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Transaction Processing System for Incoming and Outgoing Goods at BUMDes Kamulyan Store, Tasikmalaya Regency

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***Abstract*— BUMDes Kamulyan Store is a village-owned enterprise that plays a vital role in meeting community needs while simultaneously supporting local economic development in Tasikmalaya Regency. To ensure that operational activities run effectively and efficiently, a reliable transaction processing system for managing incoming and outgoing goods is required. However, the current recording process is still conducted manually using transaction books, which often results in data inaccuracies, delays in report generation, difficulties in monitoring stock availability, and a higher risk of data loss. This study aims to design and develop a computerized transaction processing information system that facilitates inventory management and improves the efficiency of transaction activities at BUMDes Kamulyan Store. The research adopts a descriptive method combined with the Prototype system development approach. Several analytical and modeling tools are employed, including Flowmaps, Context Diagrams, Data Flow Diagrams (DFD), and Entity Relationship Diagrams (ERD). The system is implemented using Microsoft Visual Studio 2008 with the C# programming language and Microsoft Office Access as the database management tool. The results demonstrate that the proposed computerized system enhances the accuracy and speed of transaction recording, accelerates report generation, simplifies inventory monitoring, and reduces human errors. Furthermore, the system contributes to more organized data management, supports better operational control, and strengthens decision-making processes within the organization. The novelty of this research lies in applying the Prototype method to the context of village-owned enterprises, ensuring continuous user involvement and producing a system that is practical, user-friendly, and aligned with the operational needs of BUMDes Kamulyan Store.**

***Keywords*— Information System; Inventory Management; Stock Control; Village-Owned Enterprise (BUMDes);**

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I. INTRODUCTION

The rapid development of information and communication technology has significantly transformed accounting systems from manual processes into computerized systems. This transformation provides several advantages, such as faster data processing and reduced human error, although it may also reduce labor requirements. In business environments, especially trading companies, efficient management of transaction processing systems is essential to ensure optimal operational performance and accurate information generation [1].

In the current competitive business landscape, organizations are required to manage their operations more efficiently to achieve their objectives. For trading businesses, the control of incoming and outgoing goods transactions is crucial, as it directly affects inventory management and financial reporting. An effective information system can produce timely, accurate, and relevant information to support decision-making processes. Therefore, transaction processing systems play a fundamental role in supporting daily business activities [1].

BUMDes Kamulyan Store, established in 2017 in Tasikmalaya Regency, is a village-owned enterprise that contributes to local economic development. However, the current system used for recording incoming and outgoing goods transactions is still manual, relying on paper-based records. This condition often leads to various problems, such as discrepancies in stock data, inaccurate recording, delays in report generation, and the risk of data loss. Similar issues have also been identified in previous studies, where manual recording systems resulted in inefficiencies and data inaccuracies [2].

Several BUMDes and similar organizations that have implemented computerized transaction processing systems have demonstrated improvements in efficiency, accuracy, and data organization. Poorly managed recording systems, particularly in transaction and inventory processes, can lead to data input errors and negatively impact operational performance [3]. In addition, delays in recording, lack of

timely verification, and inefficient reporting processes further highlight the need for system improvement.

Based on these problems, this study aims to design and develop a computerized transaction processing system for managing incoming and outgoing goods at BUMDes Kamulyan Store. The proposed system is expected to improve efficiency, enhance data accuracy, and facilitate faster and more structured reporting. By implementing a system developed using Microsoft Visual Studio with C# and Microsoft Access, this research seeks to provide a practical solution to support better operational management and accountability.

II. Literature Review

A. System

A system can be defined as a set of interrelated components that work together to achieve a common goal. Each component within the system interacts and contributes to the overall functionality, forming an integrated structure that supports organizational processes. In the context of information systems, a well-designed system ensures efficient data processing and accurate information output to support decision-making [4].

B. Transaction Processing System

A Transaction Processing System (TPS) is one of the most fundamental types of information systems used to record and process routine business transactions. According to James A. O'Brien and George M. Marakas, TPS plays a crucial role in ensuring data accuracy, consistency, and reliability in daily operations. This system supports activities such as order processing, inventory management, and financial recording, which are essential for maintaining business continuity [1].

C. Incoming and Outgoing Goods

Incoming goods refer to the process of receiving items into an organization's inventory, which must be properly recorded to ensure data accuracy and availability. This process involves verification, documentation, and storage of goods in the system. Meanwhile, outgoing goods represent the process of distributing or selling items, which requires proper coordination and accurate recording to maintain inventory balance and operational efficiency [7], [11].

D. System Modeling Tools

System development requires several modeling tools to describe processes and data structures clearly. Flowmap is used to illustrate the flow of documents or information within a system. Data Flow Diagram (DFD) represents how data moves through the system, while Entity Relationship Diagram (ERD) is used to model the relationships between data entities in a database. These tools help developers understand system requirements and design effective information systems [4].

E. Database and Programming

A database is a structured collection of related data that can be easily accessed, managed, and updated. It plays an important role in storing transaction data efficiently and securely. Microsoft Access is commonly used as a relational database management system due to its simplicity and effectiveness in small to medium-scale applications [12].

Programming is the process of designing and developing software applications to meet user needs. In this study, the system is developed using C# programming language within Microsoft Visual Studio, which provides a robust environment for building desktop-based applications [16].

F. Prototype Method

The Prototype method is a software development approach that involves creating an initial version of the system to gather user feedback before final implementation. This iterative process allows developers to refine system features based on user requirements and expectations. As a result, the final system is more aligned with user needs and provides better usability and functionality [13].

III. Research Methodology

A. Research Approach

This study employs a descriptive research method to systematically describe the conditions and phenomena related to the processing of incoming and outgoing goods transactions at BUMDes Kamulyan Store. Descriptive research aims to provide an accurate and structured representation of real-world conditions based on observed data and facts [3].

B. System Development Method

The system in this study was developed using the Prototype method. The Prototype approach is a software development model that involves creating an initial version of the system to evaluate core functionalities before full-scale development. This method allows developers to gather feedback from users and refine the system iteratively to ensure that it meets user requirements and expectations [13].

The use of the Prototype method is considered appropriate in this study because it enables continuous interaction between developers and users, ensuring that the developed system is user-friendly, efficient, and aligned with the operational needs of BUMDes Kamulyan Store.

C. Prototype Development Stages

The development of the system follows several stages in the Prototype method, as described below:

1. Requirement Identification

The first stage involves identifying system requirements and specifications through interviews and discussions with stakeholders, including management staff, warehouse staff, and administrative personnel. This stage aims to understand existing problems and determine the required system features.

2. Prototype Development and Evaluation

An initial prototype is developed and tested by end users to obtain feedback. Users evaluate the system and provide input regarding features that need improvement or additional functionalities required.

3. System Refinement and Development

After the prototype is approved, the system is further developed into a final version. This stage includes system testing, code optimization, and preparation for implementation.

4. System Implementation

The finalized system is implemented at BUMDes Kamulyan Store. Users are trained to operate the system to ensure smooth adoption in daily operations.

5. Maintenance and Improvement

After implementation, continuous support and system maintenance are provided based on user feedback to improve system performance and usability.

D. Data Collection Techniques

Data collection in this study was conducted using the following techniques:

1. Literature Study

Literature study involves collecting data from books, journals, and other relevant sources to support the research. This method helps strengthen the theoretical foundation of the study [2].

2. Observation

Observation is conducted by directly examining the ongoing processes within the organization. This method allows researchers to understand real operational conditions and identify existing problems in the transaction processing system [9].

3. Interviews

Interviews are conducted through direct communication with relevant stakeholders to obtain detailed information about system requirements, current problems, and user expectations. This method helps in gaining deeper insights into the operational needs of the organization [10].

E. System Implementation Tools

The system was developed using Microsoft Visual Studio with the C# programming language, while Microsoft Access was used as the database management system. This combination provides a practical and efficient solution for developing a desktop-based transaction processing system that is easy to implement and operate.

IV. Results and Discussion

A. Introduction

This study examined the JKN Mobile application, developed by BPJS Kesehatan, due to its significant role in the digitalization of healthcare services and its broad user base. The questionnaire results revealed several complaints regarding the user interface, feature accessibility, and application response speed, indicating a noticeable gap between user expectations and actual experience.

B. Analysis of the Existing System

The existing system for processing incoming and outgoing goods transactions at BUMDes Kamulyan Store is still carried out manually using paper-based records. The current workflow is illustrated through the running flowmap, which shows that all transaction activities, including recording, verification, and reporting, are performed manually.

This condition leads to several operational problems, such as delays in transaction recording, data inaccuracies, and difficulties in retrieving information. In addition, the manual system increases the risk of data loss and inconsistencies in inventory records. These limitations indicate that the existing system is not efficient in supporting daily operational activities.

The current system is illustrated in Fig. 1.

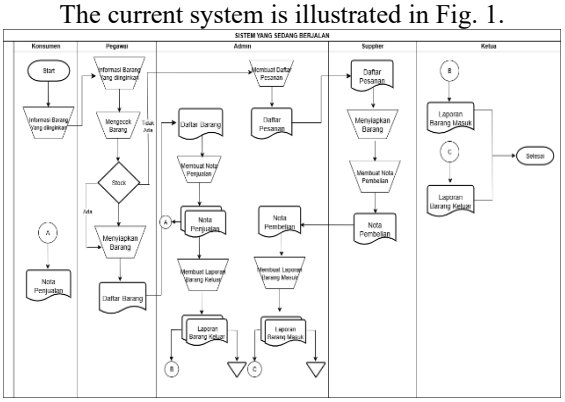

Fig. 1. Flowmap of the Existing System

C. Proposed System Design

To overcome the limitations of the existing system, a computerized transaction processing system is proposed. The proposed system is illustrated through several system design models, including the proposed flowmap, context diagram, Data Flow Diagram (DFD), and Entity Relationship Diagram (ERD).

The context diagram describes the overall interaction between the system and external entities, such as users and management. The DFD represents the flow of data within the system, including input, processing, and output processes. Meanwhile, the ERD defines the relationships between data entities such as items, suppliers, consumers, and transactions. These models ensure that the system is logically structured and capable of handling transaction data efficiently.

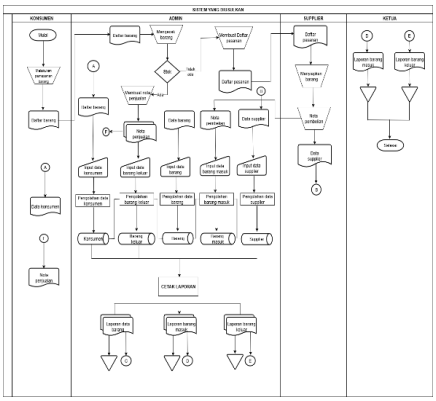

Fig. 2. Proposed System Flowmap

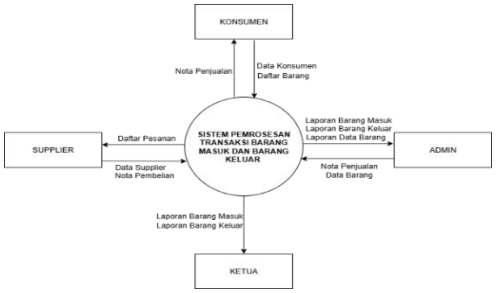

Fig. 3. Context Diagram

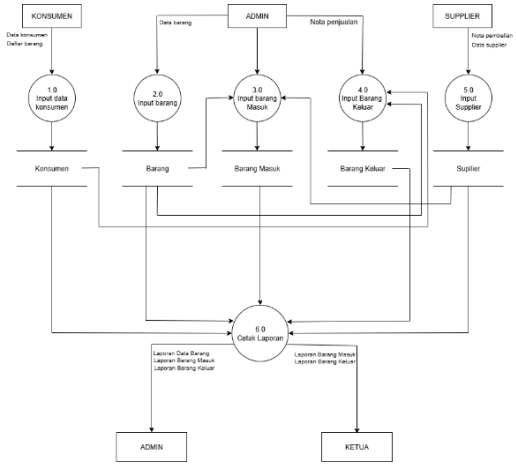

Fig. 4. Data Flow Diagram (DFD)

Fig. 2. Proposed System Flowmap

D. The system was implemented using Microsoft Visual Studio with the C# programming language and Microsoft Access as the database. The implementation includes several user interface designs to support system usability. The system provides the following main interfaces:

- Login interface for user authentication
- User input interface for managing system users
- Main menu interface for accessing system features
- Item management interface
- Consumer and supplier data management interface
- Incoming goods transaction interface
- Outgoing goods transaction interface
- Reporting interface for generating transaction reports

These interfaces are designed to be user-friendly and easy to operate, ensuring that users can efficiently manage transaction data without requiring advanced technical skills.

Fig. 6. Login Interface

Fig. 7. Main Menu Interface

Fig. 8. Item Input Interface

Fig. 10. Outgoing Goods Transaction Interface

Fig. 11. User Input Interface

Fig. 12. Item Data Interface

Fig. 13. Consumer Data Interface

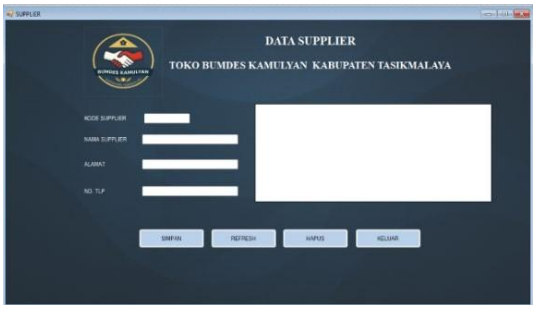

Fig. 14. Supplier Data Interface

Fig. 15. Item Data Report Interface

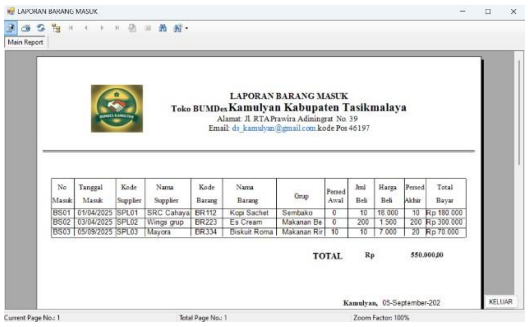

Fig. 16. Incoming Goods Report Interface

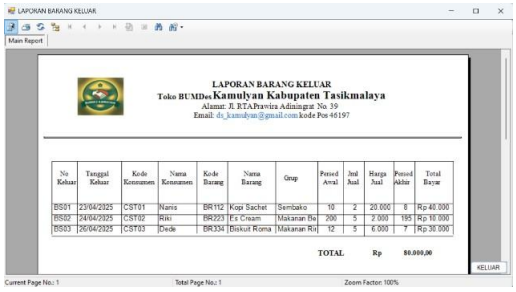

Fig. 17. Outgoing Goods Report Interface

V. Conclusion

Based on the results of the analysis and discussion, it can be concluded that the current transaction processing system for incoming and outgoing goods at BUMDes Kamulyan Store, Tasikmalaya Regency, is still conducted manually using paper-based records. This condition leads to inefficiencies in data processing, increased risk of errors, and difficulties in managing transaction data.

The proposed computerized system, developed using Microsoft Visual Studio with the C# programming language, has been proven to improve the effectiveness and efficiency of transaction processing activities, including sales, purchases, and inventory management. The implementation of the system enables faster data recording, reduces processing time, and minimizes human errors.

Furthermore, the system provides several advantages, such as improving work efficiency, simplifying bookkeeping processes, facilitating faster data retrieval, and ensuring that transaction data is stored in a more organized and structured manner. Therefore, the proposed system is considered effective in supporting operational activities and improving the quality of information management at BUMDes Kamulyan Store.

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