Artificial Intelligence (AI) has increasingly been utilized to support administrative activities, information processing, and decision-making in various organizations. The utilization of AI technology can help improve work efficiency, accelerate administrative processes, and support organizational productivity, particularly in institutions that are beginning to implement digital transformation initiatives.

BUMDES plays a strategic role in improving village welfare through the management of local economic potential. Based on Indonesian Law Number 6 of 2014 concerning Villages, BUMDES are established to strengthen village economic independence and improve community welfare. However, many BUMDES still encounter challenges such as limited technological

competence, inefficient manual administration, and a lack of digital literacy among employees.

BUMDES Kamuning Jaya, located in Cikamunding Village, Ciligrang District, Lebak Regency, Banten, is one of the village economic institutions seeking to optimize local economic potential. Nevertheless, administrative processes and operational activities are still relatively conventional and less effective due to limited utilization of digital technology. Therefore, educational activities regarding AI utilization are necessary to improve employee productivity and organizational effectiveness.

Based on preliminary observations conducted before the implementation of the program, BUMDES Kamuning Jaya involved 15 employees in administrative and operational activities. Most reporting, documentation, and information management processes were still carried out manually. Initial assessments indicated that participants had limited experience in utilizing AI applications, while the average level of understanding regarding AI technology was only 50%. These conditions resulted in longer administrative processing times and limited work efficiency, highlighting the need for digital competency improvement through AI-based training.

Based on preliminary observations and discussions with the management of BUMDES Kamuning Jaya, several

operational challenges were identified. Most administrative activities, including reporting, documentation, and information management, were still conducted manually. This condition resulted in longer processing times, lower administrative efficiency, and limited utilization of digital technology. Furthermore, the majority of employees had limited knowledge and practical experience regarding the application of Artificial Intelligence (AI) tools in supporting daily operational activities.

The limited digital competence of employees has become one of the main obstacles in optimizing organizational performance. As digital transformation continues to influence organizational management practices, village-owned enterprises are also required to adapt to technological developments. Therefore, capacity-building activities focusing on AI utilization are needed to improve employee productivity, administrative effectiveness, and digital literacy.

The novelty of this community service program lies in the implementation of Generative Artificial Intelligence technology within the administrative management of a Village-Owned Enterprise (BUMDES). Unlike conventional digital literacy training programs, this activity specifically introduced prompt engineering techniques and the practical utilization of AI platforms such as ChatGPT and Microsoft Copilot to support administrative reporting, information processing, and organizational decision-making processes.

This community service program aimed to provide education and practical training on the utilization of Artificial Intelligence (AI) technology for employees of BUMDES Kamuning Jaya. The activity was expected to improve digital literacy, administrative effectiveness, and employee productivity while supporting sustainable village economic development through digital transformation.

2. Methods

The community service program was implemented through five stages: preparation, training implementation, mentoring, evaluation, and follow-up activities. These stages were designed to improve participants' understanding and practical skills in utilizing Artificial Intelligence (AI) technology to support organizational productivity and administrative effectiveness. These stages were designed to improve the understanding and practical skills of BUMDES employees regarding the utilization of Artificial Intelligence (AI) technology in supporting organizational productivity and operational efficiency.

The preparation stage included coordination with BUMDES management, identification of participant needs, preparation of training materials, and scheduling of activities. Initial observations indicated that most participants had limited knowledge regarding AI applications and their utilization in administrative activities. In addition, several administrative processes

were still conducted manually, resulting in lower work efficiency and slower information processing.

Following the preparation stage, training implementation activities were conducted through interactive workshops, discussions, practical demonstrations, and hands-on exercises. The training materials focused on introducing the basic concepts of Artificial Intelligence (AI), AI-assisted administrative applications, prompt engineering techniques, AI-based information processing, and digital report preparation using AI tools such as ChatGPT and Microsoft Copilot.

After the training sessions, participants received direct mentoring and implementation assistance to ensure the effective application of AI technology in their daily operational activities. The mentoring process included guidance on prompt creation techniques, information filtering and validation, AI-assisted report preparation, and administrative data management. Participants were also encouraged to apply AI tools to solve practical problems related to organizational administration and information management. This stage aimed to strengthen participants' digital competencies and improve their confidence in utilizing AI technology independently.

The evaluation stage was conducted using pre-test and post-test questionnaires to measure participants' improvement in understanding and utilizing Artificial Intelligence (AI). In addition, participant engagement, enthusiasm, and practical performance during the workshop sessions were also observed and analyzed. The comparison between pre-test and post-test results was used to determine the effectiveness of the educational program in improving participants' digital literacy and productivity. The community service activity was conducted on April 09–10, 2026, at BUMDES Kamuning Jaya, Cikamunding Village, Cilongrang District, Lebak Regency, Banten.

3. Results and Discussions

The implementation of the community service program at BUMDES Kamuning Jaya showed positive results in improving participants' understanding and utilization of Artificial Intelligence (AI) technology. The educational activities, which consisted of workshops, practical simulations, and mentoring sessions, successfully increased participants' digital literacy and operational skills in utilizing AI applications for organizational purposes. The participants demonstrated high enthusiasm throughout the activity, particularly during practical sessions involving AI-based administrative and information-processing tasks.

Figure 1. Question and Answer Session from PKM Activity Participants



Prior to the implementation of the program, most participants had limited knowledge regarding Artificial Intelligence (AI) applications and their practical utilization in organizational operations. Administrative activities at BUMDES were still predominantly conducted manually, resulting in slower work processes and limited efficiency in data management. Based on the initial observations and pre-test results, participants were generally unfamiliar with AI-assisted applications such as ChatGPT and Microsoft Copilot. After participating in the training and mentoring sessions, participants demonstrated a better understanding of AI concepts, operational functions, and practical implementation in supporting daily administrative activities.

Figure 2. Material Delivery Activities to Employees at BUMDES



One of the most important aspects of the educational program was the introduction to prompt engineering techniques. Participants gained new knowledge regarding the importance of creating specific, systematic, and contextual prompts in generating accurate information from AI applications.

During the practical sessions, participants were trained to formulate prompts according to organizational needs, such as preparing administrative reports, analyzing business opportunities, and generating information related to village economic activities. The mentoring sessions showed that participants became more capable of producing relevant and structured outputs from AI systems after understanding proper prompt engineering techniques.

Figure 3. PKM Team with BUMDES Employees



The implementation of AI technology also contributed significantly to improving employee productivity and operational effectiveness at BUMDES Kamuning Jaya. Based on participant feedback and observations during mentoring activities, the use of AI applications helped accelerate report preparation, information retrieval, and document drafting processes. Several administrative tasks that previously required considerable manual effort could be completed more efficiently after participants applied AI tools in their daily activities.

Participants were able to utilize AI applications to support various administrative and operational activities, including administrative report preparation, information processing, operational efficiency improvement, data analysis, and decision-making support. The use of AI applications reduced work time, accelerated administrative processes, and improved the quality of organizational documentation. Participants also stated that AI technology helped them complete tasks more efficiently while minimizing errors in information processing and reporting activities.

To measure the effectiveness of the educational program, evaluations were conducted using pre-test and post-test questionnaires. The assessment focused on participants' understanding of Artificial Intelligence (AI), prompt engineering functions, prompt optimization skills, and the utilization of AI-generated information. The evaluation results indicated a significant improvement in participants' understanding after the educational activities were completed.

Assessment Aspect	Pre-test	Post-test
General Understanding of AI	55%	75%
Understanding AI Prompt Functions	40%	70%
Prompt Optimization Skills	50%	70%
Utilization of AI Information	55%	75%
Average Score	50%	73%

The results showed an average increase of 23 percentage points between the pre-test and post-test assessments. This improvement was influenced by the practical learning approach implemented during the training sessions. Participants were directly involved in

AI simulations, prompt creation exercises, and report preparation activities using AI applications. As a result, participants were able to better understand the practical benefits of AI technology in supporting their daily administrative work. The highest improvement occurred in participants' understanding of AI prompt functions, which increased from 40% to 70%. This finding indicates that the educational activities were effective in improving participants' digital competencies and their ability to utilize AI technology in organizational activities. Furthermore, participants reported that the training provided new insights into AI utilization, improved their operational skills, and assisted them in preparing reports and processing information more efficiently.



Overall, the community service program successfully demonstrated that Artificial Intelligence (AI) technology can support digital transformation within village-owned enterprises. This finding is consistent with previous studies which reported that AI utilization contributes to improved workplace productivity, administrative efficiency, and organizational adaptability in the digital era. Therefore, AI literacy programs can become an effective strategy to support digital transformation in local economic institutions.

To ensure the sustainability of the program, BUMDES Kamuning Jaya is encouraged to continue implementing AI applications in routine administrative activities. Future initiatives may include advanced AI training, regular mentoring sessions, and the development of AI-assisted systems to support organizational operations and decision-making processes.

4. Conclusions

This community service program successfully improved the digital competence of BUMDES Kamuning Jaya employees in utilizing Artificial Intelligence (AI) technology for administrative and operational activities. Evaluation results showed an increase in participant understanding from 50% in the pre-test to 73% in the post-test. The implementation of AI applications contributed to improved administrative efficiency, information management, and employee productivity. Continuous mentoring and further digital competency development are recommended to ensure sustainable AI adoption within BUMDES operations.

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Author Contributions Statement (mandatory)

Ichwan Putra Arianto contributed to conceptualization, activity design, methodology, supervision of the Community Service Program implementation, as well as original draft preparation and manuscript editing. Anak Agung Gede Darma Jata contributed to methodology, field investigation, data collection, and manuscript writing and review. Santinah, Shelen Akmalia Retno, and Faradila Nur Nopiyan contributed to investigation, activity implementation, documentation, and manuscript review and editing.

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Methodology	✓	✓			
Formal Analysis	✓				
Investigation	✓	✓	✓	✓	✓
Data Curation	✓	✓			
Supervision	✓				
Project Administration	✓				
Writing – Original Draft	✓	✓			
Writing – Review & Editing	✓	✓	✓	✓	✓
Visualization	✓		✓	✓	✓
Documentation					
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Conflict of Interest Statement (mandatory)

The authors declare that there is no conflict of interest regarding the publication of this article.

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