

DEVELOPMENT OF AN INTEGRATED FINANCIAL MANAGEMENT SYSTEM FOR RW 09 WASTE BANK – POJOK 3R JATISARI EDUCATION PARK TO IMPROVE FINANCIAL PERFORMANCE

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Abstract

Background: Accurate financial management is an essential factor in ensuring the sustainability of waste bank operations. The Waste Bank of RW 09 – Pojok 3R Jatisari Education Park still relies on manual recording methods, which potentially lead to data errors, reporting delays, and difficulties in monitoring customer balances and waste volumes in real-time. This community service program aimed to develop an integrated financial management system based on Microsoft Excel to enhance transparency, efficiency, and accountability in waste bank financial operations. The implementation method employed a participatory approach encompassing five stages: field observation and needs analysis through interviews with administrators; system design incorporating daily transaction inputs, automatic balance recaps, cash reports, and visual dashboards; internal development and testing through transaction simulations; training and implementation with direct mentoring for two weeks; and evaluation through satisfaction questionnaires, observations, and interviews. Five waste bank administrators participated in the program. The developed system successfully automated transaction recording, customer data management, financial report generation, and provided visual dashboards for monitoring savings growth and waste volume. Post-implementation evaluation revealed significant improvements: recording efficiency increased from 20 minutes to 5 minutes per transaction; recording errors decreased from 8-10% to less than 1% per month; and all administrators demonstrated ability to operate the system independently. Administrators reported enhanced administrative governance and increased community participation in recycling activities.

Keywords : Waste Bank; Financial Management; Microsoft Exce

INTRODUCTION

Waste banks are one of the innovations in community-based waste management that not only function to reduce the volume of waste but also provide economic value through a waste-based savings system (Al Zahra & Shohibuddin, 2025; Fatmawati et al., 2024; Juriani & Anugrahini, 2026; Najwati et al., 2025; Sabela et al., 2022; Tjenreng, 2025). The success of waste banks is greatly influenced by transparent, efficient, and accountable administrative and financial governance (Faiz et al., 2024; Fatmawati et al., 2024; Rashied et al., 2024). RW 09 Waste Bank – 3R Jatisari Corner Education Park is one of the waste management units in the Jatisari area that integrates the functions of education, processing, and community empowerment.

In addition to being a temporary shelter for sorted waste, this location also acts as a 3R (Reduce, Reuse, Recycle) learning center for local residents (Adenia et al., 2023; Andhika, 2024; Indow et al., 2025). Although active in encouraging citizens' awareness

to sort and save waste, the transaction recording system at this waste bank is still carried out manually, so it is prone to input errors, reporting delays, and difficulties in monitoring customer balances and accumulated waste volumes in real-time. These findings are in line with research by Amaral et al. (2023), which shows that many waste banks do not have clear bookkeeping, making it difficult to know financial conditions accurately. Other studies confirm that the development of applications with structured methods such as the Waterfall and object-oriented approaches can improve data accuracy and operational efficiency (Hidayat et al., 2024).

According to Kartini et al. (2023), it also highlighted that manual recording is a major obstacle, so digitization of records is considered effective to increase transparency and accountability. The urgency of addressing these gaps is underscored by several factors. First, waste banks play increasingly important roles in achieving national waste reduction targets and promoting circular economy principles. Second, member trust—fundamentally dependent on transparent financial management—represents a critical asset that, once eroded, is difficult to rebuild. Third, the potential for waste banks to scale operations and attract partnerships with government agencies, corporations, and non-governmental organizations depends on demonstrated administrative capacity and accountability.

Fourth, as waste banks accumulate larger transaction volumes and member bases, manual systems become increasingly inadequate, potentially creating crises as operations grow beyond manual management capacity. Based on these problems, it is necessary to develop a financial management system that is integrated, easy to use, and in accordance with the capacity of management resources. This community service activity focuses on the development of a Microsoft Excel-based system specifically designed to automate transaction recording, balance recapitulation, financial reporting, and data presentation in the form of a visual dashboard. With a participatory approach that directly involves managers, this program is expected not only to solve technical problems but also to increase the capacity of managers in financial management, strengthen accountability, and encourage the sustainability of the operations of the RW 09 Waste Bank – Taman Edukasi Pojok 3R Jatisari.

RESEARCH METHODS

This community service activity was carried out at the RW 09 Waste Bank – Taman Edukasi Pojok 3 Jatisari with a participatory approach, actively involving the management at every stage of implementation. The stages of the implementation method consist of five main stages, which are as follows:

1. Observation and Needs Analysis

At the beginning, observations were carried out through field surveys and interviews to identify problems with the financial recording system that are still manual, such as input errors, reporting delays, and difficulties in monitoring customer balances. The results of this analysis are the basis for designing the right system.

2. System Planning

It is focused on creating a Microsoft Excel format that includes daily transaction inputs, automatic balance recaps, cash reports, and visual dashboards. Data validation, cell protection, and auto-formula features are added to improve accuracy and efficiency.

3. Internal Development and Testing

This is done by prototyping an Excel system and testing it using transaction simulations to ensure calculation accuracy, data consistency, and ease of use. Any bugs or errors are fixed before being implemented to the partner.

4. Training and Implementation

The training and implementation stage includes providing direct training to waste bank administrators on how to use the system, making reports, and reading dashboards. The system is then used in real operations with intensive assistance for two weeks.

5. Evaluation and Improvement

The evaluation activity stage was carried out by collecting data through satisfaction questionnaires, observations, and interviews. The results of the evaluation are used to improve the system, adjust features according to user needs, and develop usage SOPs. The final version of the system is submitted to the management along with written guidance to support sustainable use.

RESULTS AND DISCUSSION

A total of 5 administrators of the RW 09 Waste Bank – Taman Edukasi Pojok 3R Jatisari participated in a series of training and assistance activities in the development of a financial management system based on Microsoft Excel well. Before the training, recording transactions at the waste bank was still done manually using a simple notebook and calculator. This condition is prone to input errors, reporting delays, and difficulties in monitoring customer balances and accumulated waste volumes in *real-time*.



Figure 1. Interviews Related to Problems Faced

The initial stage is carried out through field surveys and interviews to identify problems. The observation results show that financial recording still uses a notebook without a standard format, there are often input errors, monthly financial reporting is late,

and customer balances are difficult to monitor quickly. This condition is in line with the findings Lelyani et al (2022) which states that the weakness of manual recording systems in waste banks often hinders transparency and speed of reporting.



Figure 2. Designing a Microsoft Excel *Format*

Based on the results of the analysis, the service team designed a Microsoft Excel format with daily transaction input features, automatic balance recaps, cash reports, and visual dashboards. Data validation, cell protection, and auto-formula features were added to minimize errors. Based on research on digital-based waste bank management, the use of a structured administration system is able to improve the accuracy of recording and speed up the process of preparing financial statements, thereby minimizing the occurrence of input errors (Izzalqurny et al., 2024). Next, the system prototype is tested with simulated data to check the accuracy of the calculations and the consistency of the data. Several adjustments were made, such as the format of the report display and the customer balance search feature.



Figure 3. Financial Management Training

In the training session, the speaker explained the importance of transparent and accountable financial governance in waste bank management. The material provided includes the creation of daily transaction input formats (waste deposits, savings withdrawals, and sales of recycled products), automatic monthly and annual recapitulation, the creation of customer balance reports, and the preparation of financial performance dashboards that display graphs of income and balance developments.

The implementation of the system begins with the process of creating an integrated Excel template, equipped with automated formulas to calculate total income, expenses, and final balance. Administrators are also trained to make data backups to maintain the security of financial information. Research Utomo et al (2025) showing assistance and digitization of management systems to improve the knowledge and skills of human resources in recycling management and digital administration through web-based applications, so that waste bank operations become more effective.

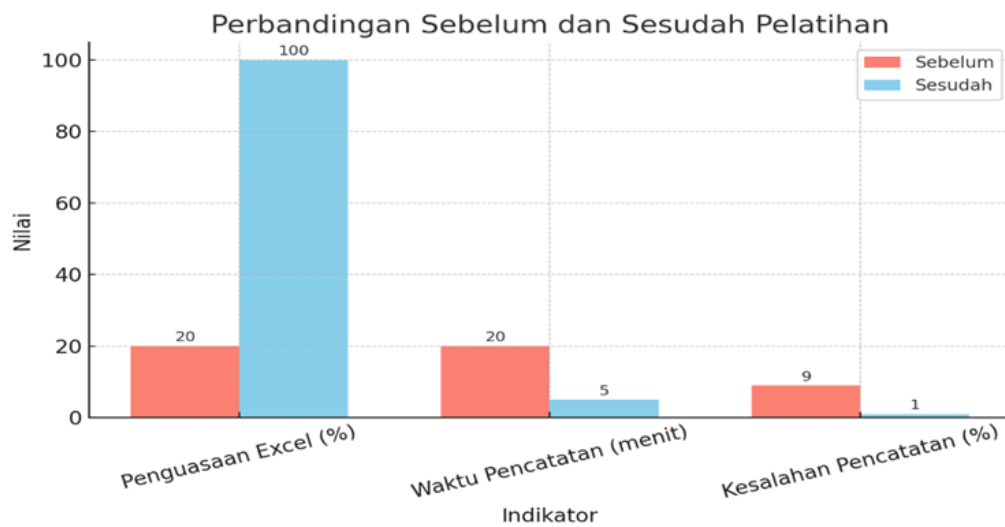


Figure 4. Pre-test and Post-test Result Diagram

The post-test results showed an increase in the knowledge and skills of the management in using the digital recording system. Before the training, 80% of the participants admitted that they had never used Microsoft Excel for financial records. After the training, all participants were able to operate the recording format, create automatic recaps, and print customer balance reports independently.

Recording efficiency has also increased significantly, from an average of 20 minutes per transaction to just 5 minutes per transaction. Recording errors that were previously around 8–10% per month decreased to less than 1%. In addition, the transparency of financial statements makes members more trustworthy, which has the potential to increase the number of customers and transaction volumes in the future. According to Wulandari et al (2023) emphasizing the importance of post-training evaluations to ensure partners understand the material and are able to implement financial records in daily operations.

Based on discussions and brief interviews after the training, the management admitted that it was very helpful with this system, because it can make it easier to report to members and partners, as well as minimize the risk of data loss or damage. Participants are also motivated to develop a cloud-based financial system so that it can be accessed online, so that the reporting and monitoring process can be carried out anytime and anywhere.

CONCLUSION

The development of a Microsoft Excel-based financial management system at the RW 09 Waste Bank – Taman Edukasi Pojok 3R Jatisari has succeeded in achieving the research goal, which is to improve the skills and efficiency of administrators in financial recording. The new system is designed with data validation features, automatic recaps, cash reports, and visual dashboards that reduce recording errors from 8–10% to less than 1% per month, as well as accelerate recording time from an average of 20 minutes to 5 minutes per transaction.

The transparency of financial statements has also increased, thereby strengthening member trust and supporting the potential to increase the number of customers and transaction volume. For further research, it is recommended that this financial management system be developed as cloud-based so that it can be accessed online by administrators and members. This development is expected to expand the scope of services, simplify the process of monitoring balances and transactions in real-time, and improve the sustainability of waste bank management in the digital era.

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