INFORMATIK

INFORMATIK JOURNAL, Volume 21, No 3, 2025

Application of Rapid Application Development Method in WEB-Based Social Assistance Data Collection System in Lombu Village

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Article Info

Article history:

Received Sep 2, 2025
Revised Oct 1, 2025
Accepted Oct 3, 2025

Keywords:

Rapid Application
Web Based
Social Assistant
Data Collection
System Village

ABSTRACT

The process of collecting social assistance data in Lombu Village has been done manually, which has led to various problems such as duplicate data, delays in reporting, and inaccuracy in targeting recipients. To overcome these problems, this study aims to develop a web-based social assistance data collection information system that can improve efficiency, accuracy, and transparency in data management. The system development method used is Rapid Application Development (RAD), which emphasizes speed in development and direct user involvement in the system design and evaluation process. The research stages include needs identification, system design with users, prototype development, system testing, and feedback-based evaluation. Data was collected through interviews, observations, and documentation of the ongoing data collection process. The result of this research is a web-based system that is capable of storing, updating, and displaying beneficiary data in a structured manner and can be accessed by village officials with a simple and easy-to-use interface. System trials show that the system can facilitate data management and accelerate the social assistance reporting process at the village level.

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I. INTRODUCTION

The use of technology in the implementation of aid distribution can make it easier for the community and the sub-district. By utilizing technology, the community no longer has to go to the sub-district office to find information about aid because it can be done online. Meanwhile, for the sub-district, by utilizing technology, the data processing is much easier and faster. In addition, the availability of technology that can be used both online and offline is very much needed.

Social assistance is one of the government programs aimed at helping underprivileged communities meet their basic needs. It consists of assistance from local, provincial, and central governments for individuals, groups, or communities that is not sustainable [1]-[4]. The distribution of this assistance requires an accurate, transparent, and accessible data collection system to ensure that it reaches the right targets and that there is no overlap in the data. In various villages, including Lombu Village, the process of collecting data on social assistance recipients is still done manually, making it prone to errors, delays, and data inaccuracies. The observations made by the author at the Lombu village office revealed problems with the aid distribution process, whereby the processing of aid distribution data was still being done manually or conventionally using books to record names and using a personal application to input the names of those who registered for assistance and the requirements submitted. This

process faces several problems, including: the data processing for aid distribution takes a considerable amount of time. Therefore, the problem with the assistance activities for the community at the Lombu village office is that a system has been created to make it easier for administrators to determine who is eligible to receive assistance, and for the community to more easily access information about the receipt of assistance. People who want to register for assistance must meet the requirements determined by the village, in this case the Social Welfare Section Head, such as ID card, family card, occupation, average monthly income, supporting documentation, so that the community can see whether they are eligible or not to receive the assistance.

This situation often causes various problems, namely the social assistance data collection system currently in place in Lombu Village. The manual system that has been used so far often causes delays, inaccurate data, and difficulties in managing information on aid recipients, duplication of recipient data, lack of regular data updates, and lack of transparency in the recipient selection process. To overcome these problems, a web-based information system is needed that can speed up the data collection process, minimize errors, and provide valid and well-organized data. This system must be accessible anytime and anywhere by village officials, and easy to use without requiring high technical expertise.

The Rapid Application Development (RAD) method is an appropriate approach because it emphasizes speed and flexibility in software development. RAD uses prototyping and direct user involvement in every stage, so that the resulting system is more responsive to user needs [5]-[9]. With RAD, the process of creating a web-based social assistance data system in Lombu Village can be carried out quickly, efficiently, and in accordance with the real needs of the community and village apparatus [10]-[12].

Lombu Village plays an important role as the village government that manages social assistance programs in the area. However, in practice, this institution often faces a number of obstacles, such as inaccurate recipient data, delays in the distribution of assistance, and a lack of transparency in the distribution process [13]-[14].

Web-based information systems offer various advantages, such as wider access, ease of real-time data updates, and the ability to integrate with other relevant systems, such as financial and population data systems [15]-[16]. Through the use of this system, the process of monitoring and managing social assistance can be carried out more quickly, accurately, and in a targeted manner [17]-[18], so that the benefits can be directly received by the people who need them [19]-[20].

Research conducted by Soni Adiyono, Noor Latifah, Diana Laily Fithri with the title analysis of digital readiness in the social assistance distribution system with the unified theory of acceptance and use of technology (utaut) aimed to analyze the social assistance distribution system using the autat method, which consists of six criteria, namely work, business, social influence, supporting conditions, behavioral intention, and actual use, with supporting data from 150 respondents with a performance expectation value of 4.2, indicating that this value is the highest. Business expectation is 4.0, and social influence expectation is 3.8

Research conducted by Chairul Rizal, Supiyandi, Barany Fachri, Muhammad Hasanuddin with the title Rapid Application Development on Web-Based Village Administration Application Design (SI-BANDID) Sei Limbat Village, Langkat Regency, aimed to produce a Web-based village community information service system integrated with a four-stage waterfall method: needs analysis, system design, implementation, and system testing. One of the features of this administration service application is the submission of letters by residents, the uploading of administrative letters submitted by residents, employee registration, and resident registration, which can be accessed by the administration.

Research conducted by Sunardi, Sigit Auliana, Gelard Untirtha Pratama, Basuki Rakhim Setya Permana, & Asep Darma Nugraha, research title Designing an Application for Direct Cash Assistance Allocation Using Laravel at Sepang District Office, the purpose of the research is to build an information system for cash assistance recipients using the PHP programming language and MySQL supported by Laravel supporting tools.

This research is unique because it applies the Rapid Application Development (RAD) method to the social assistance data collection system at the village level, particularly in Lombu Village, with a participatory approach that directly involves village officials in every stage of development. The system that was developed not only functions as a medium for recording data on aid recipients, but also emphasizes transparency and accountability in information management. The contribution of this research is practical in nature, namely by providing a web-based solution that can accelerate the data collection process, reduce recording errors, and facilitate real-time reporting. In addition, this research also contributes theoretically by demonstrating the effectiveness of the RAD method in the context of public services in villages and enriching the literature related to the application of software development methods in the local government sector.

II. METHODOLOGY

In this study, the Rapid Application Development (RAD) method was used as the basis for the application design process, with the stages arranged in the following order. In this study, several stages were carried out as shown in the flowchart below:

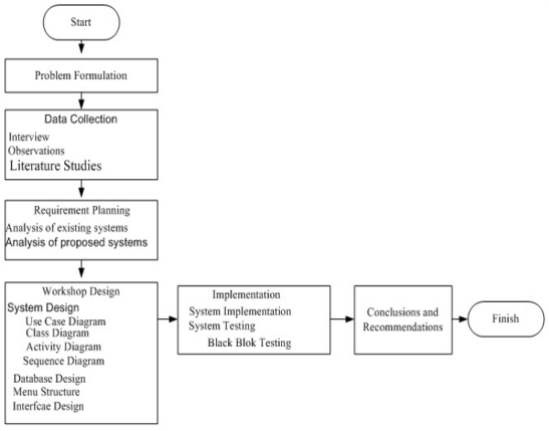

Fig.1. Research Methodology

a. Problem Formulation

Formulating issues regarding social assistance and identifying problems that arise, which are then formulated by a computerized assessment system.

b. Data Collection Methods

This stage involves collecting data on social assistance for the community. All stages of the data collection process are obtained from interviews, observations, and literature studies.

c. Requirement Planning

In this stage, researchers identify existing problems and then make plans to determine the objectives and requirements needed to achieve those objectives. The stages involved are analyzing the current system and analyzing the proposed system.

d. Workshop Design

After completing the requirements planning phase, the data needed to design the system was obtained. In addition, an employee performance appraisal information system was designed using the Rapid Application Development method. This phase involved several stages of system design, namely: use case diagram, class diagram, activity diagram, and sequence diagram.

e. Implementation

The implementation stage is the final stage of the system design process. At this stage, coding is carried out based on the diagrams that have been created. Once coding is complete, the testing process will continue. Application testing is carried out using the Black Box Testing stage.

f. Conclusions and Recommendations

At this stage, conclusions can be drawn from the test results that have been conducted. This is to determine whether the implementation of the designed system can operate properly and in accordance with the desired objectives so that it can be useful, as well as to provide suggestions for refining and developing further research.

III. RESULT AND DISCUSSION

A. System Running Procedure

This system procedure explains the process of social assistance distribution in Lombu Village. This procedure is the initial step that must be carried out by the administrator who will collect data on the poor in Lombu Village before they receive social assistance. The administrator will enter data on the poor in Lombu Village in accordance with the results obtained from integrated data verification and validation to ensure that no recipient receives assistance more than once in a given period.

B. System design

System design is a process of determining how an information system will be built to meet user needs. This stage includes designing the architecture, process flow, database, interface, and data processing mechanisms. The goal is to produce a structured, efficient, and easy-to-implement design so that the system can function according to the needs of the organization and end users.

Use Case Diagram is a visual representation that illustrates the interaction between a system and its surrounding environment. In this context, a use case diagram serves to identify and clarify the relationship between actors and the running system as well as other related systems. Each use case is illustrated through a series of simple steps that represent the process that occurs. The use case can be explained as follows.

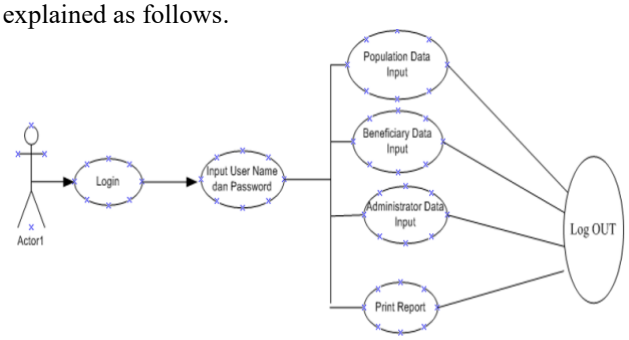

Fig. 2. Use case diagram

Class diagram, a class diagram depicts the structure of a system in terms of defining the classes that will be created to build the system. The following is a class diagram for the Social Assistance Fund Recipient Data Processing System in Lombu Village.

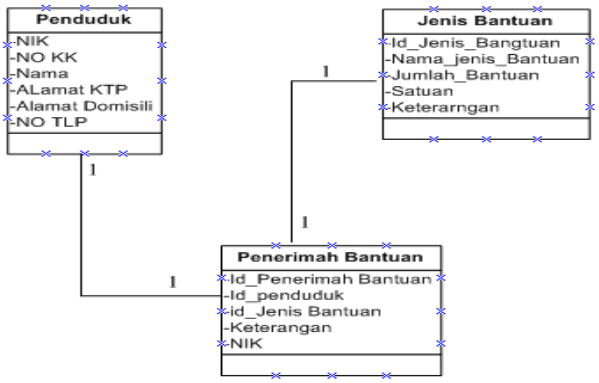

Fig. 3. Class diagram

Activity diagram, an activity diagram depicts the flow of activities in a system, from start to finish. In the context of social assistance distribution in Lombu Village, this diagram shows how the process of application, verification, and distribution of assistance takes place, who the actors are, and how interactions between actors occur. The social assistance activity diagram consists of residents, types of assistance, and recipients of assistance.

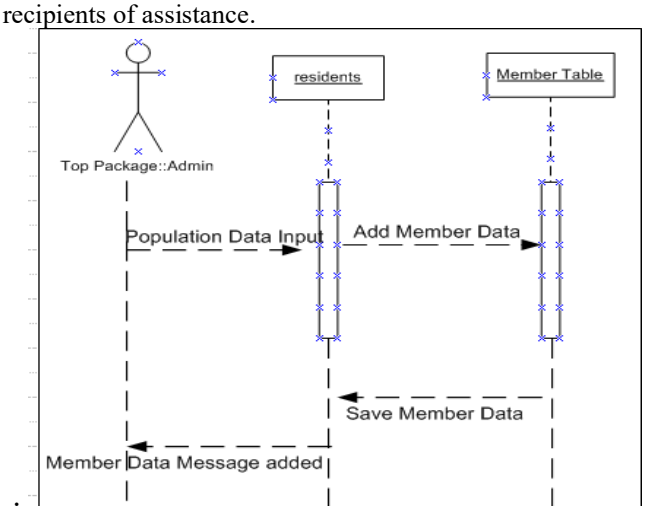

Fig. 4. Population activity diagram

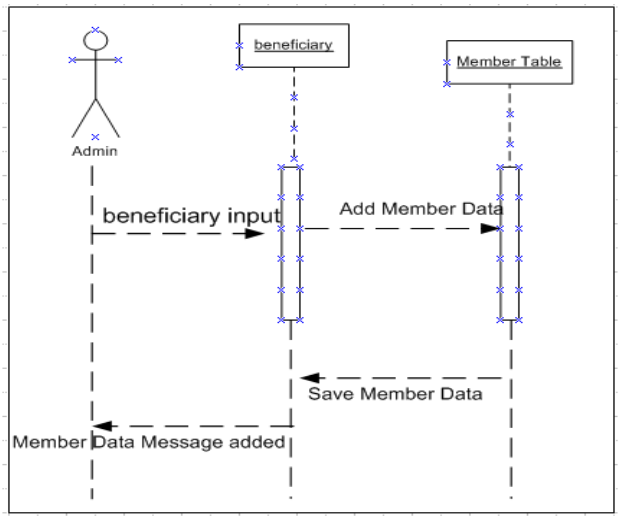

Fig 5. Beneficiary

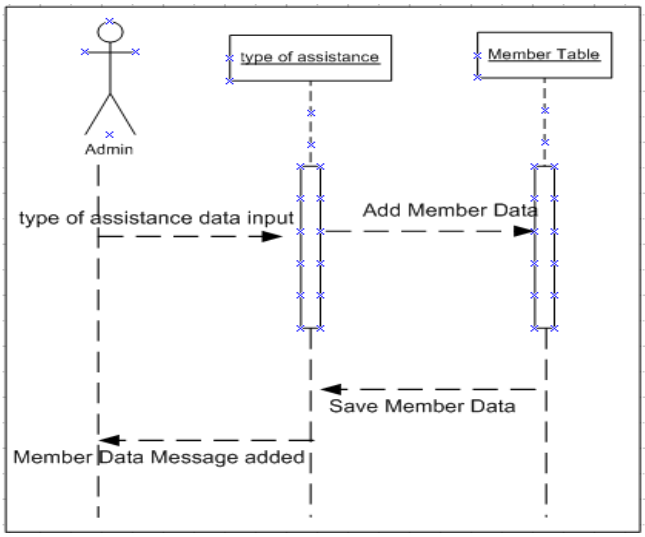

Fig. 6. Type of assistance

Sequence diagram, this sequence diagram will show or display the interactions between objects in the system arranged in a sequence or time series. The sequence diagram for the community social assistance information system at the Lombu Village Office is as follows.

Admin sequence diagram, the sequence diagram shows the administrator viewing and managing data in the community social assistance information system at the Lombu Village Office. This sequence explains the flow of the administrator's process of viewing and processing data in the community social assistance information system at the Lombu Village Office. For more details, see the following sequence diagram.

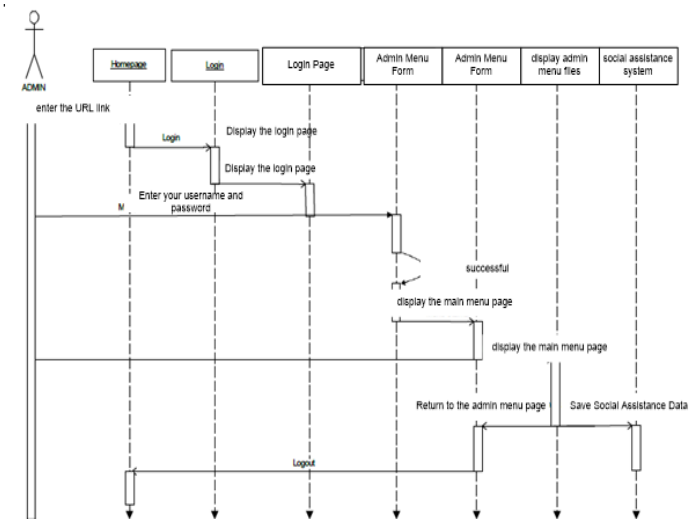

Fig. 7. Admin sequence diagram

Sequence diagram of society, the sequence diagram shows the community viewing the data available on the community social assistance information system at the Lombu Village Office. This sequence explains the flow of the community's interaction with the community social assistance information system at the Lombu Village Office. For more details, please refer to the following community sequence diagram.

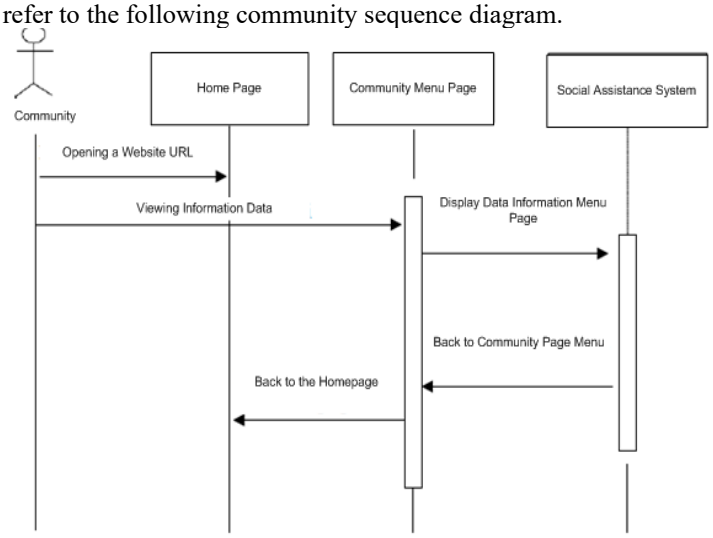

Fig. 8. Sequence diagram of society

Sequence Diagram of the Village Head, Sequence diagram of the village head viewing data reports in the community social assistance information system at the Lombu Village Office. This sequence explains the flow of the village head's interaction with the community social assistance information system. For more details, see the following sequence diagram of the village head.

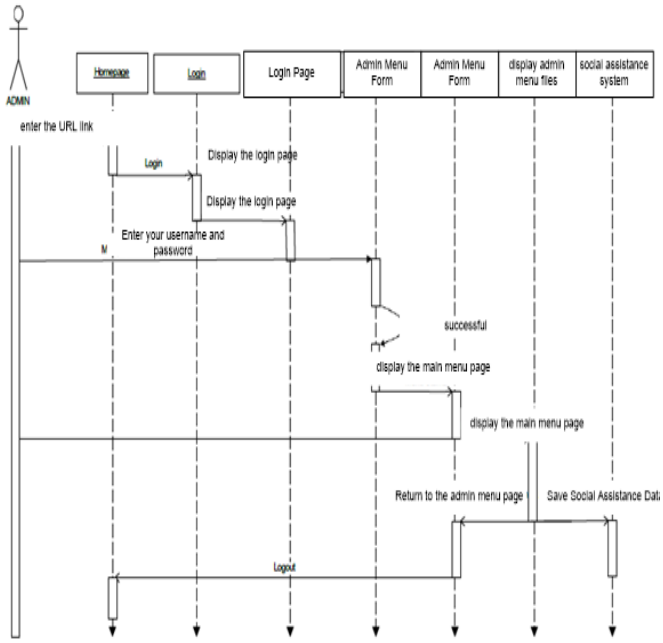

Fig. 9. Sequence diagram of the village head

A. *Program Results*

The program results display is the next stage after the planning process is complete and a web application has been produced. The results of the design of the Social Assistance Recipient Data Processing System in Lombu Village are described below. The following explains the results display of the Social Assistance Recipient Data Processing System:

Login Menu Display

The admin login menu is used to enter the username and password for the admin to perform data processing.

Fig. 10. Login menu display

B. *Main Menu Display*

The main menu display contains several menus that users can use for data input, processing, and reporting.

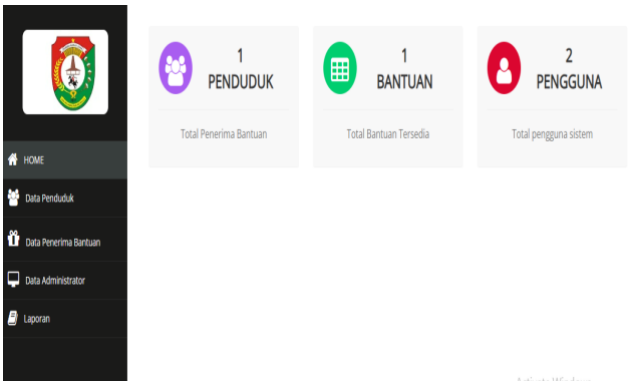

Fig 7. The main menu display

C. *Population input form*

This menu is used to add residents, and it can also be used to correct resident data if there are errors in resident identities.

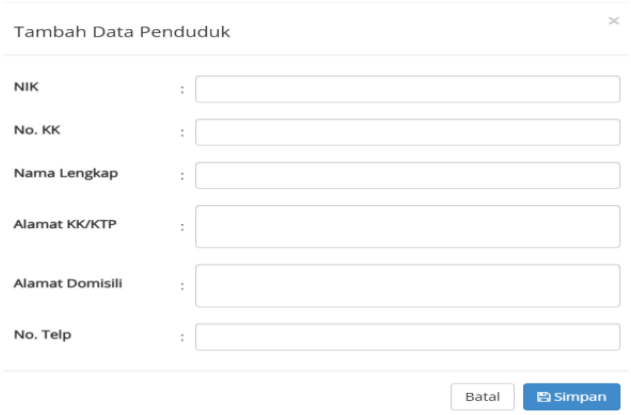

Fig. 11. Population input form

D. *Beneficiary Data*

This menu is used to add recipients of assistance. It can also be used to correct recipient data if there are errors in resident identity information.

Fig. 12. Population input form

E. *Report*

This display shows the output of data entries in the data menu and report print menu

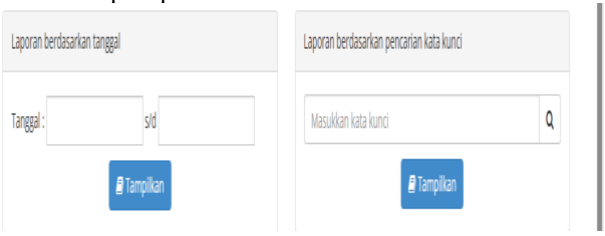

Fig. 13. Report as of the date

F. System Testing

The system is designed to meet expectations or not, then a trial is conducted by running each input and output form.

TABLE I. SYSTEM TESTING

No	Function	Output	Result
1	Login		√
2	Admin Data	Can be run from data input to display normally and as needed	√
3	Population data	Can be run from data input to display normally and as needed	√
4	Beneficiary data	Can be run from data input to display normally and as needed	√

IV. CONCLUSION

The researcher drew conclusions based on the discussion outlined in the previous chapters regarding the web application system to be implemented in the office in Lombu Village, Southwest Sumba Regency. The researcher drew the following conclusions by using the data processing system for social assistance recipients in Southwest Sumba Regency, there will be no accumulation of data queues when making changes/updates to the data. West Sumba Regency social assistance recipient data processing system, the preparation of social assistance recipient reports will be much faster.

ACKNOWLEDGMENT

The author gives thanks to God Almighty, because with His blessings and grace, the author was able to complete this report/research well. The author would like to express his deepest gratitude to:

A. Parents and family, for your prayers, support, and endless motivation.

B. Faculty members and advisors, who have provided guidance, direction, and invaluable knowledge throughout the process of preparing this report.

C. Colleagues and fellow students, who have always provided encouragement, assistance, and cooperation

D. Related parties, who have helped provide data, information, and support in completing this research.

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