

Management Information System For Garuda Cooperatives, Sragen

Fahrizal Surya Panuntun
Informatics Department
Islamic State University of Sunan Kalijaga
Yogyakarta, Indonesia

Ahmad Subhan Yazid
Informatics Department
Islamic State University of Sunan Kalijaga
Yogyakarta, Indonesia
yazid.anfalah@gmail.com

M. Mustakim
Informatics Department
Islamic State University of Sunan Kalijaga
Yogyakarta, Indonesia
197903312005011004@uin-suka.ac.id

Abstract-- The need for information in life has transformed into basic needs. As an impact, this will cause problems when not handled properly. The Garuda Cooperative is one of the Employee Cooperatives in Sragen with complex managerial data but its management is still manual. To support its business process, a management information system is needed to handle data quickly and accurately. This study aims to develop a management information system for Garuda Cooperatives. The flow of research used is analysis, design, implementation, testing, and conclusion. System modeling uses the Unified Modeling Language (UML) in the form of a use case diagram and statechart diagram. The programming language used is Delphi with PostgreSQL as database management. The information system produced includes processing savings and loan business units, processing membership data and reports. The results of the system testing on 8 respondents showed that the system was running well to meet needs, had an attractive appearance, and was easy to use.

Keywords-Management Information Systems; Garuda Cooperatives; UML; Delphi; PostgreSQL.

I. INTRODUCTION

Information in human life has become a basic necessity. Information needs become a problem when these needs cannot be handled properly. The need for an information system regarding managerial data is also very important.

Cooperatives are business entities consisting of people or legal entities by basing their activities on cooperative principles as a people's economic movement that runs on the principle of kinship [1]. Garuda Cooperative is the Republic of Indonesia Employee Cooperative (KPRI) which consists of elementary school teachers from Ngrampal sub-district of Sragen Regency. The number of KPRI Garuda members at the end of 2012 was 231 people, while the amount of money managed each year reached Rp. 3,263,890,431.00 with shop and savings and loan business units.

Archiving and storing documents at the cooperative is currently still manual. Data or documents are typed into a computer with the Microsoft Excel application and some data is only recorded in a particular book while the original documents are stored in a closet. Therefore there is a need for a management information system that can be used to facilitate managerial data processing.

This study aims to build a management information system. An information system is a component consisting of human, information technology, and work procedures that process, store, analyze, and disseminate information to achieve a goal [2]. Objectives, in this case, can be pursued through managerial processes which include: collecting (or getting back), processing, and distributing information to support decisions and controls within an organization [3].

II. METHODS

The data in this study were collected through literature studies from previous studies in the form of papers, scientific journals, books and also the internet. This study studies theory related to research, including the concept of management information systems and their development media. In addition, data is also obtained through interviews with Garuda cooperative managers to obtain data or information relating to the object of research. The flow of this research is carried out in several stages, including analysis, design, implementation, testing, and conclusion.

III. ANALYSIS

Analysis of system requirements is an initial stage and is the basis of a series of processes in the development of a system. This stage aims to evaluate the problems faced and identify the needs of the system to be developed.

A. System Analysis

Based on the results of data collection by conducting interviews and literature studies on the object of research, it can be seen several procedures that have been running at KPRI, including:

- 1) New member registrations
- 2) Deposit payments by members to the Management.

- 3) Submission of loans for money or goods
- 4) Payment of loan installments by members
- 5) The process of recording transactions that occur at KPRI
- 6) Recapitulation of monthly transactions by the management.
- 7) Record data of supervisors and administrators and their tenure.

B. Problem Analysis

The problems obtained from the results of observations on the object of research are:

- 1) The recording is done manually. Data is written in books as original documents.
- 2) The process of calculating the number of deposits, loans, and installments is done manually with a calculator by the treasurer.
- 3) Allows miscalculation performed by the treasurer in conducting transaction recap.
- 4) Original data recorded in certain books without the backup of digital data causes data to be more vulnerable to damage and difficult to recover.

C. Functional Needs Analysis

Based on the results of the problem analysis described earlier, the solution offered is the creation of a management information system. As for functional requirements (related to processes in the system, data needed by the system, and system capabilities in interacting with users) the system to be built includes the following:

- 1) The system can receive and read KPRI profile data inputted by the head of KPRI.
- 2) The system can receive and read KPRI membership data entered by the chairman or secretary of KPRI. The system is also able to print KPRI membership reports.
- 3) The system can receive and read data on KPRI supervisors and administrators who are inputted by the chairman or secretary.
- 4) The system can receive and read member deposit data entered by the chairman or treasurer.
- 5) The system can receive and read loan data and installments of members inputted by the chairman or treasurer. The system is also capable of printing monthly receipts and installment reports.
- 6) The system can receive and read transaction data entered by the chairman or treasurer. The system is also capable of printing transaction reports, transaction recaps, and a list of accounts at KPRI.

IV. DESIGN

The next stage is the system design stage. The system design phase includes the process design and system interface.

A. Process Design

Process design will discuss about the design of processes that occur in the system, which is represented by Use Case Diagrams

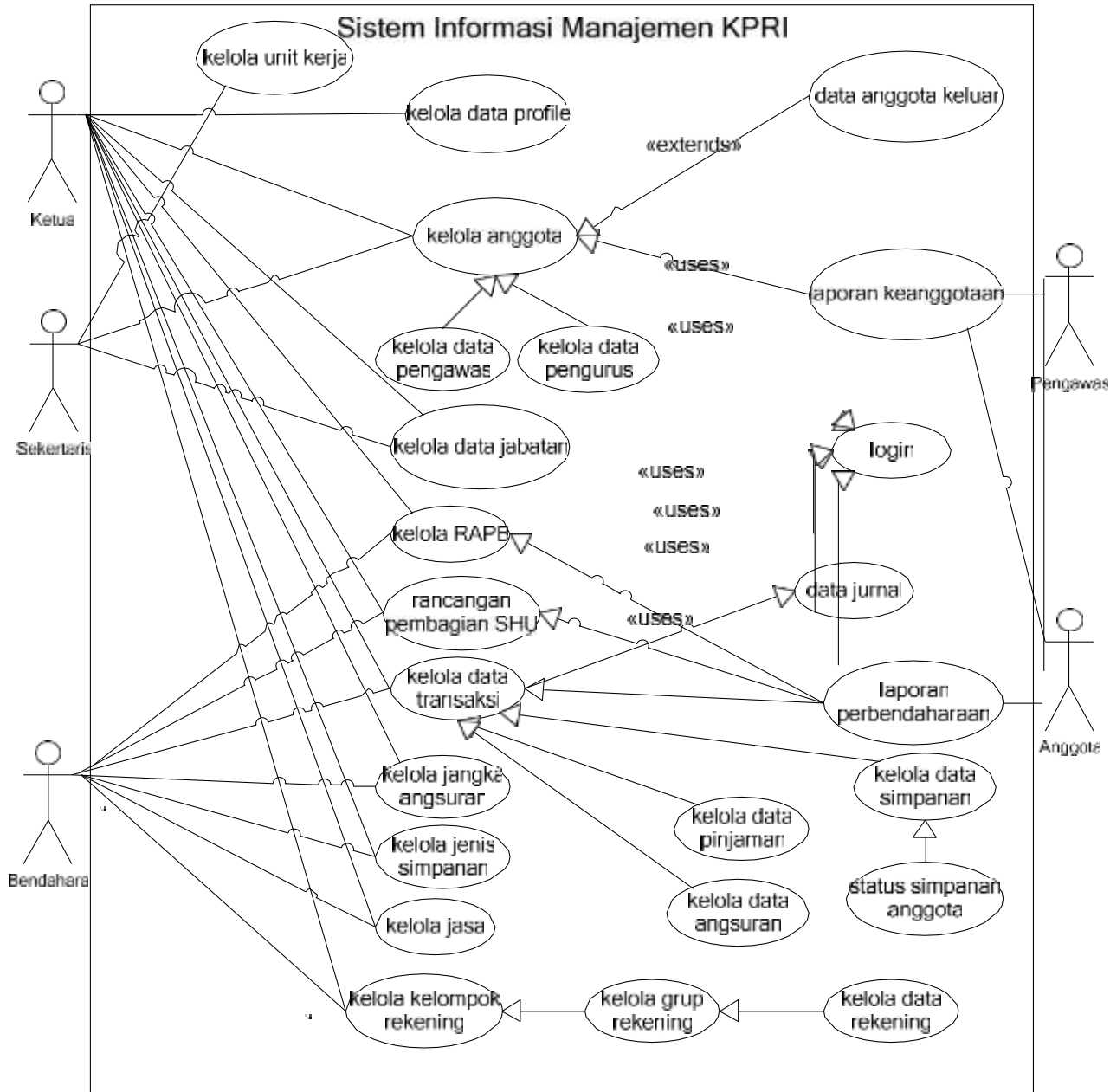


and Statechart Diagrams. Use Case Diagram describes the system requirements from the user's point of view and focuses on the functional computerized process [4]. Statechart diagrams describe the transition and changes in state (from one state to another) of an object on the system as a result of input received. In general, statechart diagrams describe certain classes [4].

1) Use Case Diagram

The use case diagram describes the functionality of the system being built. The use case diagram for the KPRI management information system can be seen in Figure 1.

Figure 1. KPRI Management Information System Use Case Diagram



Descriptions of the use case in the KPRI Management information system are presented in Table I. On the other hand, descriptions of actors of use cases diagram is shown in Table 2.

TABLE I. DESCRIPTION OF USE CASES

Use Case	Description
----------	-------------

Manage Profile Data	KPRI profile data processing conducted by the chairman. Data processing is only on updates profile data.
Manage Members	Data processing of KPRI members conducted by the chairman or secretary. Data processing includes searching, adding new data, changing data, and delete invalid data.
Manage Work Units	Data processing of KPRI work units carried out by the chairman or secretary. Data processing includes



	searching, adding new data, changing data, and delete invalid data.
Outgoing Member Data	Processing data on members who have left KPRI membership. Processing is carried out by the secretary or chairman of KPRI. Processing only adds data member who comes out.
Membership Report	It is a KPRI membership data report that can be seen by all KPRI member.
Manage Supervisor Data	Data processing of KPRI supervisors conducted by the chairman or secretary. Data processing includes performing data, adding new data, changing existing data, or deleting data that is not valid.
Manage Management Data	KPRI management data processing carried out by the chairman or secretary. Data processing includes displaying data, add data, change existing data, or delete invalid data.
Manage Job Data	KPRI position data processing carried out by the chairman or secretary. Data processing includes performing data, adding data, changing data, or deleting data.
Login	System security features ensure that only people have rights access that can process data in the system.
Manage Budget	Data processing of budget plans income and shopping. Processing is carried out by the chairman or treasurer.
Remaining Business Result Distribution Plan	Processing of SHU distribution design. Processing is carried out by the chairman or treasurer.
Treasury Report	The Treasury report is a report that contains KPRI treasury information that can be seen by all KPRI members.
Manage Transaction Data	Data processing transactions that occur at KPRI. Processing is carried out by the chairman or treasurer.
Manage Account Data	Estimated KPRI account data processing. Processing is carried out by the chairman or treasurer of KPRI
Manage Account Groups	Processing of KPRI account group data. Processing is carried out by the chairman or treasurer.
Manage Account Cluster	Group account data processing. Processing is carried out by the chairman or treasurer.
Manage Loan Data	Member loan data processing. Processing includes searching, adding new data, changing data existing, or delete invalid data. Processing is carried out by the chairman or treasurer.
Manage Installment Data	Membership installment data processing. Processing is carried out by the chairman or secretary.
Manage Services	Processing of loan services. Processing can only be done by the chairman or treasurer of KPRI.
Manage Installment Term	Processing loan installment term data. Processing is carried out by chairman or treasurer of KPRI.
Manage Saving Data	Processing member deposit data. Processing is carried out by the treasurer or chairman.
Manage Deposit Types	Data storage type deposit. Processing is carried out by the chairman or treasurer of KPRI
Member Saving Status	Processing the status of member deposits. In this menu, members can be included in each deposit. Processing is carried out by the treasurer or chairman.
Journal Data	Transaction journal data processing. Processing can only be done by the chairman or treasurer.

TABLE II. DESCRIPTION OF ACTORS OF USE CASE DIAGRAM

Actor	Description
Chairman	The active chairman of KPRI who has the right to full access to the system
Secretary	KPRI's active secretary who has access rights to processing KPRI membership data

Treasurer	The active treasurer of KPRI who has the right of access to KPRI treasury data processing
Member	Active members registered with KPRI. Eligible to know KPRI membership and treasury data
Supervisor	Active supervisors who have the right to supervise treasury data and membership of KPRI

2) Statechart Diagram

Statechart diagrams are presented for each process carried out. diagram for the loan process can be seen in Figure 2.

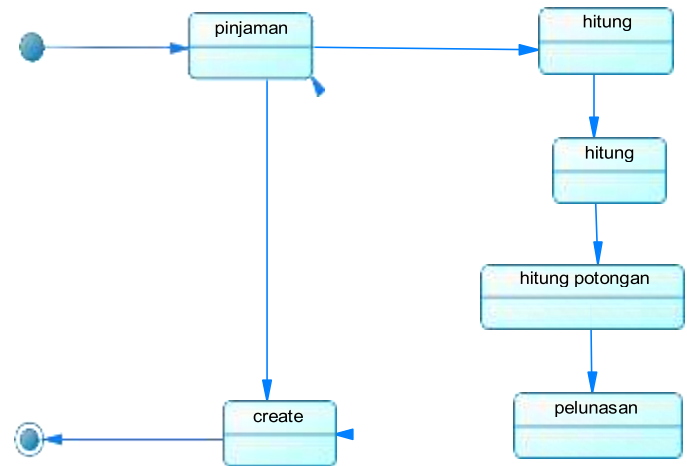


Figure 2. Statechart diagram for loans

Statechart diagram for loans (Figure 2) consists of 6 states, namely new loans, installment calculations, calculated services, monthly deduction, repayment of loans, create a journal. The next diagram is for installments which can be seen in Figure 3.

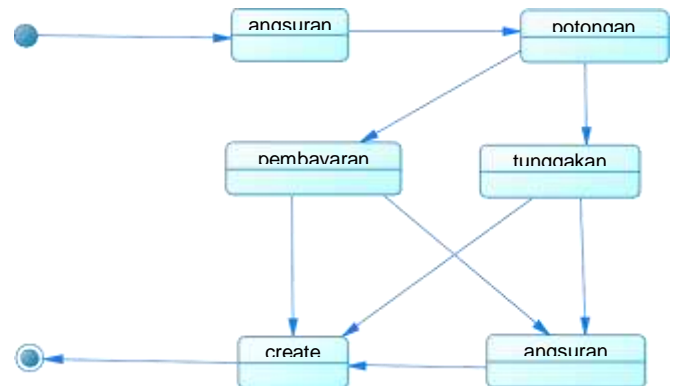


Figure 3. Statechart diagram for Installments

Statechart diagram for installments (Figure 3) consists of 6 states, namely new installments, monthly deductions, installment arrears, installment payments, repayments. The last diagram is a statechart diagram for a deposit that can be seen in Figure 4.



Figure 6. Main Page Design of Chairman Interface

3) *Main Page Design of Secretary Interface*

The main page of the secretary is the initial appearance when the user successfully logs in as a secretary. On this page, users can only access the membership menu and account. The appearance of the secretary main page interface design can be seen in Figure 7.

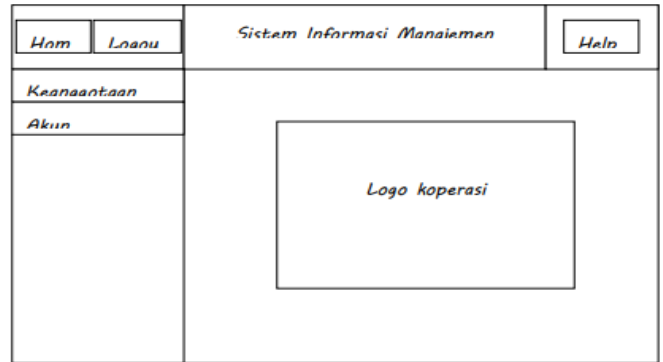


Figure 7. Main Page Design of Secretary Interface

4) *Main Page Design of Treasurer Interface*

The treasurer's main page is the initial display when the user successfully logs in as treasurer. On this page, users can only access the savings, loans, transactions, planning, reports, and account menus. The display design interface of the treasurer main page can be seen in Figure 8.

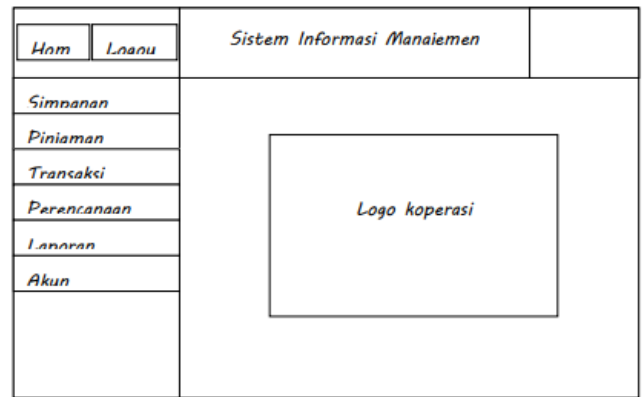


Figure 8. Main Page Design of Treasurer Interface

V. IMPLEMENTATION AND TESTING

The implementation phase is the embodiment stage of the results of the analysis and design that has been carried out. At this stage, we will explain the implementation of the desktop-based KPRI management information system.

The KPRI management information system can be accessed by three types of users. Each type of user has an interface with different functions. All of the interfaces is shown in Figure 9-12 below.

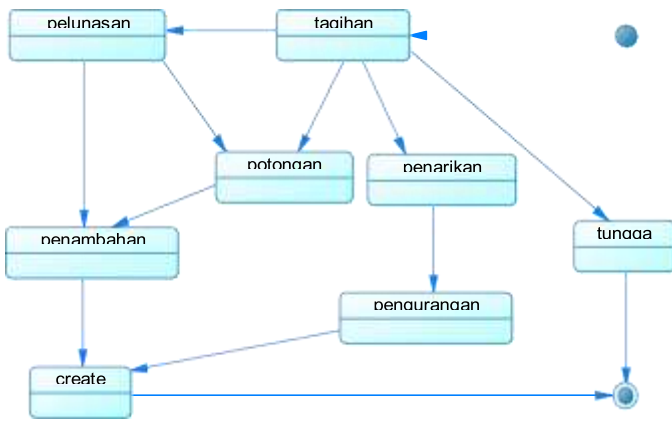


Figure 4. Statechart diagram for Deposits

Statechart deposit diagram consists of 8 states namely savings bills, repayment arrears, monthly deductions, deposit withdrawals, additional deposits, reduction in deposits, arrears, create journals.

B. *System Interface Design*

Designing the system interface is the design of the system display design that will be made a bridge between the user and the system.

1) *Login Page Interface Design*

The login page is the initial appearance of the system when the user is not logged in. On the login page, the user is asked to enter a username and password. The appearance of the login page can be seen in Figure 5



Figure 5. Login Interface Design

2) *Main page design of chairman interface*

The chairman's main page is the initial display when the user successfully logs in as chairman. On this page, all menus can be accessed in full. The display design of the leader's main page interface can be seen in Figure 6.

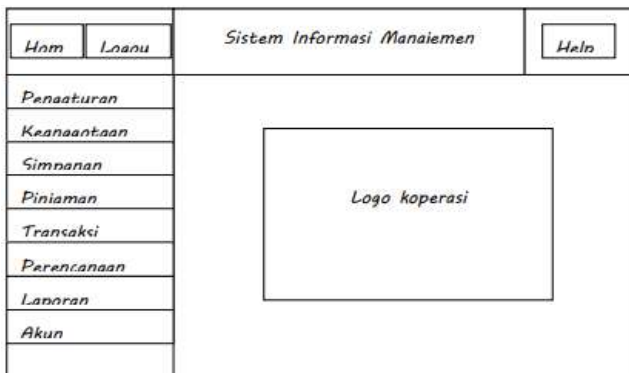


Figure 12. Main Page Design of Treasurer Interface

The last step in this research is system testing. System testing is done using a test system that tests the overall capabilities of the KPRI management system. At this stage, the author tests the system using the alpha method and the beta method.

A. Alpha Testing

Alpha testing is focused on system functionality requirements by testing data by system developers, namely by entering the correct data and incorrect data. Based on the results of Alpha testing that has been done, it can be concluded that the system built has been successful and acceptable. This result is obtained because functionally the system is in accordance with the initial requirements and produces the output or output expected by the system developer.

B. Beta Testing

Beta testing is a system testing carried out directly in the field to determine the extent of system quality and system suitability with expectations. This test is done by making a questionnaire (question) given to a number of respondents to find out the opinions or responses of users to the system being built. The number of respondents who filled out the test questionnaire was as many as 8 people, consisting of 3 administrators, 2 supervisors, and 3 members of KPRI Garuda. This test is divided into two scenarios, namely system functionality and system interface.

System functionality testing is a test of the functions contained in the system built. This test is done to find out whether the functions contained in the system run as expected or not. System interface testing is a test conducted to determine the user's response to the convenience of the interface of the system being built.

The results of the calculation of the percentage of functional testing of the system indicate that 95% stated that the agreement obtained from the calculation $(38/40) * 100\%$. For the results of the calculation of the percentage of system interface testing shows that 97.5% stated that the agreement obtained from the calculation $(39/40) * 100\%$. Thus it can be concluded that the entire system built is in accordance with the expected because the system functionality has been running well and the system has an interface that is comfortable and easy to use by the user.

VI. CONCLUSION

This research successfully designed and implemented a cooperative management information system as a means of processing data and preparing reports. The test results show that the system can answer the needs of functionality and is easy to use

REFERENCES

- [1] P. R. INDONESIA, *Perkoperasian*. Indonesia, 1992.
- [2] A. Mulyanto, *Sistem Informasi, Konsep dan Teknologi*. Yogyakarta: Pustaka Pelajar, 2009.
- [3] K. C. & J. P. Laudon, *Sistem Informasi Manajemen*. Yogyakarta: Andi, 2005.



Figure 9. Login Interface Implementation



Figure 10. Main Page Interface of the Chairman



Figure 11. Main Page Interface of the Chairman



[4] R. S. & S. D. Wahono, "Pengantar Uninfied Modeling," 2003.



This article is distributed under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/). See for details: <https://creativecommons.org/licenses/by-nc-nd/4.0/>