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Design of the Savings and Loan Accounting Information System for Sumber Bahagia Savings and Loan Cooperative Utilizing The CodeIgniter Framework

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ABSTRACT
This research focuses on analyzing and designing an accounting information system aimed at managing savings and loan transactions at the Sumber Bahagia Savings and Loan Cooperative. The cooperative currently faces challenges in transaction recording, including reliance on applications like Microsoft Excel, inefficiencies in data storage, transaction management, and financial report preparation. These limitations often result in data discrepancies, errors, and delays in generating accurate financial information. Therefore, an integrated accounting information system is essential to address these issues effectively. The methodology employed by the researcher is the descriptive method, which seeks to provide an overview of the current system and propose a more effective solution through stages of data collection, analysis, design, system development, application creation, and system testing. The analysis phase includes developing data flow diagrams, flowcharts, account data coding, normalization, and relationship diagrams to ensure a clear understanding of data processes and their interrelations. The system development process involves building a robust database structure and creating a web-based application using the CodeIgniter framework, ensuring scalability, reliability, and user accessibility. The output design aligns with current accounting standards, addressing essential functions such as transaction recording, journal posting, ledger creation, trial balance preparation, and profit calculation reports. By implementing this system, the cooperative is expected to improve efficiency, accuracy, and transparency in financial operations. Additionally, the system facilitates the auditing of financial records and enhances decision-making processes by providing timely and reliable financial reports. This research contributes to understanding how accounting systems support financial management in cooperatives.

Keywords: Accounting Information System, Savings and Loan Cooperative, CodeIgniter Framework

Introduction

A cooperative is a business organization composed of individuals or legal entities that operate based on the principle of cooperation. Beyond serving as an economic initiative involving numerous participants and founded on the principle of kinship, cooperatives also contribute to social development. This not only promotes social and income equality but also fosters economic growth and contributes to national stability, particularly in terms of economic stability [1].

Savings and loan cooperatives represent a specific type of cooperative that focuses on the collection and distribution of funds through savings and loan activities for members, prospective members, other cooperatives, and their respective members [2]. The distinctiveness of cooperatives, which sets them apart from other business entities, lies in the dual role of their members, who serve both as owners and users of the cooperative's services [3]. Savings and loan activities within cooperatives are particularly significant as they address various consumption and production needs of their members. By facilitating fund collection, these activities encourage cooperative members to save money. Furthermore, savings and loan cooperatives play an essential role in assisting members and the broader community in avoiding predatory lending practices [4].

Savings and Loan Cooperatives (SLCs) play a significant role in providing convenience and accessibility to financial resources for the community. Operating on principles of democracy and fairness, every cooperative member has equal rights in decision-making and ownership. Through active member participation, cooperatives create a fair and inclusive financial environment, supporting local economic growth and fostering community development. Demand is the willingness of potential customers to purchase a commodity. It determines the market size for a commodity and the composition of the customer base at a disaggregated level. Since its revenues, profits, and employee incomes depend on it, demand analysis is critical to a business [5].

Like other business entities, cooperatives require a system to manage the information generated and support their operational activities. Such a system is crucial for every organization, especially in financial and marketing aspects. The use of a system facilitates the preparation of financial reports, making the process more efficient. Moreover, this system improves result accuracy and helps minimize fraud risks [6]. Accounting is the exchange of financial information about a business. Accounting uses symbols, just like a common language, to communicate information. There are rules governing how these symbols are used [7]. An accounting information system is a critical component for every organization in generating quality financial information [8].

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Like other business entities, cooperatives require a robust system to manage the information generated and support their operational activities. Such a system is essential for every organization, particularly in the financial and marketing domains. The implementation of a structured system streamlines the preparation of financial reports, enhancing efficiency. Furthermore, this system improves the accuracy of results and helps minimize risks of fraud. An accounting information system is a critical component for organizations in generating quality financial information.

An accounting information system is vital for Savings and Loan Cooperatives (SLCs) as it supports their savings and loan operations. Financial data is transformed into the financial information required for managerial decision-making and external stakeholders by the combined physical and non-physical components of IS [9]. Many startups employ IS to obtain additional information that aids owners in making choices. Ultimately, this enhances the startup's overall effectiveness, profitability, and performance [10]. The system is designed to record all financial transactions related to savings and loan activities. Its development necessitates careful planning and oversight of every cooperative activity. Making the correct choices can help a business succeed. Providing account information is a crucial function of financial reports for startups to attain commercial success [11].

However, amidst ongoing economic and technological advancements, savings and loan cooperatives encounter several challenges, particularly regarding traditional data management and the lack of adoption of modern information technology. Manual data management or the use of simple applications like Microsoft Excel often proves ineffective and inefficient, especially in recording savings and loan transactions. Human errors, slow verification processes, and limitations in real-time information tracking pose significant obstacles to ensuring the accuracy and precision of financial reports. To mitigate recording errors and optimize time in financial management, an efficient savings and loan accounting system is essential. These issues can be addressed through the utilization of applications integrated with a database.

In light of these challenges, this study aims to design an accounting information system for savings and loans at KSP Sumber Bahagia by employing the CodeIgniter framework. It is anticipated that this system will significantly enhance the effectiveness and efficiency of the

management process, positively impacting the overall financial management of the cooperative, minimizing human error risks, and expediting the generation of financial reports. With the comprehensive implementation of computerized systems, all savings and loan records are expected to be stored accurately and accessed easily, thereby supporting improved strategic decision-making by the cooperative's management.

By proposing this system design, the researcher aims to assist KSP Sumber Bahagia in enhancing the quality of their financial management and ensuring that savings and loan recording and reporting activities comply with applicable accounting standards.

Method

The unit of analysis in research refers to the primary focus or aspect of the study object. It is a specific unit regarded as a research problem [12]. The design of the savings and loan analysis unit at KSP Sumber Bahagia encompasses the roles of the Treasurer and the Secretary. The population represents a general area that includes objects or topics characterized by numerical data and specific attributes identified by the researcher for study and conclusion [13]. The population examined consists of savings and loan reports at KSP Sumber Bahagia for the year 2023. The research object is an element that offers answers or explanations regarding the actual condition of the subject, thereby reflecting the research's objectives [14]. The focus of the study conducted by the researcher is the accounting information system for savings and loans at KSP Sumber Bahagia.

The study design implemented in this research is a survey design utilizing a descriptive approach. The method employed is a survey method, as the researcher seeks a comprehensive understanding of the existing system at KSP Sumber Bahagia. Additionally, the researcher conducted direct field observations to gather and analyze information about the savings and loan accounting information system, which facilitates a more thorough understanding of the system's condition and requirements.

The researcher applied the Waterfall development model in designing the accounting information system. The Waterfall model, commonly referred to as the System Development Life Cycle (SDLC), consists of sequential stages, progressing from analysis to testing.

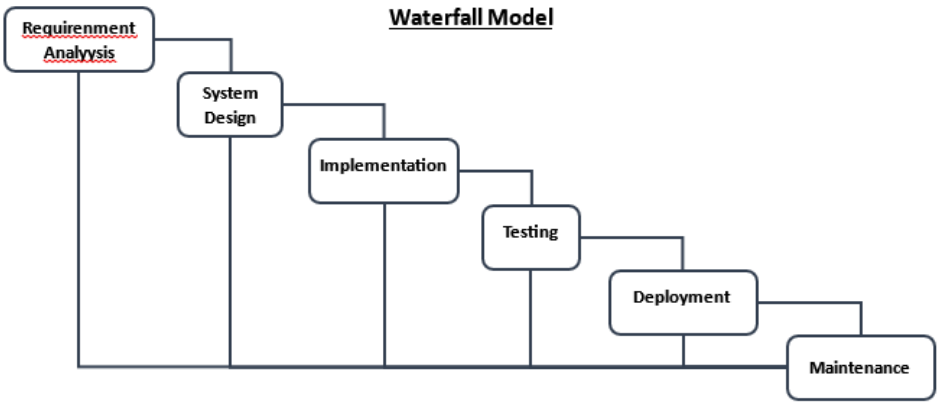

Figure 1. Waterfall Model [15]

The initial stage is analysis, during which the researcher collects data regarding the cooperative's business processes, supporting business documents, and current procedures. Improving a business's performance requires a strong business plan. To build the business strategy model, the four key components of the business plan—goals, operational procedures, conditions, and measurements—must be removed [16]. The system is described and illustrated using detailed diagrams, such as Data Flow Diagrams and Flowcharts. Following this, the design stage involves

elaborating on identified recommendations and solutions through more specific diagrams. The construction stage encompasses the development of the system, including the creation of supporting applications. The proposed system is detailed using the Proposed Data Flow Diagram, System Flowchart, Normalization, and Entity Relationship Diagram. Subsequently, the implementation stage is executed to apply the developed application program. Finally, the testing stage consists of system trials conducted by users to ensure the system operates according to the established needs and specifications.

The researcher selected the Waterfall model because this approach provides an organized and sequential framework for system development, ensuring that each stage—from analysis to testing—is executed systematically and thoroughly to produce a system that meets user requirements. The essence of entrepreneurship is the process of creating something with intrinsic worth via time and effort, financial, psychological, and social risks, and obtaining personal fulfillment and a living [17].

Results and Discussion

The primary objective of designing this savings and loan accounting information system is to streamline and expedite the process of recording savings and loan transactions within cooperatives. With the implementation of this system, every transaction conducted by cooperative members will be recorded automatically and with a high degree of accuracy. This significantly mitigates the risk of errors commonly associated with manual recording processes.

In addition to enhancing efficiency, this information system empowers cooperative managers with access to real-time and precise financial information. The computerized recording process not only saves time but also enhances clarity and accountability in financial management. By adopting this system, the administrative processes become more streamlined, ultimately improving cooperative performance and bolstering members' trust in financial management practices. This system ensures that all transaction-related information is effectively managed and easily accessible, thereby supporting informed decision-making and increasing the overall operational effectiveness of the cooperative.

Based on previous observations, in the process of recording savings and loan transactions that have not been computerized, there are several obstacles, including:

1. The recording of savings and loan transactions remains manual and is not fully computerized.
2. Errors in manually adjusting transaction recordings and in the Excel system.
3. Human errors frequently occur during the recording of savings and loan transactions.

Several policies regarding the savings and loan accounting information system can be outlined as follows:

1. The administration section is responsible for inputting member registration data, recording member deposits, processing loan applications, and recording installment payments.
2. The treasurer and secretary are authorized to verify and access data related to member registration, deposits, loan applications, and installment payments.
3. The chairman holds the authority to verify the data about member loan applications.
4. The chairman has complete access to all data, including member information, loans, savings, installment payments, as well as the cooperative's annual report.
5. Members have access to the cooperative's annual report.
6. The member book will be accompanied by a Member Card.
7. The secretary is responsible for printing Member Cards.

The procedure of the savings and loan accounting information system at KSP Sumber Bahagia can be explained below:

1. The procedure for registering members and processing member deposits is detailed below:

A. Prospective members visit the cooperative with the required documentation and submit an initial deposit of Rp150,000 to the administration section.
B. The administration section prepares the FPA (Member Registration Form) for prospective members. Once completed, the FPA is returned to the administration section, where member registration details are entered for verification by the chairman and secretary. Upon completion of the registration input, a member number is automatically generated, and the initial deposit is recorded by the administration section.
C. The secretary then prints the Member Card (KA) and the KPA (Member Estimate Card). The secretary also prepares the AD/ART Book, which is submitted to the administration section along with the Member Card (KA). The KPA is archived by the secretary.
D. Subsequently, the treasurer verifies the savings, prints the Transaction Proof, and submits it to the administration section.
E. The administration section receives the transaction proof from the treasurer, along with the Membership Card (KA) and AD/ART Book from the secretary. The administration section then distributes these to the members.
F. The administration section collects and prints the daily transaction recap, which is then submitted to the treasurer.
G. The treasurer reviews and verifies the accuracy of the transaction recap. If discrepancies are found, the treasurer returns the transaction recap to the administration section. If the recap is accurate, it will be archived by the treasurer.

2. The loan application procedure at KSP Sumber Bahagia is as follows:
   A. Members visit the cooperative to apply for a loan, bringing their membership cards, which they submit to the administration section.
   B. The administration section provides the Loan Application Form (FPPU) for members to complete. Once the FPPU is filled out, it is returned to the administration section. The administration section then inputs the loan application and awaits verification from the chairman and secretary. Additionally, the FPPU is submitted to the secretary.
   C. The secretary submits the FPPU and KPA for analysis by the chairman.
   D. The chairman analyzes the data. If the chairman does not approve the loan application, the application will not be verified, and the FPPU, along with a loan rejection note, will be returned to the administration section for distribution to the members. If the requested loan amount exceeds the members' savings, the chairman will also refrain from verifying the loan application, returning the FPPU with a loan reduction note and advising the members to either approve or reject it.
   E. If the chairman approves the loan application and the requested amount does not exceed the members' savings, the chairman will verify the application and instruct the secretary to prepare an agreement letter.
   F. The secretary submits the Agreement Letter, affixed with a 10.000 stamp, to the administration section for distribution to the members. Subsequently, the administration section returns the signed agreement letter to the secretary and chairman for their signatures.
   G. The signed agreement letter is submitted by the chairman to the treasurer for verification of the loan disbursement. The treasurer then prints proof of the transaction.
   H. The proof of transactions, funds, and agreement letters are submitted to the administration section for return to the members.
   I. The administration section collects and prints a daily transaction summary, which is then submitted to the treasurer.

J. The treasurer reviews and verifies the transaction summary. If it does not align with the records, the summary is returned to the administration section. If it is accurate, the summary will be archived by the treasurer.

3. The installment payment procedure at KSP Sumber Bahagia is as follows:
   A. Members visit the cooperative with their membership cards and payment, which they submit to the administration section.
   B. The administration section inputs the installment payment data.
   C. The secretary verifies the installment payment, prints the KPA, and archives it.
   D. Subsequently, the treasurer verifies the installment payment and prints proof of the transaction. This proof is then submitted to the administration section along with the membership card for distribution to the members.
   E. The administration section compiles and prints a daily transaction summary, which is then submitted to the treasurer.
   F. The treasurer reviews the transaction summary. If discrepancies are found, the summary is returned to the administration section; if it meets compliance, the summary is archived.
4. Proposed Transaction Recording Procedure
   A. The treasurer collects the transaction summary and prints the general journal.
   B. The treasurer then prints the general ledger, trial balance, and business income calculation report.
   C. The treasurer archives the general journal, general ledger, and trial balance. The business income calculation report is submitted to the chairman for signature, then distributed to the members and archived by the treasurer.
5. Proposed Forms/Documents
   A. General Journal.
   B. General Ledger.
   C. Trial Balance.
   D. Business Result Calculation Report.
   E. Membership Card
6. Proposed Account Code and Account Name

The proposed account code and name in the Savings and Loan Accounting Information System at the Sumber Bahagia Savings and Loan Cooperative Using the Codeigniter Framework are as follows:

Table 1. Chart of Accounts (CoA)

Account No.	Account Name
111	Cash
112	Member Receivables
311	Principal Deposits
312	Mandatory Deposits
313	July 12 Deposits
314	Voluntary Deposits
411	Service Income
412	Provision Income

7. System Flowchart

The proposed system flowchart illustrates how the system flows from one entity to another along with the data used.

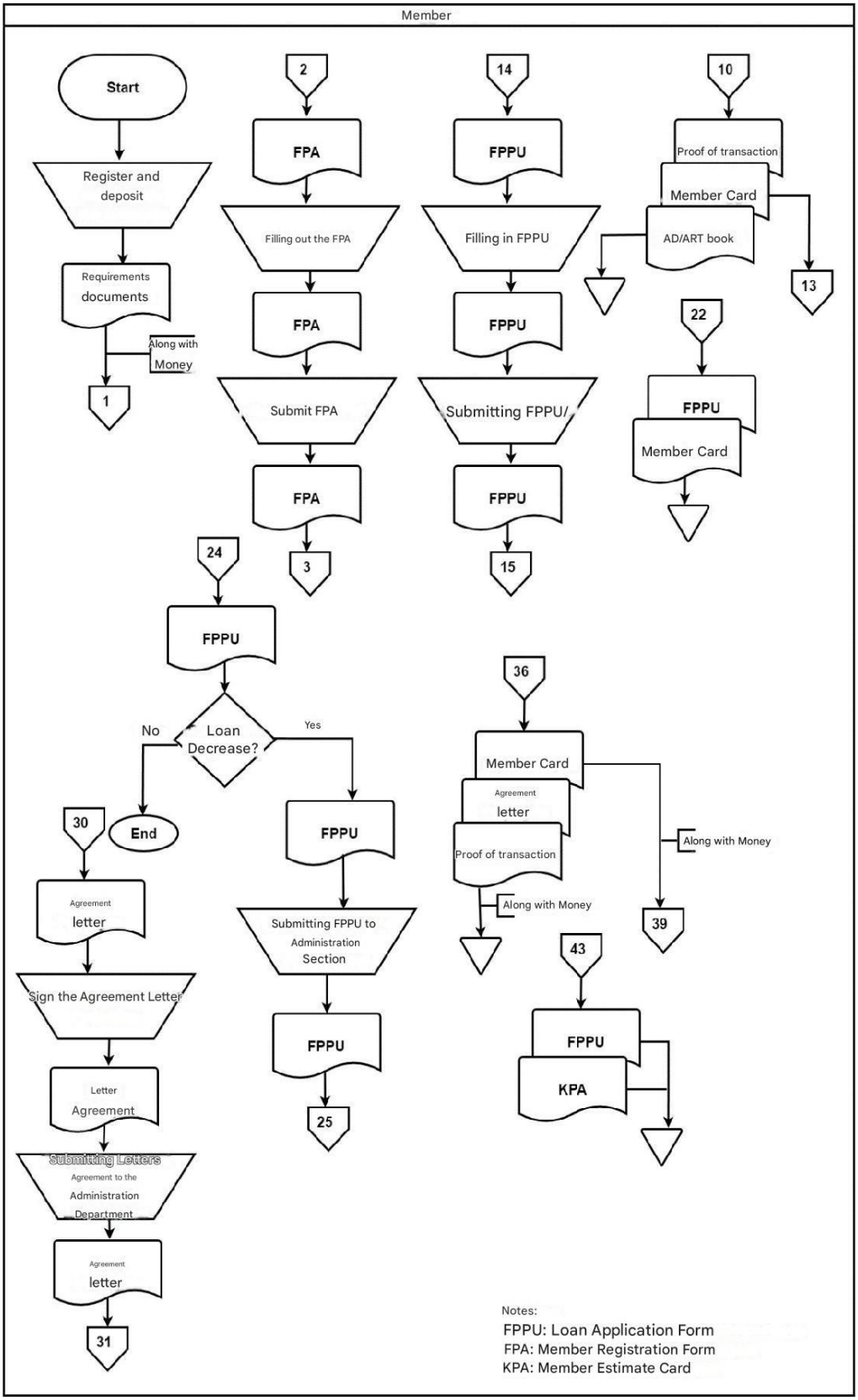

Figure 2. Proposed Savings and Loan Transaction Flowchart 1

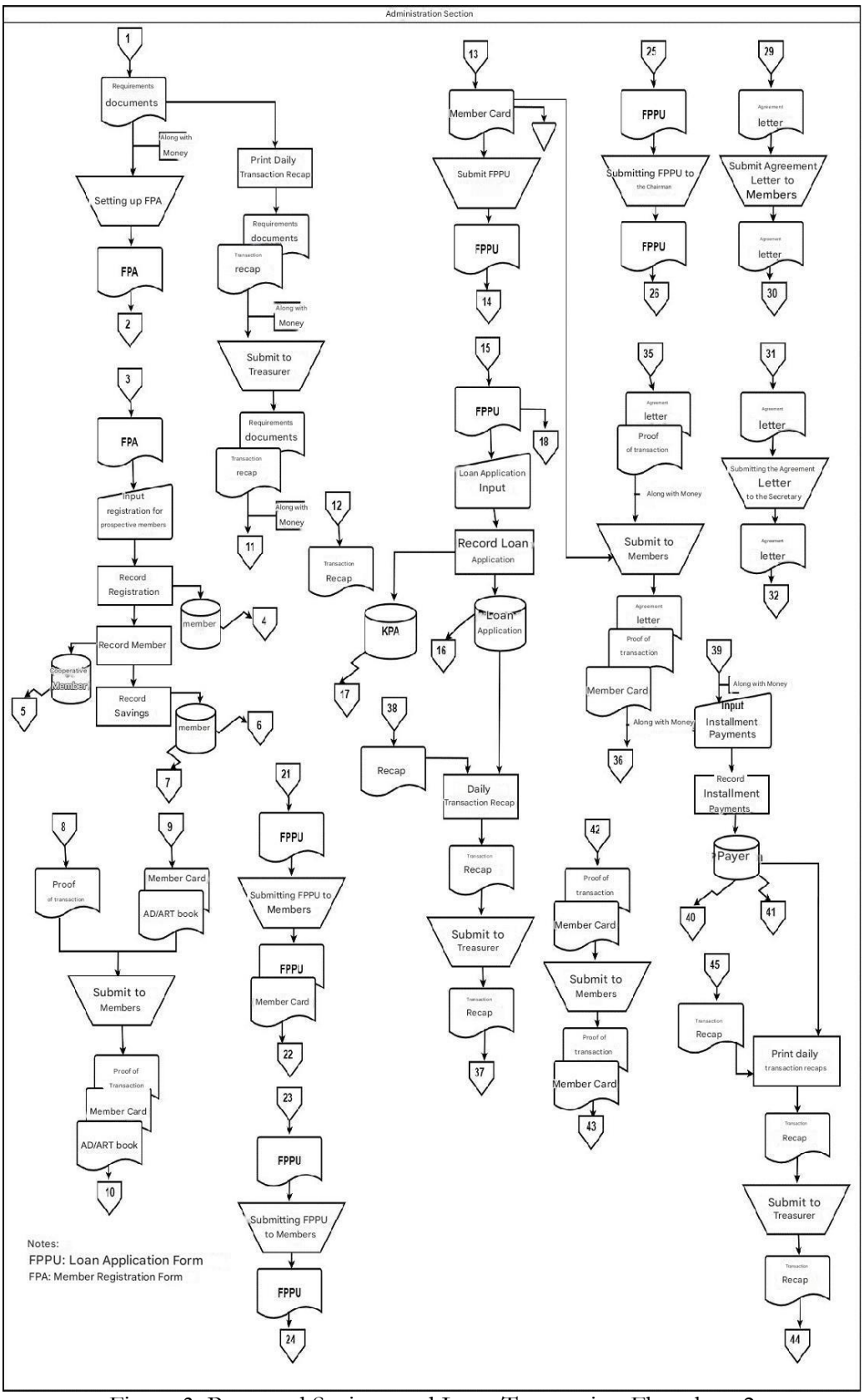

Figure 3. Proposed Savings and Loan Transaction Flowchart 2

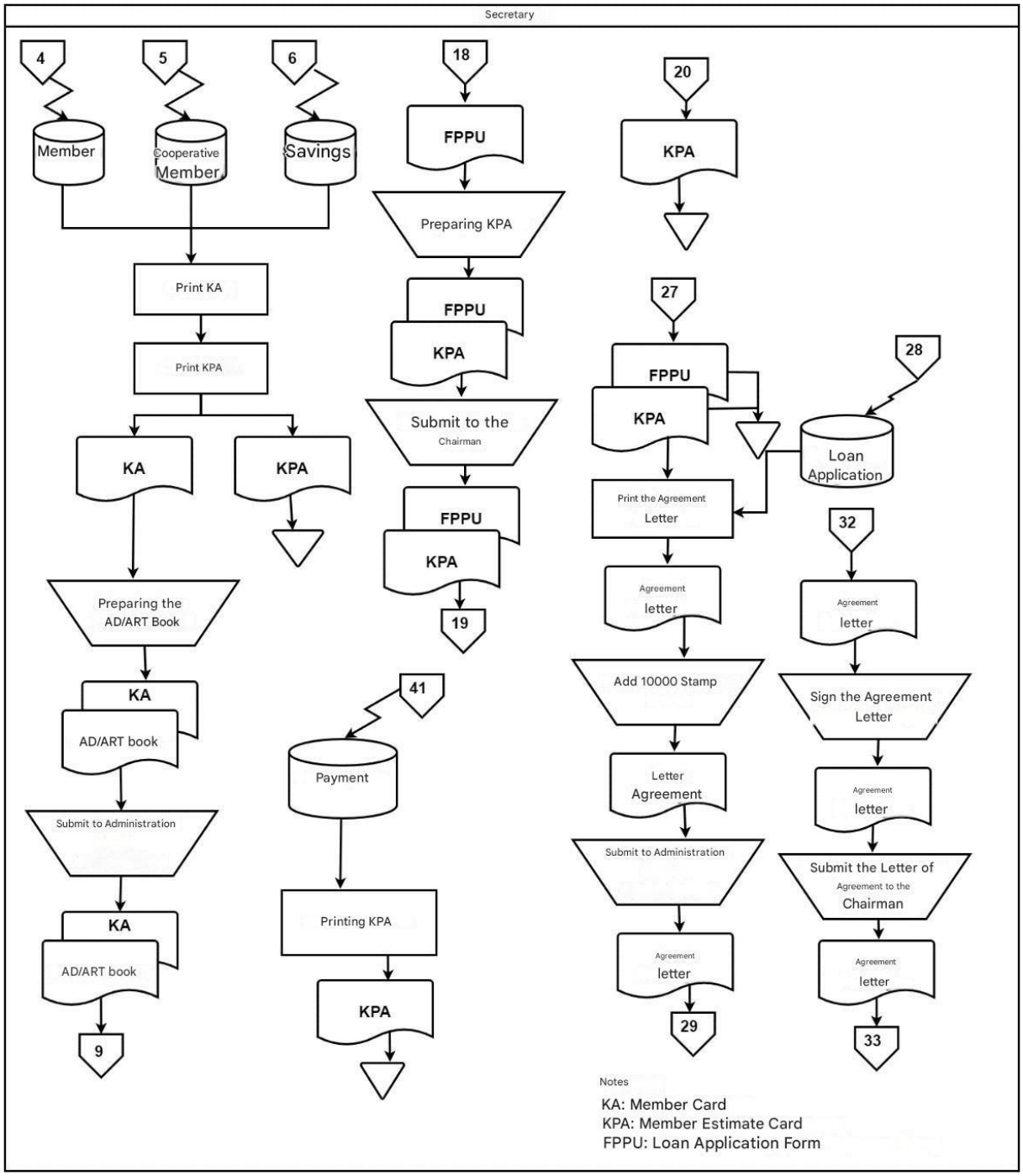

Figure 4. Proposed Savings and Loan Transaction Flowchart 3

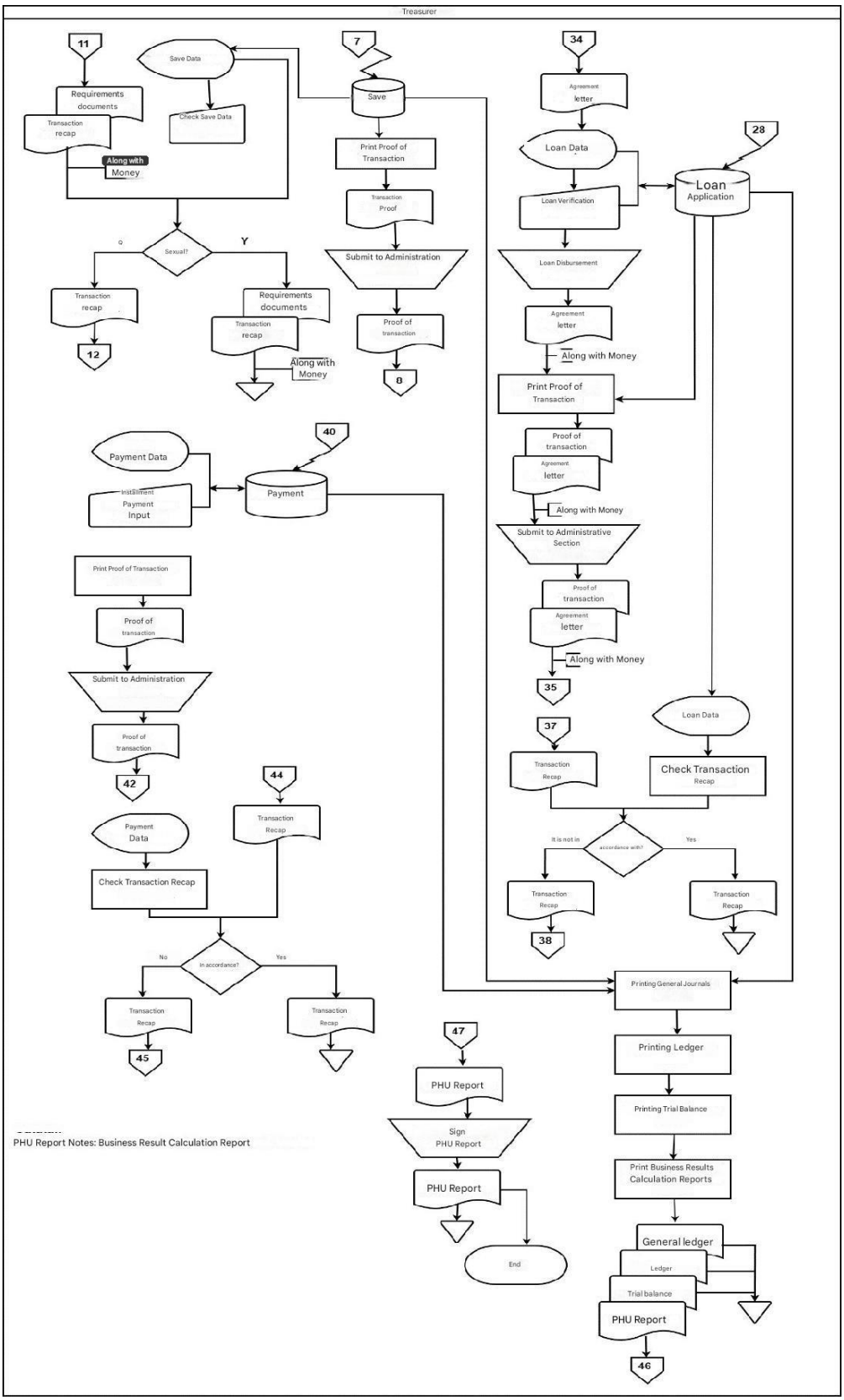

Figure 5. Proposed Savings and Loan Transaction Flowchart 4

8. Diagram Konteks

The proposed context diagram is an illustration that demonstrates how the new system will align with existing needs and processes. This diagram offers a comprehensive overview of the proposed system's functionality and its interactions with various entities within the cooperative.

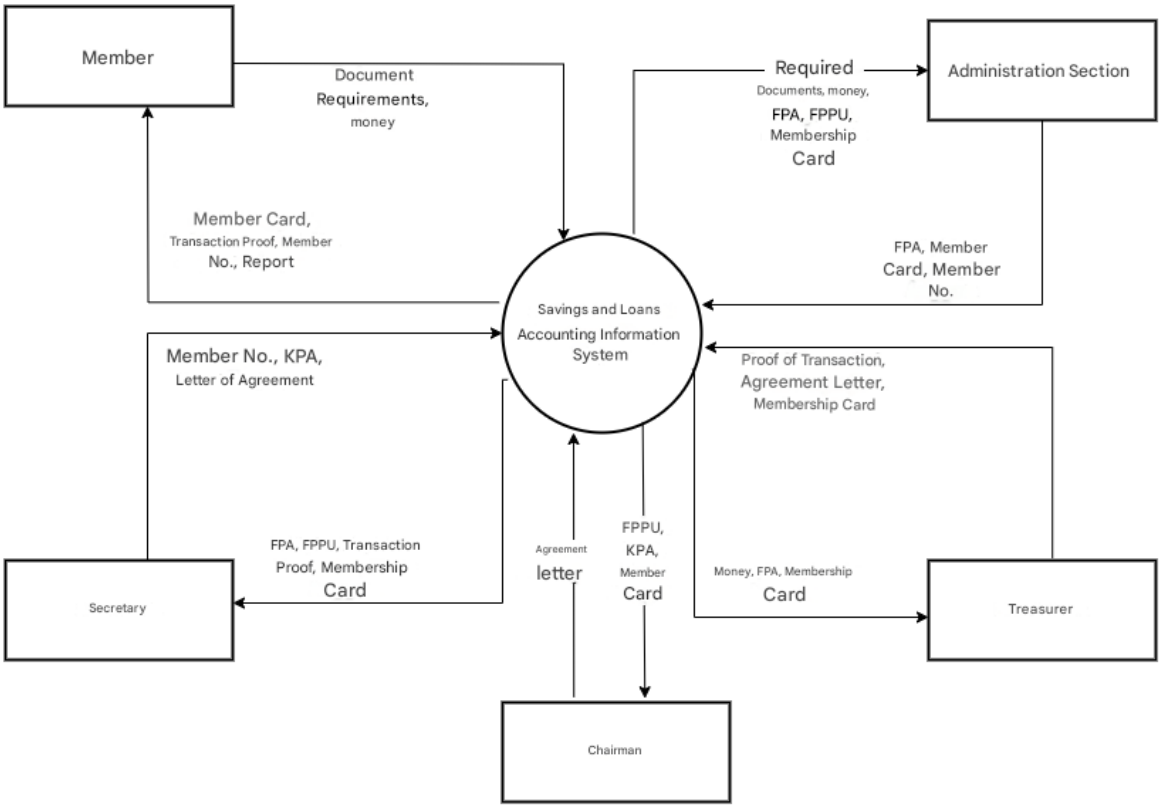

Figure 6. Context Diagram

The diagram illustrates the flow of information within a cooperative's Savings and Loan Accounting Information System, which involves various stakeholders such as members, administration, treasurer, chairman, and secretary. Cooperative members can submit the required documents and funds and, in return, receive membership cards, transaction proofs, member identification numbers, and reports generated by the system. This system serves as a centralized hub for managing all transactional data occurring within the cooperative, processing incoming information, and generating essential documents.

9. Data Flow Diagram Level 0

The proposed Data Flow Diagram Level 0 offers a comprehensive overview of the primary processes, demonstrating how the system aligns with operational requirements. It illustrates the flow of data between entities and processes in greater detail than the Context Diagram.

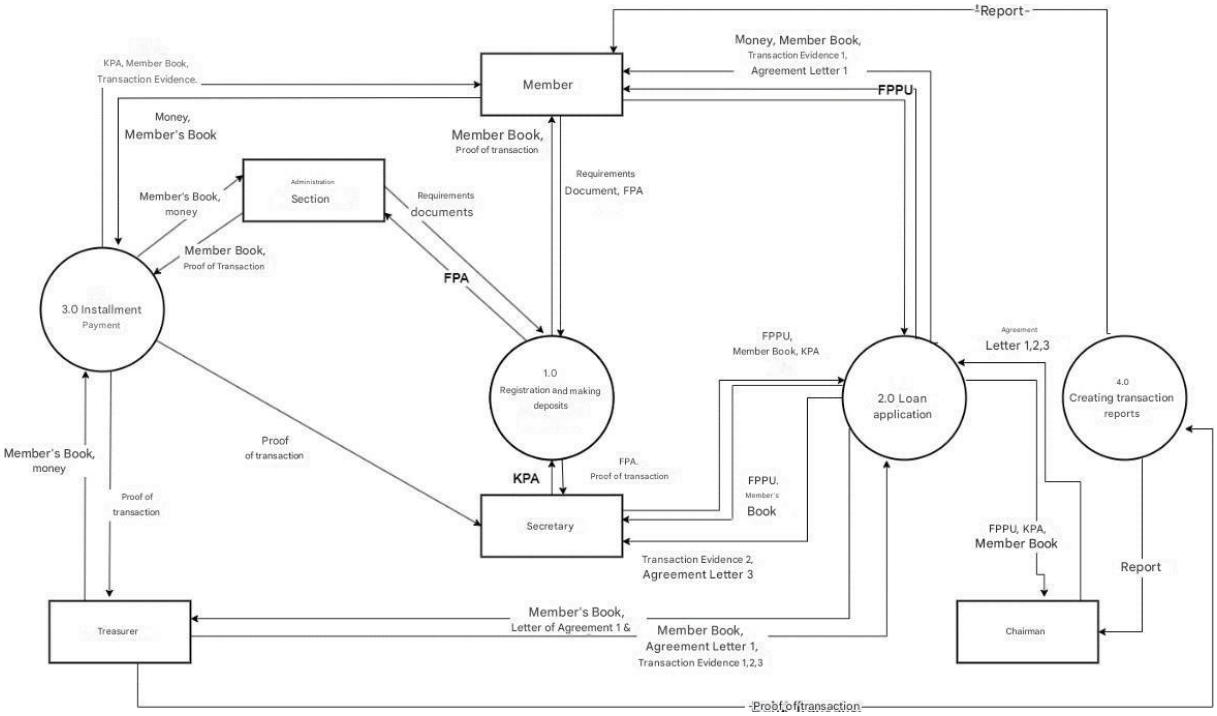

Figure 7 Level 0 Data Flow Diagram

The administration section, as one of the involved entities, enters the required documents, funds, FPA, FPPU, and membership card into the system, subsequently receiving outputs such as FPA, membership card, and membership number. The treasurer also plays a crucial role in this process by inputting funds, FPA, and membership card, and receiving outputs from the system, including proof of transaction, agreement letter, and membership card.

Meanwhile, the chairman inputs FPPU, KPA, and membership card, and receives the necessary agreement letter. The secretary interacts with the system by entering FPA, FPPU, proof of transaction, and membership card, and receives outputs such as membership number, KPA, and agreement letter from the system. Overall, this diagram illustrates how the savings and loan accounting information system effectively manages and distributes critical information and documents to support cooperative operations, from initial input to processing and output distribution among various internal entities. The following presents the results of designing a savings and loan accounting information system at KSP Sumber Bahagia using the CodeIgniter framework.

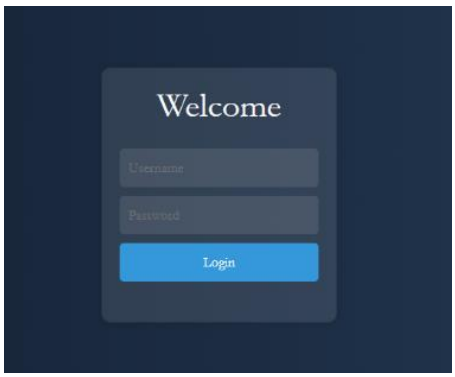

Figure 8. Login View

Figure 8 illustrates the home page of the web application, where users are required to enter a valid username and password to log in to the system. This interface serves as the primary entry point into the application, ensuring that only registered individuals with valid credentials can gain access. By providing accurate login information, users can utilize the various features and data pertinent to their roles or entities within the application. This login page not only contributes to maintaining system security but also ensures that access is granted exclusively to authorized users based on their functions and responsibilities within the organization.

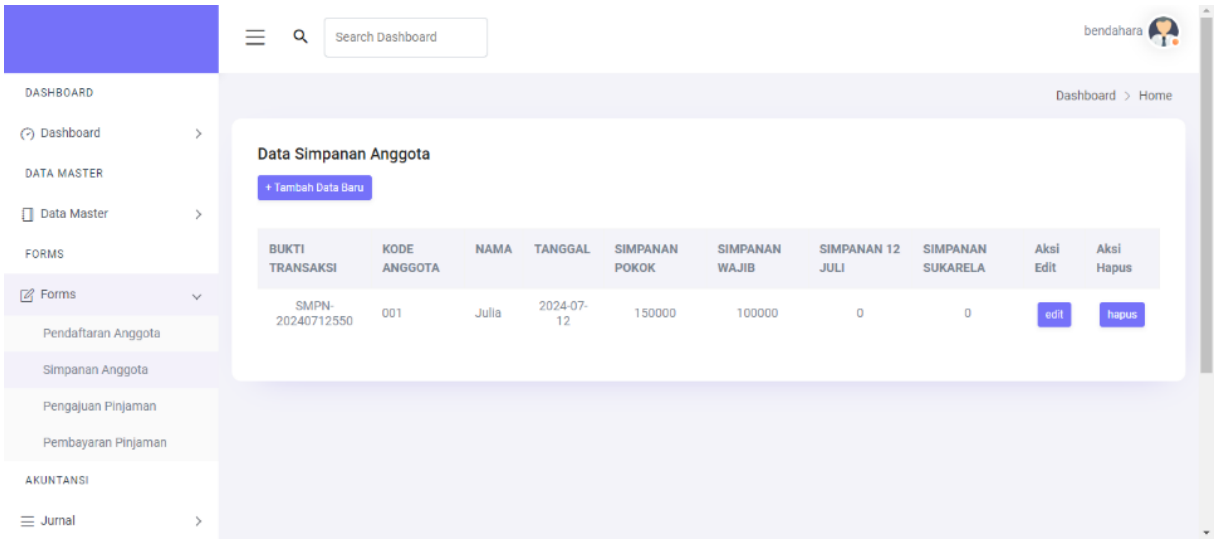

Figure 9. Member Savings Form View

This member savings form display is an integral component of a web application designed to manage savings data within the Savings and Loan Cooperative. At the top, users will find an "Add New Data" button for entering new information. Below, the table presents member savings details, including Transaction Evidence, Member Code, Name, Date, Principal Savings, Mandatory Savings, and Voluntary Savings. The "Action" column on the right provides options for users to edit or delete data, thereby facilitating the efficient management of member information.

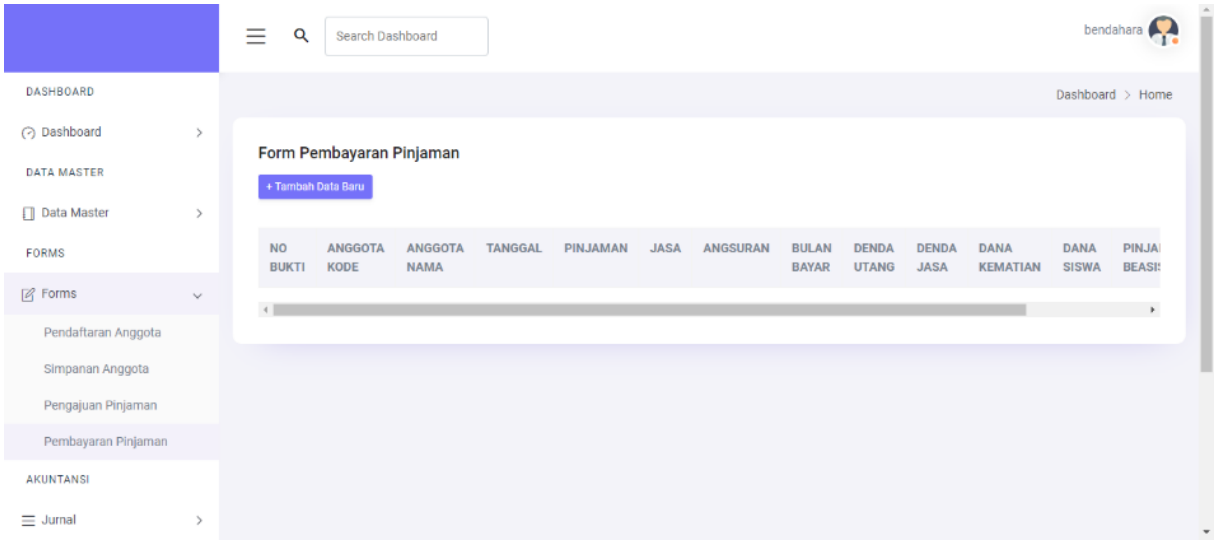

Figure 10. Loan Payment Form View

This installment payment form display is an integral component of a web application designed to manage member installment payment data at the Savings and Loan Cooperative. At the top, there is an "Add New Data" button for entering new installment payments. The displayed table includes essential information such as Proof Number, Member Code, Member Name, Date, Loan Amount, Services, Installments, Payment Month, Debt Fines, Service Fines, Death Funds, Student Funds, and Scholarship Loans. This form facilitates a comprehensive and structured approach to viewing and managing installment payment data.

Conclusion

After conducting comprehensive research at KSP Sumber Bahagia regarding the savings and loan accounting information system, the author has concluded. To address the identified issues, the author proposes the design of a tailored savings and loan accounting information system specifically for KSP Sumber Bahagia. This system will facilitate automatic transaction recording and generate real-time, accurate financial reports. Consequently, this accounting information system will serve not only as a recording tool but also as a foundational element for enhanced financial management at KSP Sumber Bahagia. Further research development can focus on the implementation and evaluation of the designed accounting information system, as well as analyzing its impact on managerial decision-making, operational efficiency, and integration with other supporting technologies to improve system transparency and reliability.

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