NEWTON: Networking and Information Technology
Vol. 5 No. 3 February 2026, Page. 114 - 120
E-ISSN: 2797-0728

Dela Web-Based Laundry Information System Using the Codeigniter Framework

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ABSTRACT
Dela Laundry, a laundry business in Banggle Hamlet, Losari Village, Ploso Subdistrict, is still experiencing operational problems due to the use of manual record-keeping. This has the potential to cause data errors, delays in information, and reduce customer satisfaction. Therefore, a web-based information system is needed to speed up the service process, minimize the risk of errors, and provide transparency of the laundry process to customers. As a solution, this study designs and develops a Laundry Information System using the CodeIgniter 4 framework with PHP programming language and MySQL database. The development method used is the Waterfall model, which includes the stages of requirement analysis, system design, implementation, testing, and maintenance. This system aims to facilitate administrators and staff in managing customer data, orders, services, and reports, as well as allowing customers to monitor the status of their laundry orders online without needing to log in. Testing results using the Black Box Testing method showed that all system functions operated properly without any significant errors being detected. In addition, a feasibility test conducted through a questionnaire to users obtained an average score of 88%, which falls into the "Good" category and is suitable for use. Thus, this system is capable of making operational processes more structured, efficient, and transparent, as well as increasing customer satisfaction and supporting the development of small to medium-scale laundry businesses.

***Keywords**: Information System; Laundry; CodeIgniter 4; Web.*

INTRODUCTION
In today's technological era, advances in information technology have made everyday life easier, allowing various tasks to be performed more easily and in a well-organized manner. Information technology has become an effective and efficient business strategy for increasing competitiveness (Anggraeni & Elan Maulani, 2023). The development of digital technology is driving the transformation of traditional businesses into integrated information systems (Galib et al., 2024).

Laundry is a business that provides clothing washing services using washing machines. In this modern era, the laundry business has grown rapidly, especially in urban areas and areas with high mobility, such as boarding houses and rented rooms for students and busy workers (Wijana et al., 2023). Dela Laundry, a home-based business in Banggle Hamlet, Losari Village, Ploso Subdistrict, has many customers despite being located in a rural area. The service package includes dry cleaning, ironing, and express ironing. However, the manual record-keeping system that is still in use causes difficulties in service delivery.

The main issues faced include a lack of transparency in service information provided to customers, insufficient documentation of laundry deliveries, which can lead to lost or damaged items, and inaccuracies in the billing process (Santoso & Dermawan, 2025). Damage to goods due to improper washing processes and careless handling also reduces customer trust and has the potential to cause losses. (Buntu Laulita et al., 2022).

According to Rachmawati et al. (2024), the implementation of web-based information systems in service businesses can improve operational efficiency, service transparency, and customer satisfaction. In addition, web-based systems enable real-time order monitoring, which facilitates communication between service providers and customers.

Previous research by Miftahul Rohmah et al. (2024) shows that the development of a web-based

laundry information system improves service effectiveness and reduces operational errors. However, the study has not yet integrated features for monitoring order status without logging in and detailed recording of goods delivery. In addition, research by Wijana et al. (2023) argues that the implementation of an integrated information system in laundry businesses can speed up the transaction recording process and reduce data entry errors, but does not yet focus on real-time transparency of information to customers. Another study from Santoso & Dermawan (2025) highlights the importance of recording deliveries and damage claims in laundry businesses to minimize losses, but the system developed does not yet provide online order monitoring features without logging in.

This study aims to fill this gap by developing a web-based laundry information system using the CodeIgniter 4 framework, which allows customers to monitor the status of their orders online without logging in, as well as providing integrated modules for recording deliveries and damage claims. This study supports previous findings but expands the system's functions to provide greater transparency and security for customers and business managers.

The objective of this research is to design and develop a web-based laundry information system that can accelerate service, minimize operational errors, enhance customer satisfaction, and support the management of small to medium-sized laundry businesses in a more structured and efficient manner.

METHOD

In this study, a web-based laundry information system was developed using the CodeIgniter 4 framework by applying the Waterfall method as a stage in the Software Development Life Cycle (SDLC). This development model applies a systematic approach with a sequential workflow. It is called Waterfall because each stage must wait for the completion of the previous stage before proceeding to the next stage. The process is linear, starting from the initial planning stage to the final system maintenance stage. (Yusuf et al., 2025).

The Waterfall method in system development has a structured and sequential approach, where each stage must be completed before moving on to the next stage. In this method, there are five main stages that will be passed through in the development process, namely: requirements analysis, system design, implementation, testing, and maintenance. A more detailed explanation of each of these stages will be described as follows.

- Analysis

  At this stage, a system requirements analysis was conducted by comparing the old manual system with the proposed new web-based system. The old system still uses manual recording, making it prone to data errors and time-consuming processes. Customers submit their clothes in person, and orders are recorded physically without real-time monitoring of the process. The proposed system is designed to simplify order management and monitoring of laundry status through a web application. The automated system generates digital invoices, labels clothes, and allows customers to monitor order status online until payment is made. Functional requirements include user access rights such as Super Admin, Admin, Staff, and Customer, each with data management and order status checking functions. Non-functional requirements include user-friendliness, information accuracy, and system security through user authentication.
- Design

  The design stage is the process of designing the structure and components of the system based on the results of the requirements analysis. During this phase, a blueprint or detailed outline of how the system will be built is created, including user interface (UI) design, database design, and system workflow. This design serves as a technical guide for the implementation phase to ensure that development proceeds in accordance with the established requirements. With a well-designed system, it is expected to operate efficiently, be user-friendly, and meet the intended objectives.
- Implementation

  The implementation stage is the process of turning the system design into a functioning program. At this stage, code is written using the selected programming language and framework, such as CodeIgniter 4, to build features according to the design. In addition, initial testing is usually carried out in stages to ensure that each module is working properly before the system is ready for full use. The implementation stage is an important phase because it determines the success of the system development in accordance with user needs.

- Testing

  The testing phase is the process of testing the built system to ensure that all features function as expected and are free of errors (bugs). During this phase, various types of testing are conducted, such as functional testing, integration testing, and user acceptance testing (UAT). The results of these tests form the basis for system improvements and refinements before full implementation. With thorough testing, the system is expected to operate stably and meet user needs.
- Maintenance

  The maintenance phase is the process of caring for and updating the system after it has been officially put into use. During this phase, repairs are made if errors are found, adjustments are made to meet new needs, and system performance is improved to ensure it continues to run optimally. Maintenance aims to ensure that the system remains relevant, secure, and able to meet user needs over time.

RESULT AND DISCUSSION

This section presents the results obtained from the development and testing of a web-based laundry information system using the CodeIgniter 4 framework. The results presented include feature implementation, interface display, and system performance in meeting user needs. Furthermore, these results will be analyzed and discussed to evaluate the strengths, weaknesses, and effectiveness of the system in supporting laundry operations. This discussion will also compare the test results with the initial development objectives to provide a comprehensive overview of the project's success.

System Design

System design is a stage in information system development that describes how the system will perform the functions necessary to solve the problem. The proposed system is modeled using an object-based approach, with components that include Use Case Diagrams and Activity Diagrams.

- Use Case Diagram

  A use case is a description of a system's functions from the user's perspective. Use cases explain what the system and its components will do. A use case diagram is a diagram that illustrates the interactions between actors and use cases. This diagram is used in the system analysis and design process (Arianti et al., 2022).

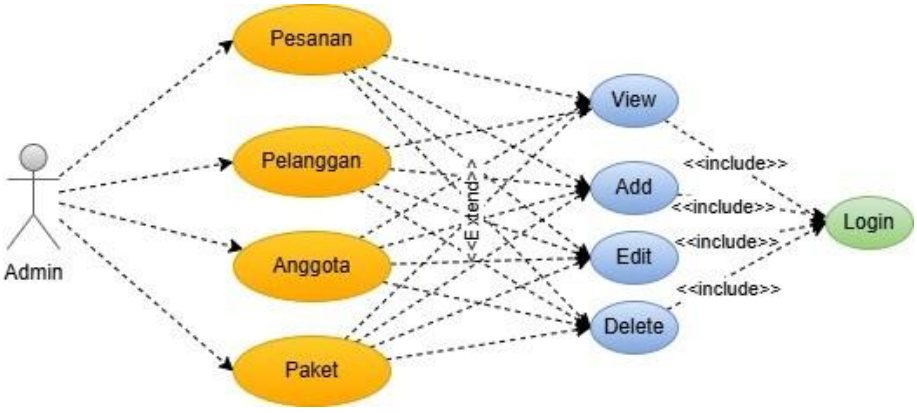

Figure 1. Use Case Diagram

In this system, the admin has the right to manage the data center on this system. The data center in question means that the admin has access rights to the entire system, such as logging in, managing customer data, managing order data, managing employee data, and so on, related to the system.

- Activity Diagram

  An activity diagram is a visual representation that shows the workflow or activities of a system, business process, or menu in software. This diagram focuses on the activities performed by the system, not the actions performed by the actor (Musthofa & Adiguna, 2022).

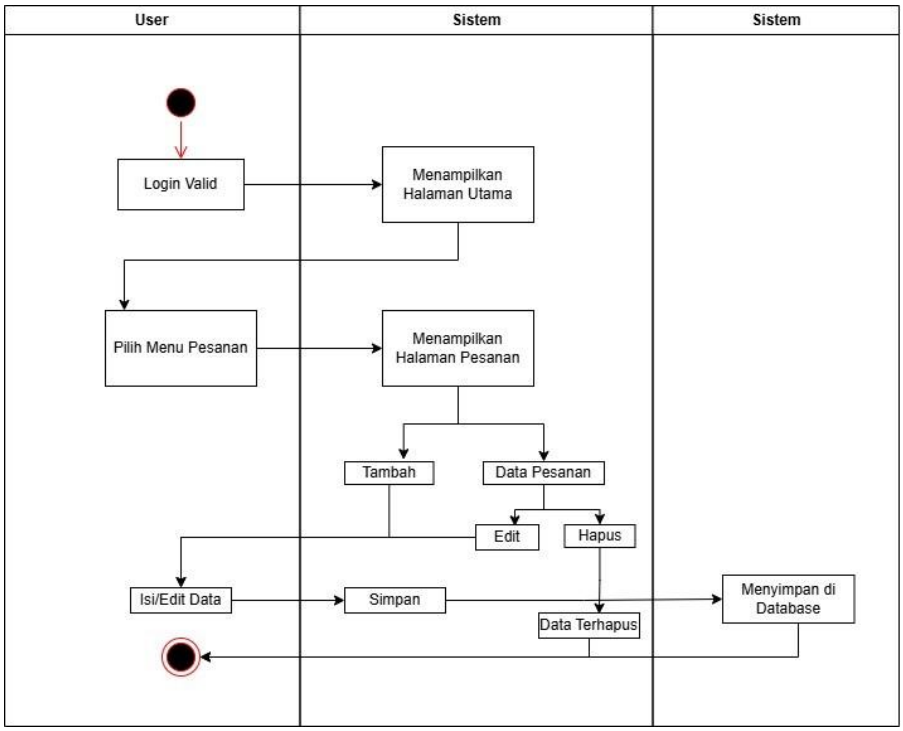

Figure 2. Activity Diagram

The order data processing process begins after the user successfully logs into the system. The user then accesses the order menu to perform various activities, such as adding new orders, editing existing order data, or deleting canceled or unsuitable orders. The system is designed to make this process easy and efficient, facilitating accurate and real-time order data management.

Result

During the implementation phase, the system design that has been created is translated into a functional application. This process involves coding using the CodeIgniter 4 framework, database configuration, and integration of various features according to user requirements. The implementation aims to create a web-based laundry information system that runs smoothly and meets the previously designed specifications. This stage also involves initial testing to ensure that each module runs as expected before the system is fully operational.

- Implementation of Login Page

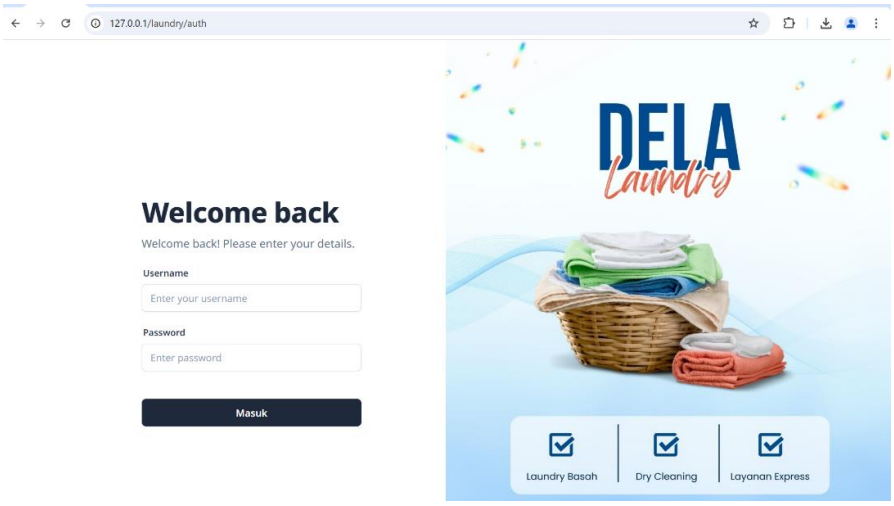

Figure 3. Login Page Display

The login page is the page that users see before entering the main page. Login serves to provide data security for the system.

- Implementation of Dashboard Pahe

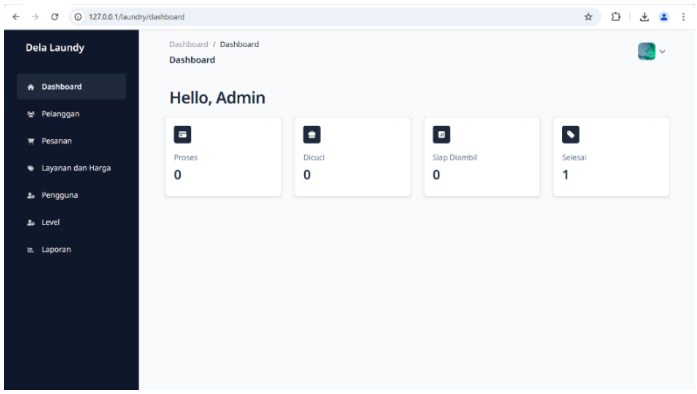

Figure 4. Dashboard Page Display

The dashboard page is the main page of the system. This page provides information about the laundry processes currently in progress.

- Customer Page Implementation

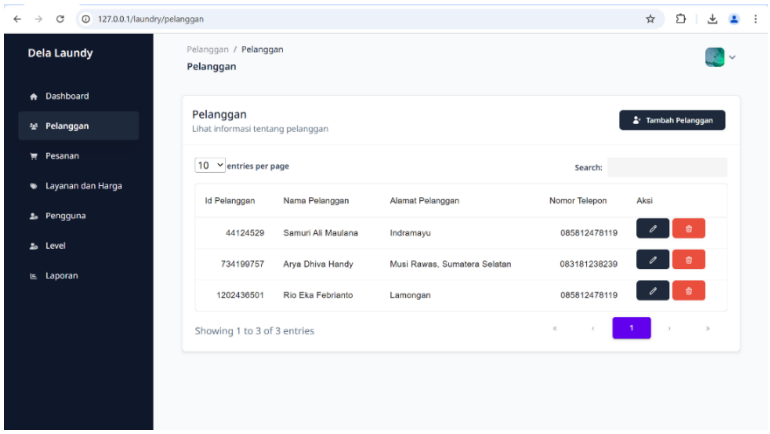

Figure 5. Customer Page Display

The display on this customer page is a page that shows customer data. This page will be managed by administrators and officers to fill in customer data, starting from names, addresses, telephone numbers, and other data.

- Order Implementation

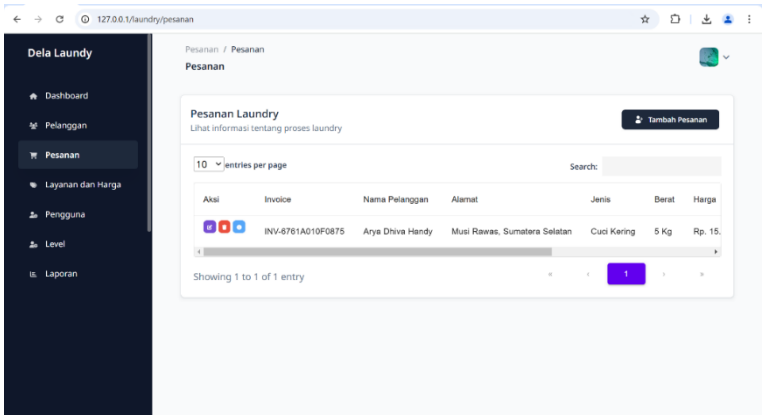

Figure 6. Order Page Display

This page displays all order data and is designed to manage order data such as adding, updating order status, editing orders, and deleting orders that are canceled or unclear.

- Implementation of View Orders

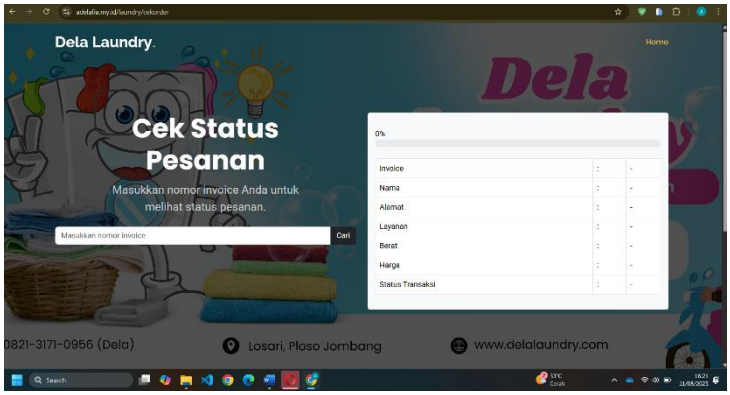

Figure 8. View Order Page

This order page displays the orders we searched for using the invoice given by the laundry cashier to the customer. After searching, the details of our laundry order will appear.

- Implementastion of Online Payment

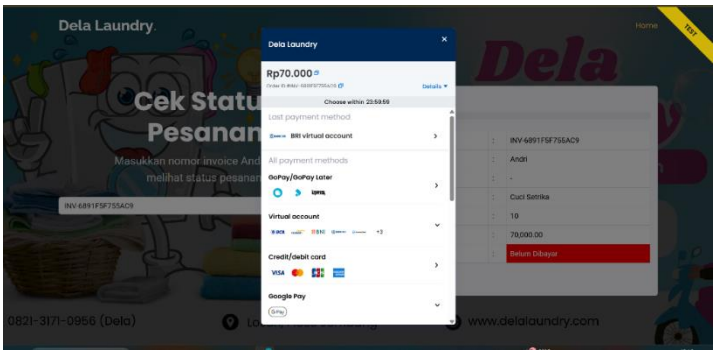

Figure 9. Payment Page

The payment page displays payment details for users. On this page, users can pay for laundry online by searching for laundry data with an invoice. The data will then appear automatically and users can proceed with payment immediately.

Discussion

This study uses the black box testing method. This method aims to verify software functions by providing specific inputs and observing whether the outputs produced are as expected or not. (Mad Cani & Ali Ridha, 2023). Details of the test results can be seen in the following table.

Table 2. Testing Black Box

Test Scenarion	Test Result Prediction	Test Result Realization
Empty Data	Display error popup	Success
Data Input	Display popup indicating successful addition	Success
Data Edit	Display popup indicating successful edit	Success
Payment	Display notification indicating successful payment	Success

CONCLUSIONS

In general, the author concludes that a web-based laundry information system has significant capabilities in simplifying the laundry data management process, including transaction recording, customer management, and laundry status tracking. With this system, customers can easily monitor the laundry process of their clothes in real-time, thereby increasing transparency and convenience in the service. Based on the research "Web-Based Laundry Information System Using the CodeIgniter 4 Framework," several key conclusions can be drawn. First, the implementation of this system demonstrates transparency in the laundry process in line with advancements in information technology.

Second, the system makes it easier for customers to check the status of laundry orders that have been submitted to the store. Third, the system assists laundry owners in managing customer data, transactions, and reports in a more structured and efficient manner. Fourth, the use of the CodeIgniter 4 framework makes system development more organized, flexible, and easy to expand in the future. Finally, the system supports better communication between customers and the laundry through online access to order status information. Thus, the use of a web-based laundry information system using the CodeIgniter 4 framework not only provides added value in terms of tracking laundry status but also strengthens transparency and ease of access for all parties involved.

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