

Digital Literacy and Data Security Training for Digital Era Village Cooperative Management

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ABSTRACT

The Merah Putih Village Cooperative is a village cooperative that has a strategic role in strengthening the people's economy, especially through savings and loan services and trading agricultural products. However, in the digital era, cooperatives still face challenges in the form of low digital literacy of administrators and weak management of member data security. Administrative processes that are still manual and have minimal understanding of cybersecurity risks have the potential to hinder the operational effectiveness and sustainability of cooperatives. This community service activity aims to increase digital literacy and data security awareness for the management of the Merah Putih Village Cooperative through a participatory and collaborative approach. Implementation methods include problem identification, programme dissemination, digital literacy and data security training, application of cloud-based technologies, and post-training mentoring and evaluation. Training includes the use of digital productivity applications, cloud-based document management, as well as the implementation of data security practices such as the use of strong passwords, two-factor authentication and data backup. The results of the activity show a significant increase in the digital competence of the management, the efficiency of cooperative administration, as well as increasing awareness of the importance of member data protection. This activity is the first step in the digital transformation of village cooperatives towards more effective, safe, transparent and sustainable governance, while strengthening synergies between universities, village governments and the community.

Keywords: Digital Literacy, Data Security, Village Cooperatives, Digital Transformation, Community Service.

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1. INTRODUCTION

The Red and White Village Cooperative is one of the active cooperatives in rural areas with high people's economic potential (Hartono et al., 2025; Maryam, 2025). This cooperative has carried out various productive business activities, such as savings and loans, agricultural product management, and village community-based micro businesses (Amelia, 2025). However, amidst the current development of the digital era, cooperatives still face serious challenges in the aspects of digital literacy and managing the data security of their members (Hermansyah et al., 2023)

Based on the results of observations and interviews with cooperative administrators, it is known that most administrators and members do not yet understand the importance of digital data security. The administrative process is still carried out manually and does not yet use an adequate information system. In addition, there is a low knowledge of potential cyber risks, such

as data theft or misuse of member information is a risky problem for cooperative sustainability. (Salam, 2024)

Geographically, the location of cooperatives is in a relatively easy-to-reach area, but limited training facilities and access to digital learning resources are obstacles in themselves. Based on partner inventory data, of a total of 25 administrators and operational staff, only around 20% are able to use computers independently and understand the basics of digital literacy. The Merah Putih Village Cooperative operates in the field of savings and loan services and trading local agricultural products. The transaction recording system, membership and financial reporting are still carried out manually using a notebook and simple Excel. Partners do not yet have an integrated cooperative information system, and all member data is stored without secure encryption or backup.

The active participation of the cooperative's management was an important factor in the success of the programme. A participatory and contextual approach to training will therefore be favoured. The implementation team consists of lecturers and students from the informatics field who are experienced in community training and user needs-based information system development.

It is hoped that through this activity cooperatives can begin to carry out digital transformation in stages and be able to maintain the security of their members' data in the long term. Apart from that, student involvement in this activity also provides real experience in the application of science in society.

2. METHODS

This service implementation method is designed systematically to solve the problems of village cooperative partners through a participatory and collaborative approach, with the following main stages:

a. Implementation Stage and Solutions

- 1) Identify and Confirm Problems. Conduct initial discussions and field observations to confirm the digitalization and data security problems faced by cooperative administrators.
- 2) Program Socialization. Dissemination activities to cooperative administrators regarding the objectives, benefits and plans of training activities and their active involvement. Presentations methods, group discussions and questions and answers.
- 3) Digital Literacy and Data Security Training. Training materials include fundamentals of digital literacy for the management of cooperative administration. Introduction to productivity applications (Google Workspace, Microsoft 365). Basic data security education: use of strong passwords, phishing, data backup, and encryption. Interactive lectures methods, hands-on practice, case simulation.
- 4) Technology Application. Implementation of the use of cloud-based spreadsheet applications and online storage systems (e.g. Google Drive) as cooperative data management solutions. Training in the use of basic security software (antivirus, cloud backup).
- 5) Mentoring and Evaluation. Intensive mentoring for 1 month after training to ensure implementation is progressing well. Evaluation is carried out through:
 - Questionnaire on participant satisfaction and understanding.
 - Observation of the application of technology in cooperative activities.
 - Direct interviews with partners.
- 6) Program Sustainability. Creation of digital training modules that can be used independently by partners after the activity is completed. Creation of online communication groups for long-term assistance. Involvement of students in regular monitoring of cooperative activities.

b. Technological Approaches and Innovation. The approach used is community empowerment through education, simple technology demonstration, and direct application. Proposed

technology: Use of free cloud computing platforms (Google Workspace, Dropbox). Use of lightweight and user-friendly cybersecurity applications. Utilization of digital-based cooperative cash applications that are in accordance with the village business scale.

- c. Partner Participation. Partners play an active role in: Provision of training sites. Determine the training implementation schedule. Providing available tools for training and implementation. Deliver feedback on the implementation of activities
- d. Evaluation and Sustainability of Programs. Evaluation: Carried out quantitatively (pre-test and post-test understanding of participants). Evaluation of the process through observation sheets and partner feedback. Sustainability: 1) The program comes with a digital guide and video tutorial. 2) The service team opened an online post-activity consulting service. 3) Prepared by students to carry out advanced service based on final assignments/internships.

3. RESULTS AND DISCUSSION

a. General Overview of Implementation

Activities Digital Literacy and Data Security Training for the Management of the Merah Putih Village Cooperative, Grujugan Kidul Village, Grujugan Era Digital District implemented as a form of implementation of community service programs that focus on increasing the capacity of cooperative human resources to face the challenges of digital transformation.

Activities carried out during several days adjust to training needs, located in Village Hall, and the house of the Red and White Village Cooperative management, by involving 8 administrators, cooperative supervisors, Babinsa, babin kamtibmas and several active member as participants.

The implementation of activities is carried out in a manner face to face (offline) by applying the method interactive lectures, demonstrations, simulations and live mentoring. All participants actively participated in the activities until the end of the session.



Figure 1. The management, supervisor of the cooperative, Babinsa, Babin Kamtibmas and several active members of the Cooperative

Source: Community Service Activity (2025)

b. Activity Series

Program implementation is divided into several main activity stages as follows:

1. Socialization and Preparation Stage: 1) Coordination is carried out with village officials and cooperative administrators to determine the time, place and technical training needs. 2) Initial data collection related to participants' digital literacy levels, device conditions, and data security practices that have been used. 3) Installation of supporting applications such as Google Workspace, Cloudstorage, and Password Manager simple.

2. Training Implementation Stage

Training activities are divided into two main sessions:

Session 1 – Basic Digital Literacy

- Introduction of digital technologies and their benefits for cooperatives.
- Training in the use of digital devices (laptops, smartphones, internet and cooperative official email).
- Shared digital document creation practices using Google Docs and Sheets.
- Usage demonstration cloud storage (Google Drive/OneDrive) for data storage and collaboration.



Figure 2. Training in the use of digital devices (Google Drive, Google Docs, Sheets and Village Cooperative Systems

Source: Community Service Activity (2025) adoption Hidayat and Samsi (2025), and Wahid et al., 2025)

Session 2 – Data Security and Information Protection

- Introduction of cybersecurity concepts and digital threats (phishing, malware, data theft).
- Manufacturing training strong password, usage two-factor authentication (2FA), and online data backup.
- Simulation of data leak incidents and how they are handled.
- Introduction cooperative data security policy simple that can be applied every day.

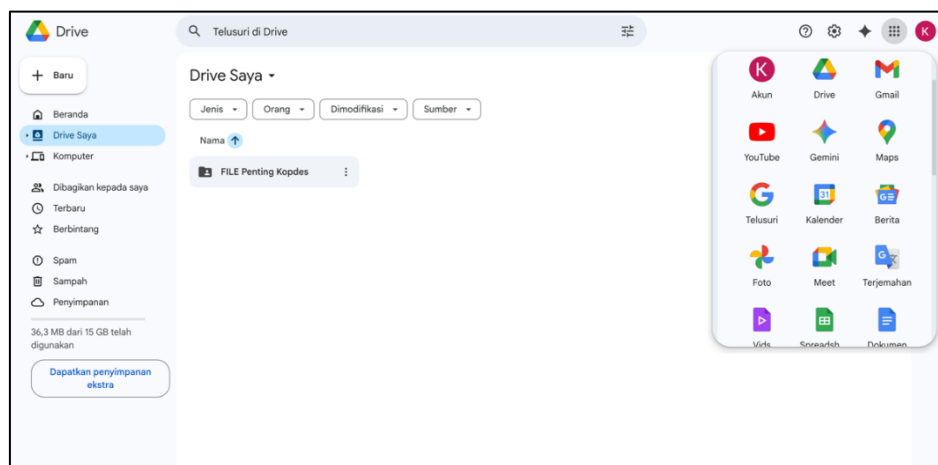


Figure 3. Introduction of Google Drive as a temporary data storage medium for Cooperatives Red and White Village

Source: Community Service Activity (2025)

3. Mentoring and Evaluation Stage

- The devotion team does post-training mentoring for two weeks online (via WhatsApp Group and Google Meet).
- Evaluation is carried out through pre-test and post-test which shows a significant increase in participants' abilities.
- Active participants who pass the evaluation are given certificate of training in digital literacy and cooperative data security.

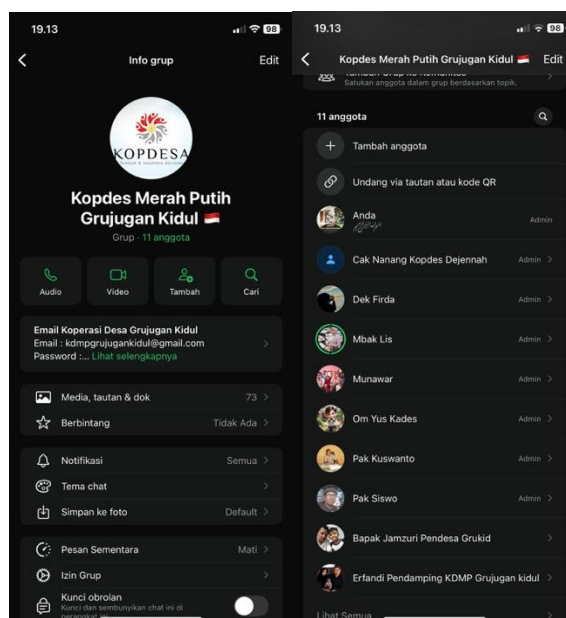


Figure 4. Post-training assistance Via WhatsApp Group and Google Meet

Source: Community Service Activity (2025)

c. Activity Achievement Results

The results of the implementation of the activities show increased competencies and changes in digital behavior in the cooperative environment. The main results achieved can be summarized as follows:

No	Assessed Aspects	Conditions Before Training	Conditions After Training	Success Indicators
1	Management Digital Literacy	Most administrators are not used to using official cooperative computers and emails	All administrators have been able to create, manage and send digital documents	90% of participants passed the post-test
2	Data Management	Data storage is still done manually and spread across personal devices	All cooperative data is stored in the cloud folder along with the backup system	A cloud-based data management system was formed
3	Data Security Awareness	Does not have a weak data and password security policy	Each account already has a strong password and applies two-factor authentication	100% of cooperative accounts are safe and protected
4	Administrative Efficiency	Report production is still manual and slow	Faster administration process through collaborative digital documents	Report creation time reduced by 50%
5	Participant Participation	Minimal participation and enthusiasm	Participants actively discuss and practice the material	85% of participants followed until the final session

Source: Data Processed (2025)

d. Level of Participant Satisfaction and Evaluation

From the results of the evaluation questionnaire distributed to participants after the activity:

1. 95% participants declare this activity very useful for cooperative work.
2. 90% participants declare material is easy to understand and applicable.
3. 85% participants declare ready to implement the data security practices studied.
4. 100% participants expect similar activities to continue with advanced training such as digital financial management and online marketing.

e. General Conclusions

Activity implementation Digital Literacy and Data Security Training for Digital Era Village Cooperative Management went well and succeeded in achieving the goals set. This activity not only improves the technical skills of cooperative administrators, but also fosters awareness of its importance data security and digital management the professional. The results of the activity are expected to be the first steps in the transformation of cooperatives towards transparent, secure and sustainable digital governance.

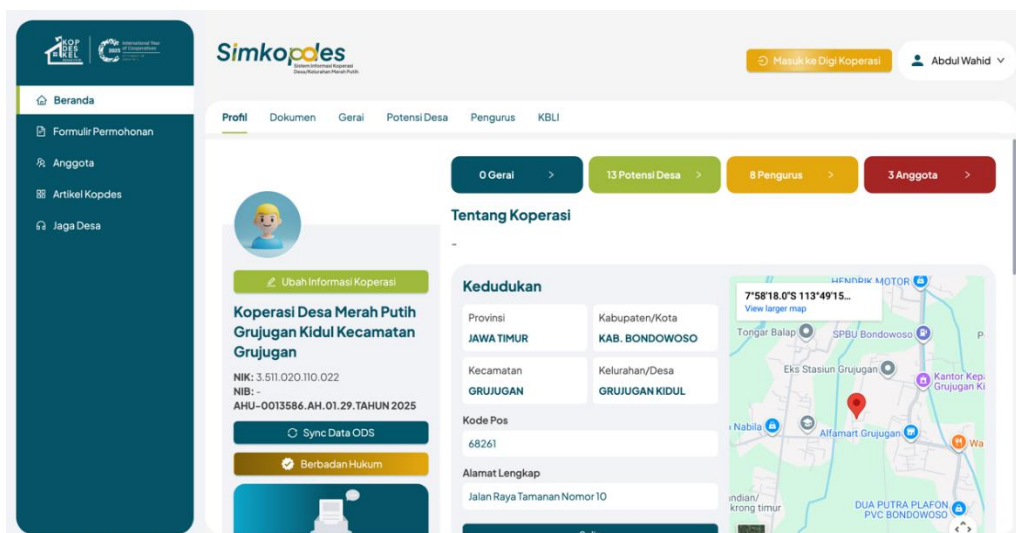


Figure 5. Profile of the Village Cooperative System
Source: Community Service Activity (2025)

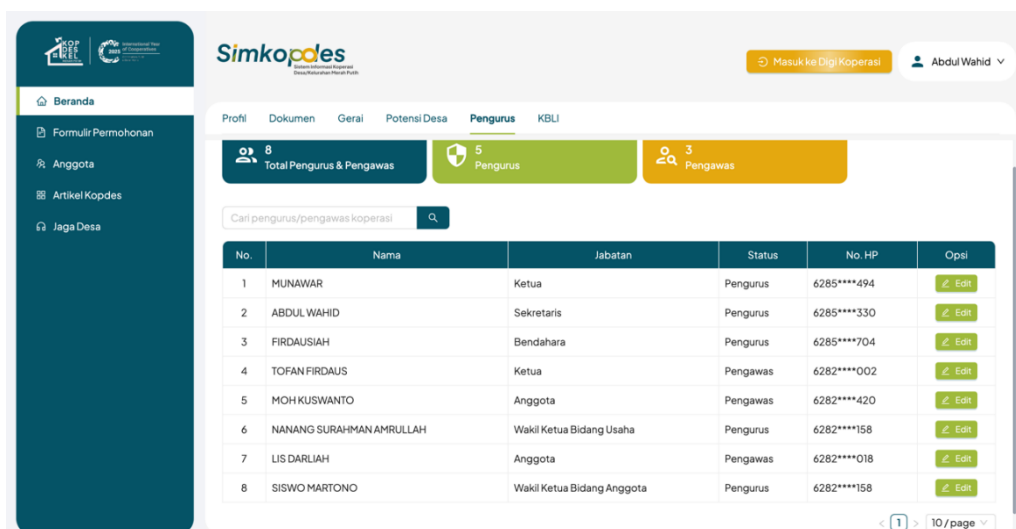


Figure 6. The profile of the Cooperative Management and Supervisor includes KTP data, Email, No. HP, Management Address, Self photo
Source: Community Service Activity (2025)

4. CONCLUSION

The Digital Literacy and Data Security Training for Digital Era Village Cooperative Management successfully enhanced the digital literacy and data security awareness of village cooperative administrators, while also promoting the adoption of cloud-based digital systems for more efficient, secure, and transparent cooperative data management. Furthermore, the program fostered cooperative independence in utilizing information technology to support operational activities and member services, and strengthened collaboration between universities, village governments, and local communities in driving grassroots digital transformation. With these achievements, the initiative not only contributed to the improvement of individual capacities but also facilitated institutional transformation of cooperatives toward adaptive and sustainable digital governance.

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