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Socialization of Mobile-Based Warehouse Inventory Management Application at PT Cahaya Cemerlang Lestari

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Abstract: *PT Cahaya Cemerlang Lestari, a Crude Palm Oil (CPO) processing company, faces challenges in efficient warehouse inventory management. Despite using an Integrated Work System (IWS), the technology is not yet capable of supporting dynamic, real-time stock management. Currently, there is a lag in updating incoming and outgoing goods data, resulting in frequent discrepancies between system and physical data. Furthermore, reliance on WhatsApp groups for reporting results in disorganized data, prone to human error, and not automatically integrated. This situation hinders management in making decisions regarding procurement and reduces the risk of overstocking and stockouts. This community service activity aims to optimize the inventory management system through the development and implementation of an integrated Real-Time Inventory Tracking module. The implementation method used includes system requirements analysis, validated database design, technical training for warehouse staff, and operational support. Through integrated reporting digitization, the company is expected to minimize recording errors, accelerate data recapitulation, and provide accurate stock information in real time. The results of this community service are projected to improve the company's operational efficiency and support more precise inventory control.*

Introduction

Inventory management plays an important role in maintaining operational continuity and supporting effective decision-making in industrial companies. An inadequate inventory management system can lead to recording errors, delays in stock monitoring, and discrepancies between recorded inventory data and actual warehouse conditions. These problems may affect procurement planning, inventory availability, and overall operational efficiency (1). Therefore, companies require an integrated inventory management system that enables accurate, structured, and timely recording of goods movements.

PT Cahaya Cemerlang Lestari is an industrial company engaged in crude palm oil (CPO) processing. Based on observations and interviews conducted with the company, warehouse inventory management previously relied on the Integrated Work System (IWS) as an operational data management tool. Integrated Work Systems provide a structured approach to

managing manufacturing operations, reducing operational losses, and maintaining organizational performance (2). However, the existing implementation of IWS has not fully accommodated the company's requirements for flexible and real-time inventory management. In particular, stock information is not automatically updated when incoming and outgoing goods transactions occur. Consequently, the recorded inventory data may differ from the actual quantity of goods available in the warehouse.

In addition to the limitations of IWS, the company still relies on WhatsApp groups to communicate and report warehouse inventory transactions between departments. Although this approach facilitates informal communication, it does not provide a structured mechanism for inventory data recording and validation. Information regarding incoming and outgoing goods is frequently submitted through text messages, creating the possibility of recording errors, delayed reporting, and difficulties in retrieving historical transaction information. Furthermore, data communicated through WhatsApp groups are not automatically integrated with the company's inventory records, requiring additional administrative work for data recapitulation. These conditions indicate the need for a more integrated and systematic inventory management solution.

Based on field observations and discussions with the company's personnel, three main problems were identified. First, the existing IWS system has limitations in accommodating dynamic inventory transactions because stock changes are not automatically updated when goods enter or leave the warehouse. Second, discrepancies between physical inventory quantities and recorded data may occur because of delayed updates, potentially affecting procurement planning and inventory availability. Third, reliance on WhatsApp groups for inventory reporting creates difficulties in data validation, documentation, and historical transaction tracking. These problems demonstrate that the existing inventory management procedures require technological improvement to support more accurate and accountable warehouse administration.

To address these challenges, the introduction of a mobile-based warehouse inventory management application through an integrated Real-Time Inventory Tracking module is proposed as a technological solution. The application is designed to support more structured recording of incoming and outgoing goods transactions, facilitate timely inventory updates, and provide more integrated inventory reporting. Through a validated database design, transaction information can be organized systematically, while the use of mobile devices allows warehouse personnel to access and submit inventory information more conveniently. The integration of transaction recording and reporting is expected to reduce dependence on informal communication channels, minimize manual recapitulation, and provide management with more reliable information for inventory monitoring and procurement decisions.

Previous studies have addressed the development of digital inventory and warehouse management systems through various technological approaches. Handayani et al. (2023) discussed the design of a web-based goods inventory information system using the Agile Software Development method, while Julfia et al. (2024) focused on developing a web-based warehouse management application using Laravel and MySQL. Fernanda et al. (2025) also addressed the development of an Android-based spare-part warehouse inventory information system. These studies demonstrate the relevance of information technology in supporting

inventory administration and warehouse management. However, the present community service activity emphasizes not only the introduction of a digital inventory management solution but also its socialization, technical training, and operational assistance for warehouse personnel at PT Cahaya Cemerlang Lestari. Thus, the contribution of this activity lies in connecting the implementation of mobile-based inventory technology with the practical needs and capacity development of employees in an industrial working environment.

Based on these considerations, this community service program aims to introduce and support the implementation of a mobile-based warehouse inventory management application at PT Cahaya Cemerlang Lestari through system requirements analysis, database design, technical socialization, employee training, and operational assistance. The program is expected to improve warehouse employees' understanding and ability to use digital inventory management tools, facilitate more systematic recording of incoming and outgoing goods, and support the availability of more accurate and timely stock information. Furthermore, the application is expected to assist company management in improving inventory monitoring, strengthening procurement planning, and reducing potential discrepancies between recorded and physical inventory data.

Research Methods

Work procedures

This community service activity is a follow-up to the research conducted, which involved outreach on how to use the warehouse inventory management application at PT Cahaya Cemerlang Lestari. Following the outreach, ongoing monitoring and evaluation of the program's success will be carried out.

Activity Plan

This Community Service activity is planned for 6 months with the following details:

Table 1. Activity Implementation Plan

No.	Type of activity	Schedule of activities
1	Partner Needs Analysis	July 2026
2	Activity Planning	July-August 2026
3	Socialization Activities	September 2026
4	Monitoring and Evaluation	October – November 2026
5.	Final Activity Report	November – December 2026
6.	Documentation	July – December 2026

Results and Discussion

Socialization Activities

The outreach program was conducted at the community service location, PT Cahaya Cemerlanh Lestari, involving lecturers, students, and data management staff at the company. The program included in-person outreach on how to use the warehouse inventory management application for warehouse officers, employees, and data administrators using smartphones, laptops, and computers.



Figure 1. Socialization Activities

Monitoring and Evaluation Activities

Following the socialization activities conducted in August, ongoing monitoring and evaluation of the application's success were carried out. This activity was conducted over two months, in September and October 2025, at PT Cahaya Cemerlang Lestari.



Figure 2. Monitoring and Evaluation Activities

Conclusion and Recommendation

The community service activities conducted have had a positive impact on partners, providing solutions to the problems of managing warehouse inventory data, which has been done manually and inefficiently. To ensure the sustainability of this program, we recommend partners learn more about how to process data in the applications they have created.

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