Website-Based Management Information System at Bungah Bareng Mandiri Banyumas Cooperative Using Agile Method

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Abstract

The development of information technology encourages cooperatives to manage operational activities in an integrated manner to improve the effectiveness and accuracy of data management. The Bungah Bareng Mandiri Banyumas Cooperative still faces obstacles in managing cash and credit transactions, recording customer data, installment payments, and preparing reports because the system used is not yet fully integrated. This study aims to design and implement a website-based cooperative management information system that is able to integrate all operational data into a centralized platform. The research method used is applied research with a qualitative-descriptive approach, while system development is carried out using the Agile method to accommodate user needs iteratively. The implementation results confirm that the improved system is able to increase the regularity and accuracy of data processing, facilitate monitoring of installment due dates, and support the preparation of operational reports more quickly and structured. Thus, the implementation of this information system contributes to increasing the effectiveness, efficiency, and transparency of the operational management of the Bungah Bareng Mandiri Banyumas Cooperative.

Keywords: Management Information System, Cooperative Information System, Web-Based System, Agile Method

1. Introduction

The rapid advancement of information technology has prompted various organizations, including cooperatives, to utilize information systems to support operational activities and business management. Cooperatives as business entities based on the principle of family are required to manage their activities professionally and accountably. One of the main activities of cooperatives is cash and credit sales to customers, which requires accurate, transparent, and integrated data management to maintain business continuity and customer trust. Bungah Bareng Mandiri Cooperative is a cooperative that was established in 2015 with a total of 1,522 customers. Until now, the management of cash sales, credit applications and installment recording still uses a simple application that is not yet integrated. As a result, frequent errors occur in recording customer data and transaction data, delays in accounts receivable information and difficulties in monitoring installment payment schedules, thus hampering the accurate and efficient financial reporting process [1]. Problems in managing data and transactions using simple, non-integrated applications result in low operational efficiency and reduce the effectiveness of decision-making by cooperative management. The use of websites as a management medium facilitates the association to reach a wide client base. Utilization of this technique is anticipated to reduce operational burdens and increase the efficiency of cooperative business processes [2]. Through the provision of supplies and usage archives, the potential for errors and resistance to the current mechanism can be minimized. The design of this information system construction is anticipated to serve as a model that can be implemented in other similar cooperatives [3].

2. Research Methods

In the context of this research, the Agile approach is used as a framework for developing a website-based cooperative management information system, integrating the iterative processes of needs analysis, design, development, testing, and evaluation. Thus, this research is expected to produce an information system that is not only technically functional but also meets user needs and the cooperative's operational conditions. The following is a diagram of the research stages:

2.1. Teknik Pengumpulan Data

The data collection techniques used were as follows:

1. Direct observation of the process of recording member data, applying for credit, and paying installments at the existing Bungah Bareng Mandiri Cooperative.
2. Interviews with two individuals, a manager and staff member, regarding system requirements.
3. Literature review by reviewing and studying several relevant scientific papers.

2.2. Agile Methods

In the context of web-based information systems, Agile methods are particularly relevant because user needs tend to be dynamic and can change over time. Agile methods offer a key advantage in terms of responsiveness to changing needs, as each development iteration always involves direct user feedback. [27].
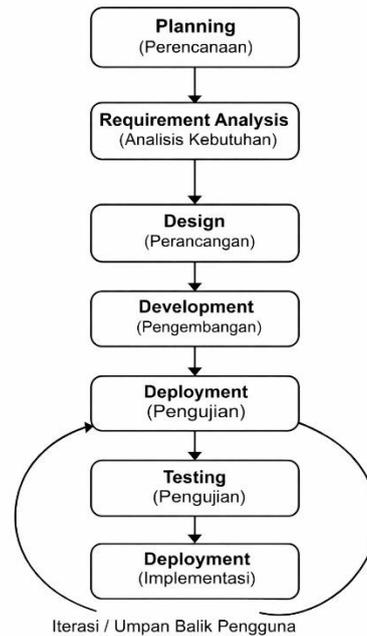

Fig 2: Agile Method

1. Planning
   System development planning includes determining the system scope, compiling a backlog, scheduling development, and prioritizing features to be developed in each iteration (sprint).
2. Requirements Analysis
   Conducting an analysis of the existing business processes, the problems encountered, and user needs for the information mechanism to be developed.
3. Design
   The design step is carried out to design the system architecture, process flow, and user interface design. The system design is carried out simply and adaptively to facilitate adjustments if requirements change in the next stage.
4. Development
   This stage involves coding and implementing the system based on the design results. Development is carried out in stages over several iterations, with each iteration producing a part of the system that can be tested and evaluated.
5. Testing
   Testing is conducted on each development result to ensure that the system operates according to requirements and is free from operational errors. Testing involves users to obtain direct feedback.
6. Evaluation and Improvement
   The final stage is testing and handing over the system to users for actual use. User feedback is collected for further improvements, and the system is maintained and updated regularly to ensure it meets evolving needs.
7. Deployment
   The final stage is implementing the developed and tested system into the user environment. The implemented system is expected to help improve the effectiveness and efficiency of work processes in accordance with the research objectives.

3. Results and Discussion

3.1 Needs Analysis

The requirements analysis step is the initial step in the Agile method, where developers identify system requirements together with users. At this stage, system requirements are not rigidly defined, but rather compiled into a prioritized list (product backlog) that can change based on conditions and user input. This approach allows developers to focus more on the key needs that have the highest value to users.

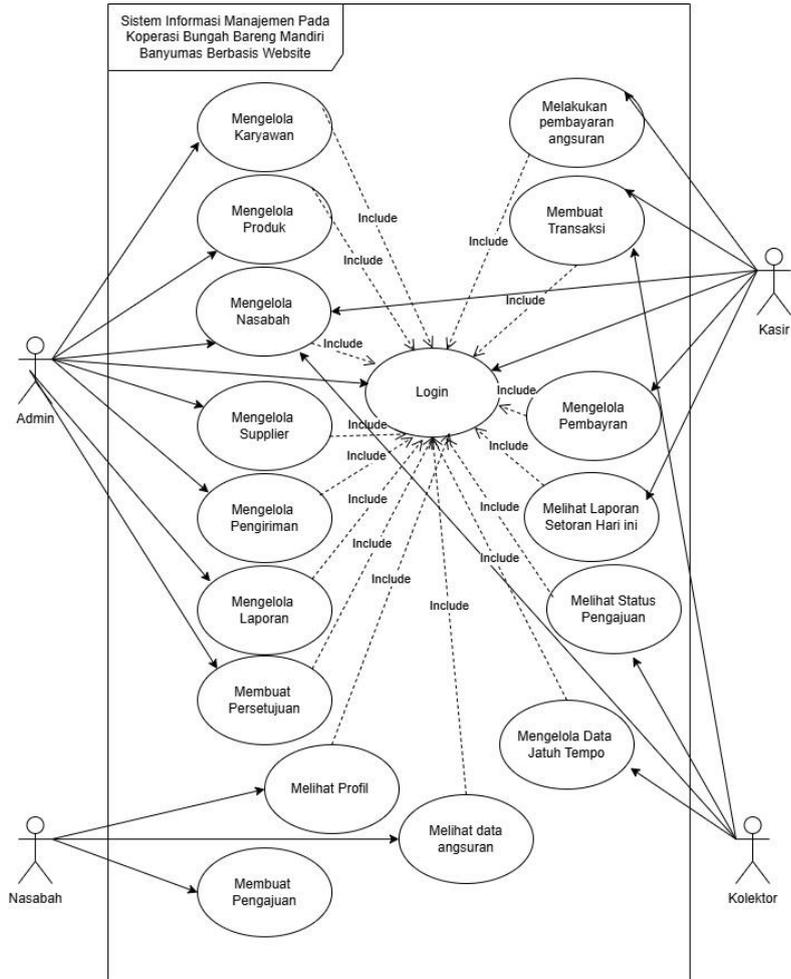### 3.2 Design Analysis

1. Use Case Diagram

Fig 3 Use Case Diagram
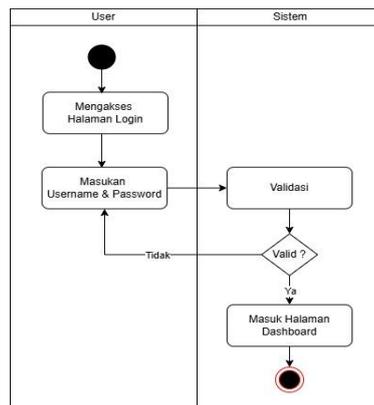
2. Login Activity Diagram

Fig 4 Login Activity Diagram
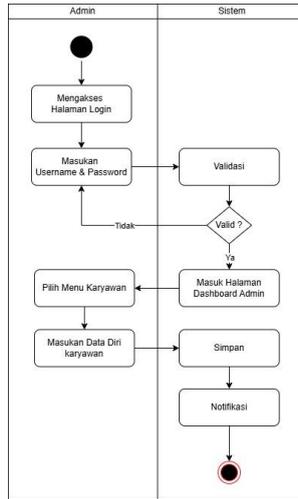
3. Employee Input Activity Diagram

Fig 5 Employee Input Activity Diagram
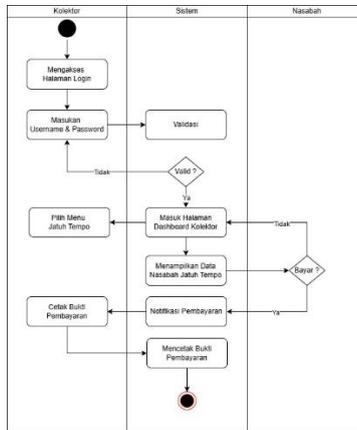
3   Activity Diagram Payment Due

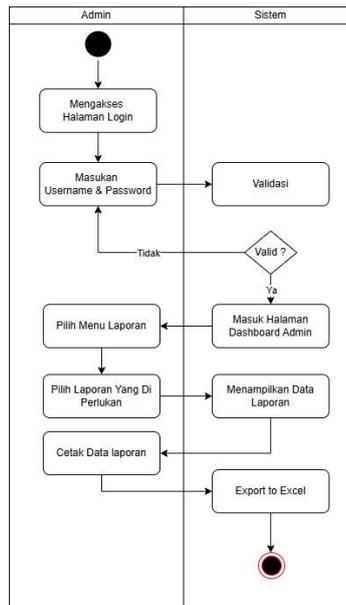Fig 6 Activity Diagram of Due Payment

4   Activity Diagram Report

Fig 7. Activity Diagram Report
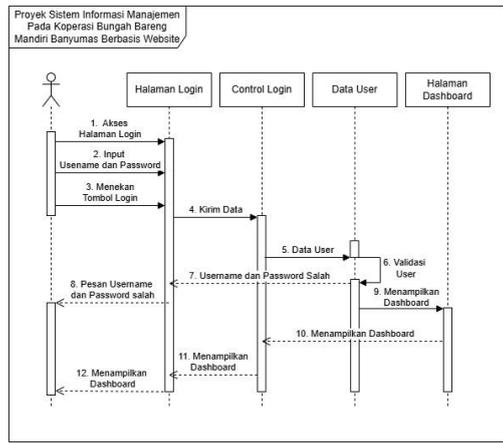
5.   Login Sequence

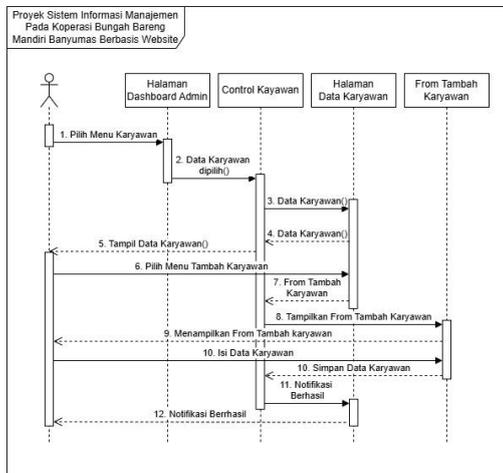Fig 8 Login Sequence

6.   Sequence Add Employees

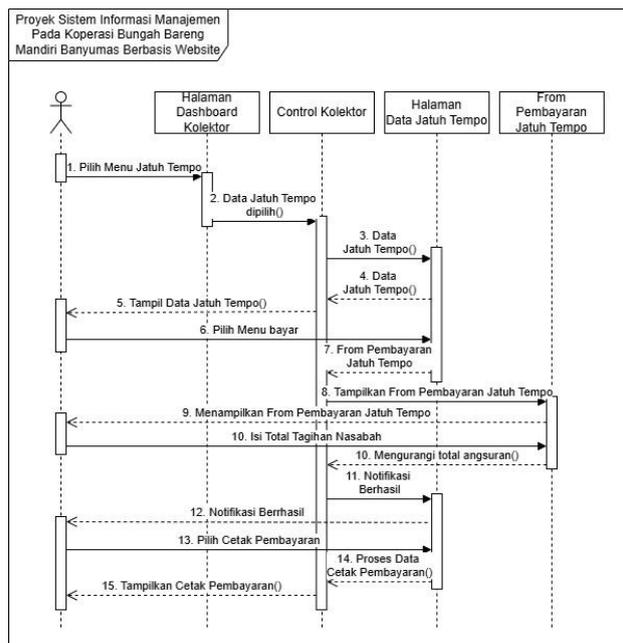Fig 9 Sequence for Adding Employees

7.   Maturity Sequence
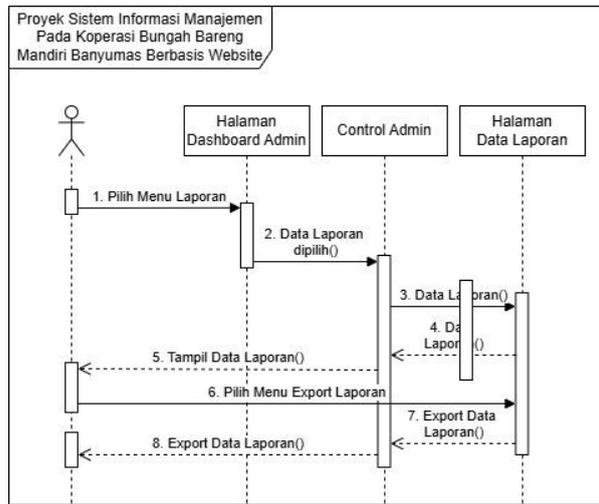

Fig 10 Maturity Sequence

8.   Report Sequence

Fig 11. Report Sequence
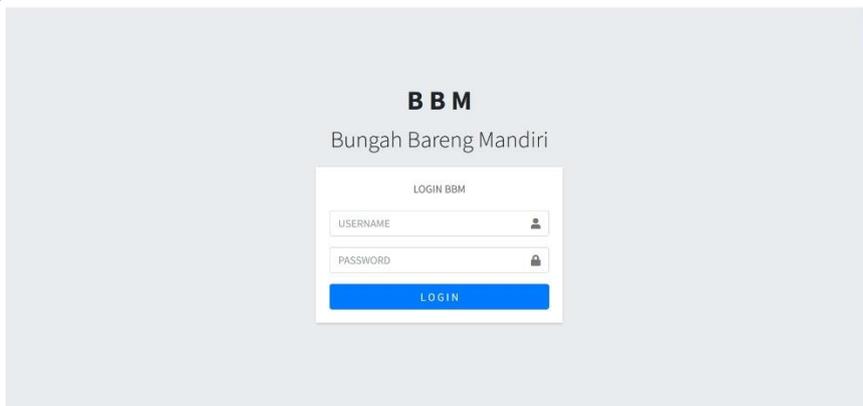
3.3. Implementation

1. Login Page

Fig 12: Login Page

The user login page is the initial screen used by users to access the system. On this page, users are prompted to enter the username and password registered in the system. The login process ensures system security and limits user access according to their authorized permissions.
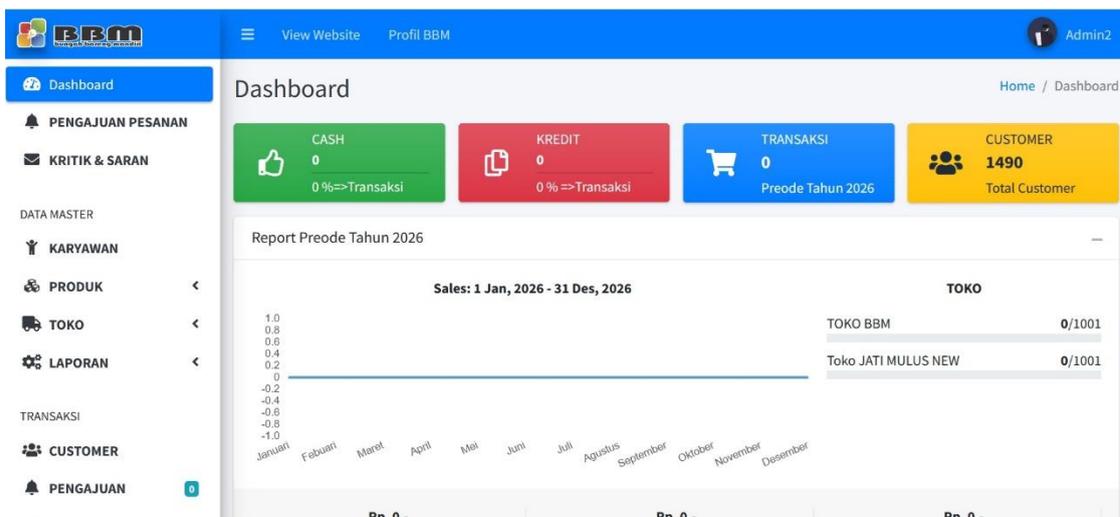
2. Dashboard Page

Fig 13: Dashboard Page

The admin dashboard page is the main display after successfully logging into the system. It displays general information about the cooperative and a navigation menu for accessing system features. This page is designed as a navigation center so admins can easily navigate to other pages as needed.

3. Payment Due Page Display

Fig 14: Payment Due Page View

On this page, collectors can view the customers they manage, including those whose payments are due. There's also a navigation menu that makes it easy for collectors to access other pages, such as managed customer data, application confirmation status, and customer surveys. Overall, this interface is designed to support a structured, fast, and accurate credit transaction recording process to improve the efficiency of cooperative financial data management.
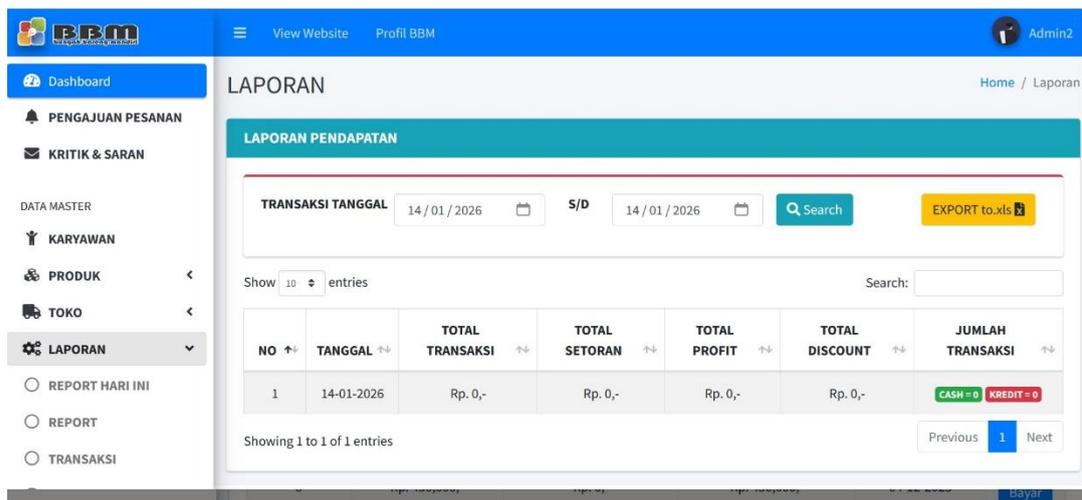
4. Income Report Page

Fig 15: Income Report Page

The system also offers report printing and data export features to Excel, supporting fast and efficient financial reporting and documentation. Overall, this report layout is designed to aid managerial decision-making by providing accurate and easy-to-understand financial information.

3.4. Test Results

To verify that the Bungah Bareng Mandiri cooperative website had been successfully created, testing was carried out using black box testing. Black box testing is a technique that tests the functionality of a system based on specifications, without analyzing the design or program code..

1. Black Box Testing

Tab. 1: Black Box Testing

No	Skenario Pengujian	Data Uji	Hasil yang Diharapkan	Status
1	Login with valid data	Username and password are correct	Sistem menampilkan dashboard	Valid
2	Login with wrong password	Username is correct, password is incorrect	The system displays an error message	Valid
3	Adding customer data	Complete data	Data saved successfully	Valid
4	Adding data without mandatory fields	Blank name	The system displays a warning	Valid
5	Input credit transactions	Complete transaction data	Saved transactions	Valid

6	Invalid transaction input	Nominal empty	The system refused to save	Valid
7	Displaying reports	Date range	Reports appear according to filters	Valid
8	Export report	Click export Excel	File downloaded successfully	Valid
9	Admin access all menus	Admin login	All menus are displayed	Valid
10	Limited access cashier	Cashier login	Menu according to access rights	Valid
11	Unauthorized menu access	Non-admin users	Access denied	Valid

4. Conclusion

This research successfully developed and implemented a website-based Management Information System at the Bungah Bareng Mandiri Banyumas Cooperative. The developed system is able to integrate the management of customer data, product data, cash and credit sales transactions, installment payments, and report preparation into a centralized media that can be accessed in real time. The implementation of this system provides solutions to data management problems that were previously not integrated, including difficulties in monitoring installment due dates and delays in report preparation. The results of the system implementation show an increase in the order and accuracy of data management, and support the efficiency of the cooperative's operational processes. In addition, the availability of structured and easily accessible information helps cooperative administrators in monitoring operational activities and making more accurate decisions. Thus, the developed website-based management information system is able to play a supporting role in improving the quality of operational management at the Bungah Bareng Mandiri Banyumas Cooperative.

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