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Reimagining a Web Based Sales Information System Using the Waterfall Approach for Elvrim Store

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ABSTRACT

The development of information technology today has a significant impact on the business sector, particularly in managing sales transactions and inventory. Many retail businesses still face challenges due to manual recording methods, which may lead to errors, delays in reporting, and difficulties in monitoring stock availability directly. Elvrim Store is one of the retailers that still relies on manual recording, thus requiring an information system that can enhance its operational efficiency. This study aims to design and develop a web-based sales information system that improves the effectiveness of sales transactions, facilitates data management, and provides accurate, structured, and user-friendly stock information. The method used in this study is the Waterfall approach, which includes requirements analysis, system design, coding, testing, and maintenance. The system was built using PHP with a MySQL database and designed with a simple interface to enable easy operation by the admin without advanced technical skills. The main features developed include a dashboard, item and category management, sales, sales reports, and complete store settings. Blackbox testing results show that all features function according to user expectations. The system is capable of recording transactions in real time, generating sales reports, and facilitating stock monitoring. Therefore, the developed web-based sales information system is proven to improve efficiency, reduce manual recording errors, and support faster, more accurate, and well directed operational decision making at Elvrim Store.

Keywords: *Information System; Retail Store; Sales; Waterfall; Web*

INTRODUCTION

The development of information technology has brought a significant impact on the business sector, particularly in managing sales transactions and inventory. Many small to medium scale retail stores still rely on manual recording, which is prone to errors, delays in reporting, and difficulties in monitoring stock availability in real time. This condition not only hinders operational efficiency but may also reduce the quality of service provided to customers. Therefore, the urgency of research on designing a web-

based sales information system continues to increase, especially for retail businesses that seek to enhance competitiveness through efficient and accurate data management.

Previous studies have extensively discussed the implementation of sales information systems using various approaches. Attanggo et al. (2021) designed a clothing sales management system using the Waterfall method that produced features aligned with store needs. Kusumo et al. (2021) developed a web-based sales system for Smooth Tee that accelerated information access and supported promotional activities. Dewi et al. (2020) created an e commerce system for MD Shoes that improved transaction efficiency, accelerated sales processes, and provided automated reports. Meanwhile, Apriana and Nurhasanah (2021) emphasized the importance of data integration to enhance effectiveness, and Manis et al. (2021) demonstrated that a web-based sales system can support both administration and product promotion. From these studies, it is evident that web-based systems can improve efficiency, although there are still limitations in stock integration, data management convenience, and the accuracy of reports that match the specific needs of retail stores.

This study presents novelty by designing a Web Based Sales Information System for Elvrim Store using the Waterfall method. The system not only focuses on recording transactions but also provides real time stock management features, product category organization, comprehensive sales reports, and a simple interface that can be operated easily without advanced technical skills. Supported by the Waterfall method, the development process is carried out systematically from needs analysis to testing, resulting in a structured and accurate system that aligns with user requirements. This innovation is expected to address the weaknesses of manual recording, minimize the risk of human error, and improve the efficiency of operational decision making at Elvrim Store.

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LITERATURE REVIEW

Management Information System

A Management Information System plays a very important role in supporting operations and decision making within an organization or company. It does not only function to collect, process, store, and present information in a structured manner, but also assists in coordination, analysis, and operational control.

Website

According to Sintaro (2022), a website is an information system or application that is accessed and operated through the internet using a web browser. A website enables users to obtain various types of information and access digital services available online.

Waterfall

The Waterfall method is a simple and systematic system development model carried out sequentially. Each development stage begins with requirements analysis, followed by planning, design, implementation, and testing, and must be completed step by step before continuing to the next stage.

Retail Store

Retail refers to an activity involving the sale of goods or services to potential consumers with no minimum purchase requirement, commonly known as retail selling (Nur, 2023).

METHOD

This study uses the Waterfall method as the approach in developing the web-based sales information system for Elvrim Store. The Waterfall method is a systematic and structured software development model in which each stage must be completed sequentially before proceeding to the next phase.

The stages of the Waterfall method used in this study are as follows:

Requirements Analysis

The researcher analyzed the existing problems at Elvrim Store, especially errors caused by manual processes, difficulties in monitoring stock accurately, the lack of structured sales reports, and inefficient distribution of goods.

System Design

This stage aims to design the system structure, including the user interface design. In developing the web-based sales information system for Elvrim Store, the user interface (UI) was designed using Figma as the main design tool.

Coding

At this stage, the system was built using PHP as the primary programming language and a database to store and manage data.

Testing

The testing stage of the web-based sales information system at Elvrim Store was conducted using the Blackbox Testing method.

Maintenance

System maintenance was carried out by the developer to ensure that the web-based sales information system continues to function properly after implementation.

RESULTS AND DISCUSSION

Requirements Analysis Stage

This system is expected to include features for accurate stock monitoring and the ability to generate structured sales reports.

System Design Stage

In the design stage of building this system, the researcher used UML modeling.

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Use Case Diagram

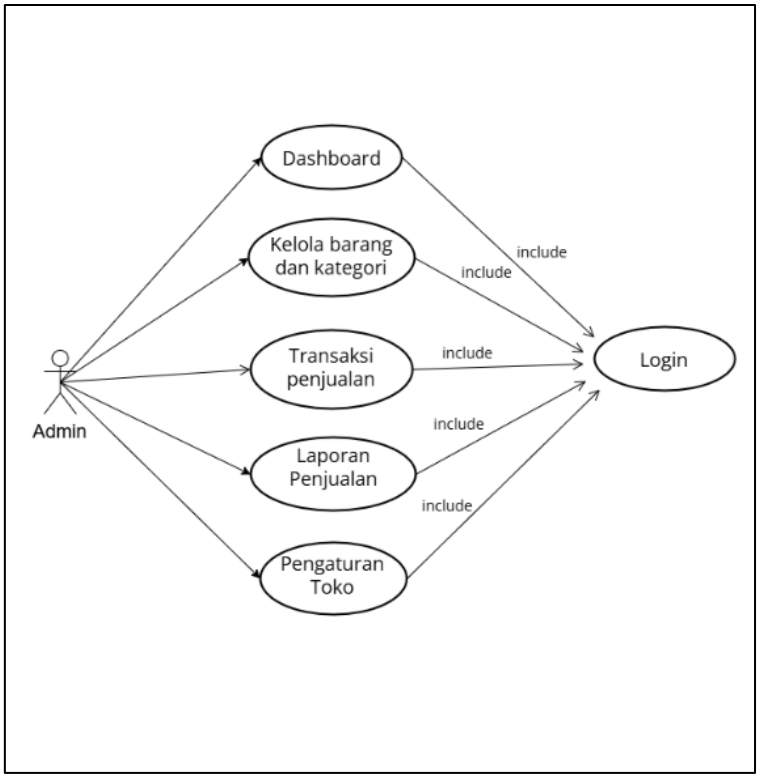

Figure 1. Use Case Diagram

DFD

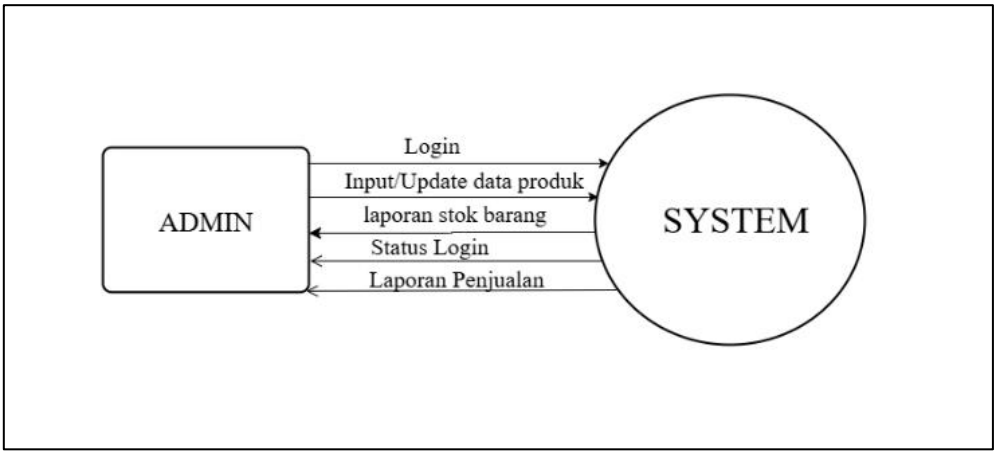

Figure 2. DFD Level 0

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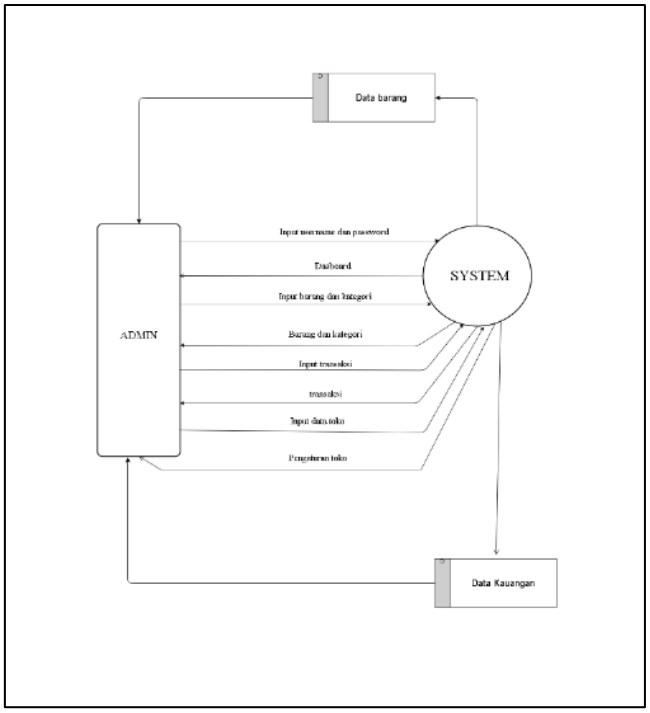

Figure 3. DFD Level 1

ERD

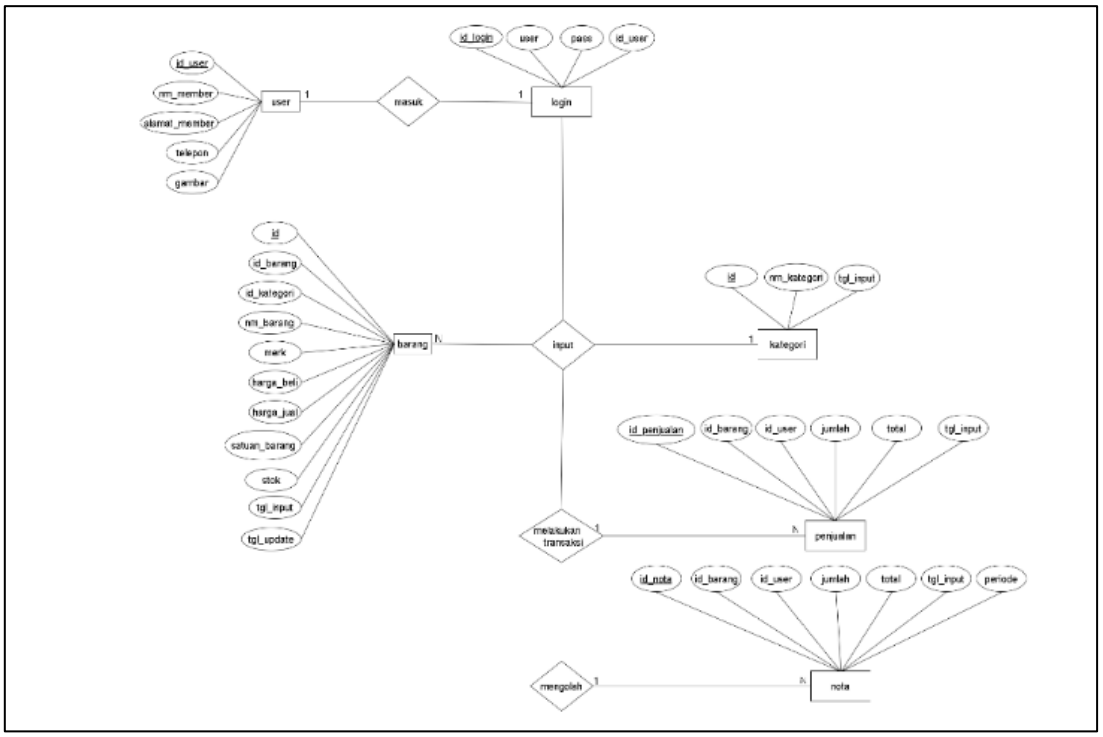

Figure 4. Entity Relationship Diagram

Implementation Stage

Dashboard Page

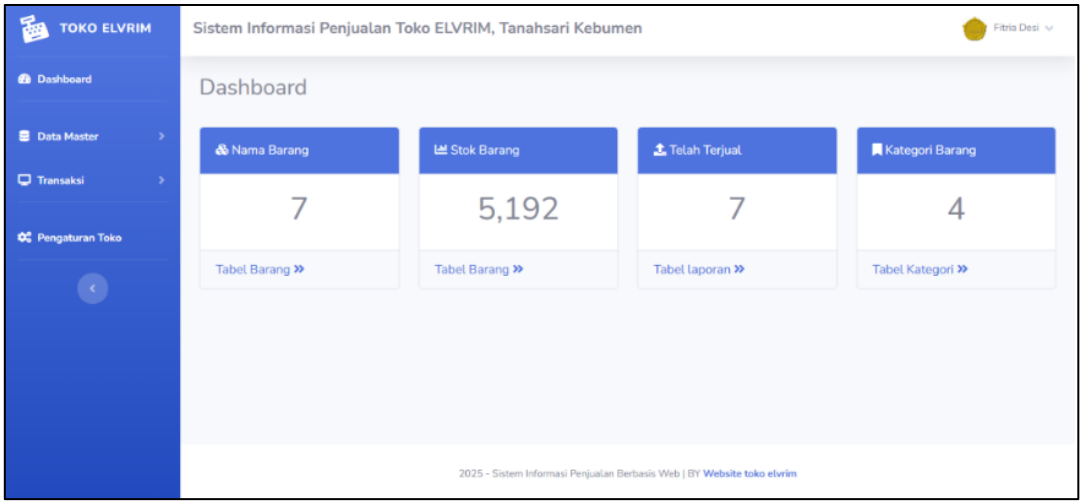

Figure 5. Dashboard Page

Items Page

Figure 6. Items Page

Category Page

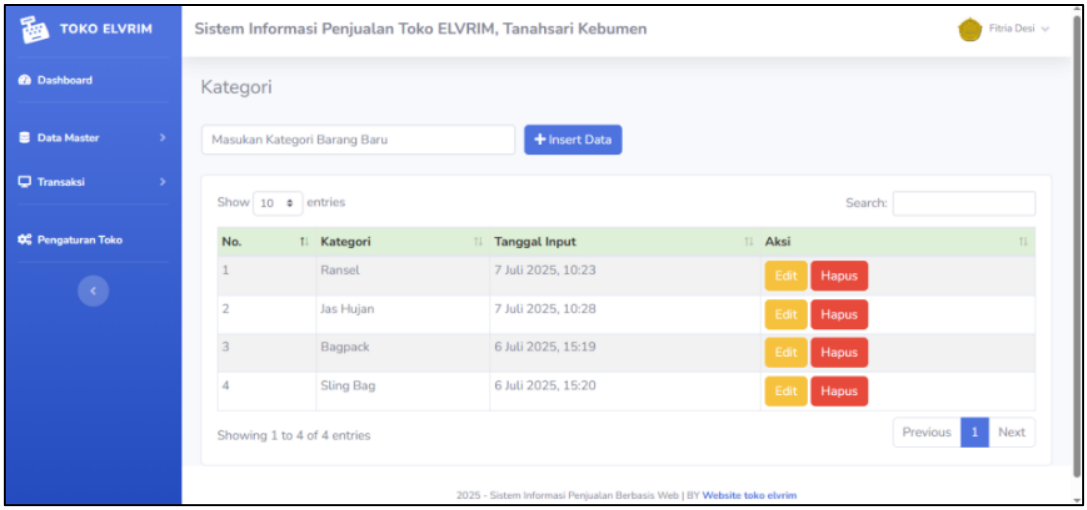

Figure 7. Category Page

Sales Page

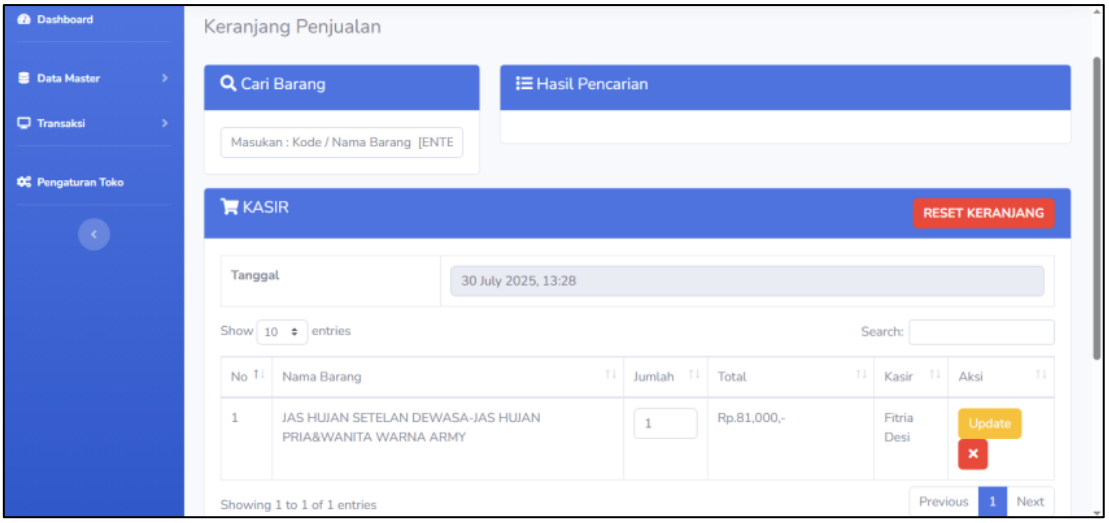

Figure 8. Sales Page

Sales Report Page

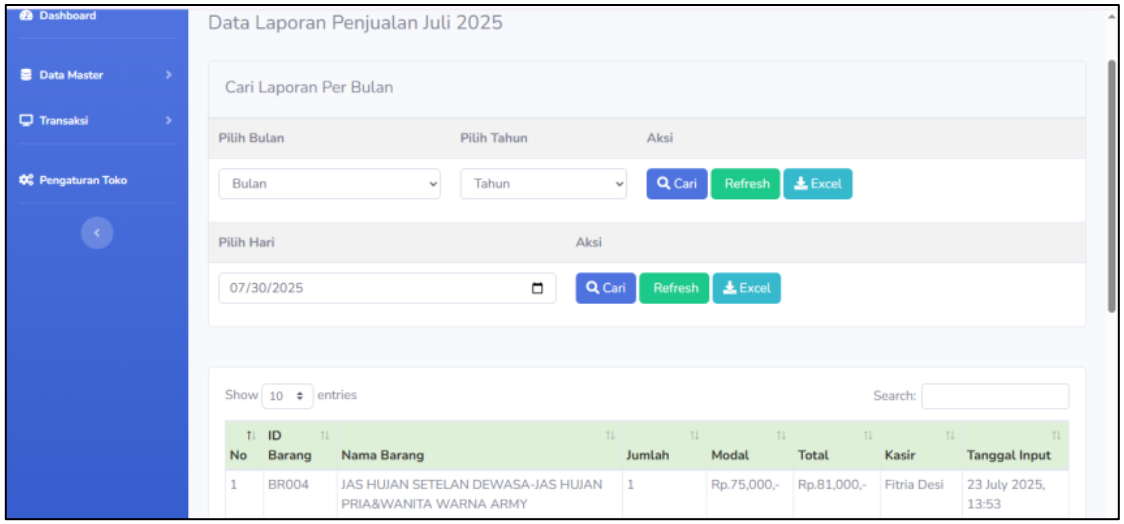

Figure 9. Sales Report Page

Store Settings Page

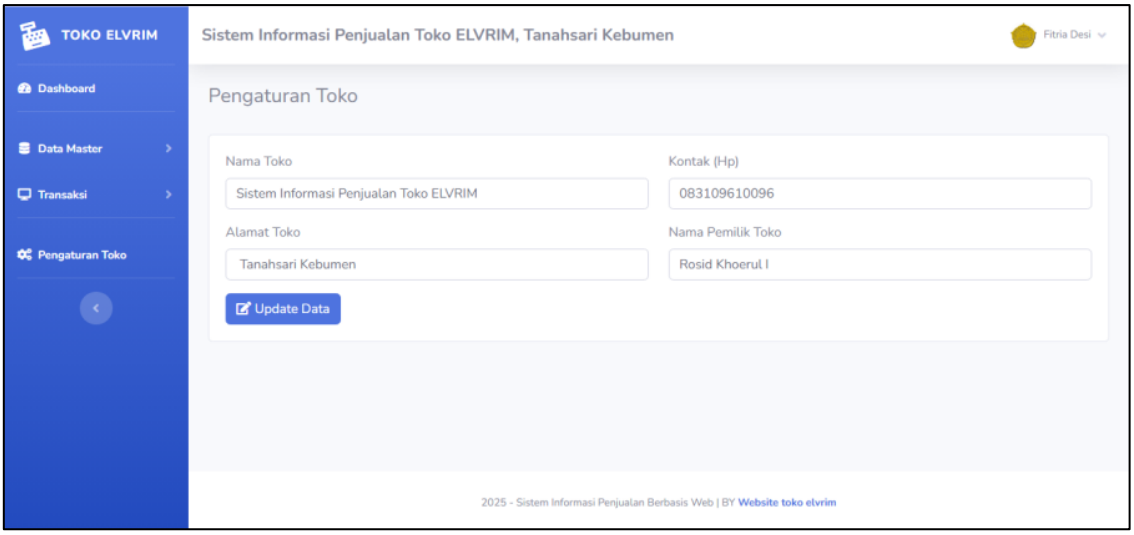

Figure 10. Store Settings Page

Testing Stage

Based on the results of testing using the Blackbox Testing method, all main features of the sales information system at Elvrim Store have operated as expected. The success of the testing indicates that the system is capable of reducing errors in manual recording, speeding up the reporting process, and providing convenience for the

admin in managing items, categories, transactions, and sales reports, aligned with the objectives and operational needs of Elvrim Store.

Maintenance Stage

Through this stage, the system is expected to function properly after being implemented and to continue supporting the operational needs of Elvrim Store.

CONCLUSION

Based on the research and development carried out under the title "Design of a Web Based Sales Information System Using the Waterfall Method at Elvrim Store," the design of the sales information system at Elvrim Store was successfully completed using the Waterfall method. The testing phase was also achieved because the system is able to record each sales transaction, store data in an integrated database, and minimize the risk of errors.

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