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Design and Implementation of a Saccos Management Information System for Sifa Saccos Members' Savings and Credits

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A B S T R A C T

The Savings and Credit Cooperative Societies (SACCOS) are financial co-operatives that aim at meeting the financial needs of all members, men/ women, old/ young, rich/ poor in particular, by encouraging savings and granting loans to the members. It belongs to its members who manage it democratically. Savings in a credit cooperative society play an important role of granting loans to members. For the SACCOS to be viable and sustainable, they must build their lending capacity through perpetual members' savings, at the same time meet the requirements as per cooperatives registrar's office. Currently SACCOS use manual systems in their operations. In most cases SACCOS are facing challenges such as lack of timely information flow; delay in payment of the loan; poor management of database system; poor computerized system; and delaying of presentation of financial reports to required stakeholders; time to process loan repayments; and time to generate reports and complete the auditing process. Requirements were gathered from Sifa SACCOS Ltd, which is located in Iringa region, in Tanzania. This is a community-based SACCOS with the common bond of members from Iringa municipality. This study uses Waterfall model. System was implemented using PHP, Apache, MySQL, and Visual Studio Code. The study is useful in increasing efficiency and effectiveness of the SACCOS procedures. It has automated member registration, deposits and withdraws, loan acquisition, loan payment, and reports modules.

Keywords: SACCOS, system development, savings, credit, waterfall model, PHP, Apache, MySQL, Visual Studio Code

1. Introduction

1.1 Background

Savings and Credit Cooperatives (SACCOs) are considered as voluntary associations where members are encouraged to make regular savings, and subsequently obtain credit for use in their different activities (Kule et al., 2020). A Savings and Credit Cooperative (SACCO) is a type of cooperative whose objective is to pool savings for the members and in turn provide them with credit facilities (Mwangi & Wambua, 2016). A savings and credit cooperative is an autonomous association of persons united voluntarily to meet their common economic, cultural needs and aspirations through a jointly owned and democratically controlled enterprise. The key idea behind a co-operative society is to pool the scarce resources, eliminate the middlemen and to achieve a common goal or interest (Idowu, 2017).

The Savings and Credit Cooperative Societies (SACCOS) are financial co-operatives that aim at meeting the financial needs of all members, men/ women, old/ young, rich/ poor in particular, by encouraging savings and granting loans to the members. It belongs to its members who manage it democratically (Anania & Gikuri, 2015).

According to (Mumanyi, 2014) there are three major categories of SACCOS, namely

1. Community-based - SACCOS. These SACCOS can be found in urban areas or regional towns, but are most frequently encountered on village level. A variety of group and individual loans can be found, including women solidarity loans, business loans for individual members, or loans for small and micro enterprises;
2. Employee-based SACCOS- These represent SACCOS where all the members are drawn from one employer and these SACCOS are generally located in urban areas or regional level. Specific salary-based loans are extended which are often guaranteed by the employer.
3. Agricultural SACCOS - To date these represent primarily small-scale farmers. Both individual farmers and farmers' associations can be clients of the SACCOS. Loans are extended for various purposes, including agricultural production loans. Many SACCOS may have a combination of different clients, including women Solidarity groups, individual borrowers for small business purposes, individual salaried clients or farmers.

1.2 Problem Statement

Savings in a credit cooperative society play an important role of granting loans to members. For the SACCOS to be viable and sustainable, they must build their lending capacity through perpetual members' savings, at the same time meet the requirements as per cooperatives registrar's office. Currently SACCOS use manual systems in their operations.

However, in most cases SACCOS are facing challenges such as lack of timely information flow; delay in payment of the loan; poor management of database system; poor computerized system; and delaying of presentation of financial reports to required stakeholders; time to process loan repayments; and time to generate reports and complete the auditing process.

This study curbs the gap by enhancing savings and loan management, through developing a system that stores information about member's saving and credits.

1.3 Study Beneficiaries

1. Members: Members are key to SACCOS. The output of study helps members to have timely information flow; receive payment of the loan in a relatively shorter time; average time it takes a member to make a deposit; and improved trust.
2. Members of Board: Board of SACCOS is responsible for ensuring that Manager and other workers are working according to expectations. Therefore, this study helps members of board to receive timely information; follow up on member's payment of the loan; increased capital; improved debt and equity funds; receiving financial reports; follow up of loan repayments; increased revenues; increased number of members; improved Return on Assets (ROA); increased Return on Equity (ROE), and improved trust.
3. Manager: Manager is a leader of workers in SACCOS. He oversees the activities. Using this study, manager has timely information flow; right information on payment of the loan; facilitates debt and equity funds; improved overall workload to be done on a daily basis; efficient process of loan repayments; short time to generate reports and complete the auditing process; increased revenues; increased number of members; improved Return on Assets (ROA); improved Return on Equity (ROE); and improved trust.
4. Loan officer: Loan Officer is responsible for loan management, including loan payment and making sure that loans are paid back in time. The study facilitates timely information flow; right information on payment of the loan; facilitate debt and equity funds; improved overall workload to be done on a daily basis; efficient process of loan repayments; short time to generate reports and complete the auditing process; and improved trust.
5. Teller: Teller's duties and responsibilities are to make and receive payments, enter records in the primary books of accounts, and balance daily transactions. The output assists teller to make timely information flow; and improved overall workload to be done on a daily basis.
6. Government: SACCOS are regulated by government agencies such as Registrar, and Bank of Tanzania (BoT). The government needs financial reports. Therefore, the study facilitates timely submission of reports and improved trust.

2. Related Works

SACCO is an acronym for Savings and Credit Cooperative Organizations. They are owned, governed and managed by their members who have the same common bond: they may be working for the same employer, belonging to the same church, labor union, social fraternity or living/ working in the same community. A person is admitted to membership in the SACCO after registration in accordance with the SACCO's by-laws (Kamulegeya et al., n.d.).

A SACCO's membership is open to all who belong to the group, regardless of race, religion, color, creed, and gender or job status. It's a unique, democratic, member driven and self-help cooperative organization where members agree to save their money together and offer loans to each other at reasonable rates of interest.

A study by (Kinyua, 2015) revealed that most of the SACCOs in Nyeri County including their branches are using traditional and old way in doing daily banking activities and also most of their systems and computers are old and without advanced software and new computer applications. In their study they recommend that the SACCOs should ensure that the information flow is transparent and effective. This will help enhance confidence and credibility of the operations of the SACCOs. In addition, the SACCOs will be able to monitor the information of clients and avoid falling into bad debts.

In his study (Cyiza, 2015) found that traditional methods of Loan management (use of pens, manual files to capture and manage such records) that are used at most finance services in Uganda including Ishaka Farmers' SACCO LTD pose difficulties in capturing, storage, retrieval and back up of clients' loan records. Since clients' loan records are kept in paper files and then stacked in open wooden shelves, retrieving a particular record is tiresome and time consuming and there are no security measures to the clients' records. As a result, the SACCO is not able to timely retrieve client records; carry out proper data analysis, which leads to increased clients waiting time, loss of client data, inaccurate and delayed reporting, leading to delayed and unguided decisions in loan management.

3. Methodology

Methodology is a formalized approach or series of steps. System development methodologies are divided into Structured design, Rapid Application Development (RAD), and Agile Development.

3.1 Methods and Technologies

3.1.1 Structured design

1. Waterfall Method
2. Parallel Development
3. Rapid Application Development (RAD)
    a. Phased Development
    b. Prototyping (system prototyping)
    c. Throwaway Prototyping (design prototyping)
4. Agile Development
    a. eXtreme Programming

3.1.2 Criteria for selecting Methods and Technologies

1. Clarity of User Requirements
2. Familiarity with Technology
3. System Complexity
4. System Reliability
5. Short Time Schedules
6. Schedule Visibility

This study uses Waterfall model. The Waterfall Model was the first Process Model to be introduced. It is also referred to as a linear-sequential life cycle model.

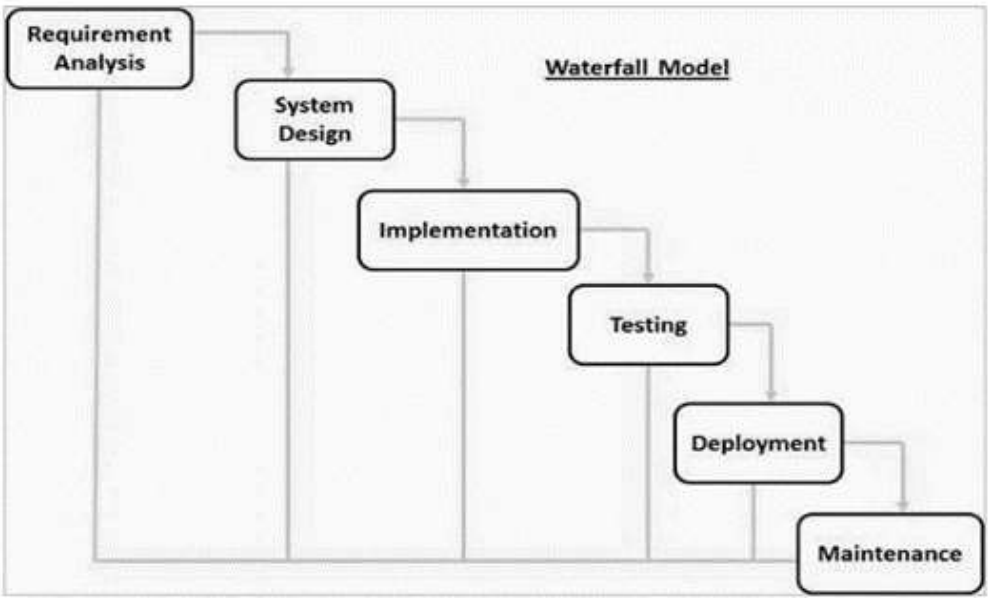

Fig. 1 – Waterfall Model

3.2 Reasons for selecting Waterfall Model

1. Simple and easy to understand and use.
2. Phases are processed and completed one at a time.
3. Works well for smaller projects where requirements are very well understood.
4. Clearly defined stages.
5. Easy to arrange tasks.
6. Process and results are well documented.

3.3 What was done in each phase of the methodology

1. Requirements Gathering and analysis: All possible requirements of the system to be developed were captured in this phase and documented in a requirement specification document. Requirements were gathered from Sifa Saccos Ltd, a community based saccos that is located in Iringa region, in Tanzania.
2. System Design: The requirement specifications from first phase were studied in this phase and the system design was prepared. This system design helped in specifying hardware and system requirements and helped in defining the overall system architecture. The system design shows a blue print of the system. Unified Modeling Languages (UML) have been used, such as use case diagram and Entity – Relationship Diagram.
3. Implementation: With inputs from the system design, the system was first developed in small programs called units, which were integrated in the next phase. Each unit was developed and tested for its functionality, which is referred to as Unit Testing.
4. Integration and Testing: All the units developed in the implementation phase were integrated into a system after testing of each unit. Post integration the entire system was tested for any faults and failures.
5. Deployment of system: Once the functional and non-functional testing was done, the product was deployed in the customer environment.
6. Maintenance: Maintenance was done to deliver the changes in the customer environment.

4. System Design

4.1 Use Case Diagram

A use case diagram is a dynamic or behavior diagram in UML. Use case diagrams model the functionality of a system using actors and use cases. Use cases are a set of actions, services, and functions that the system needs to perform. The "actors" are people or entities operating under defined roles within the system.

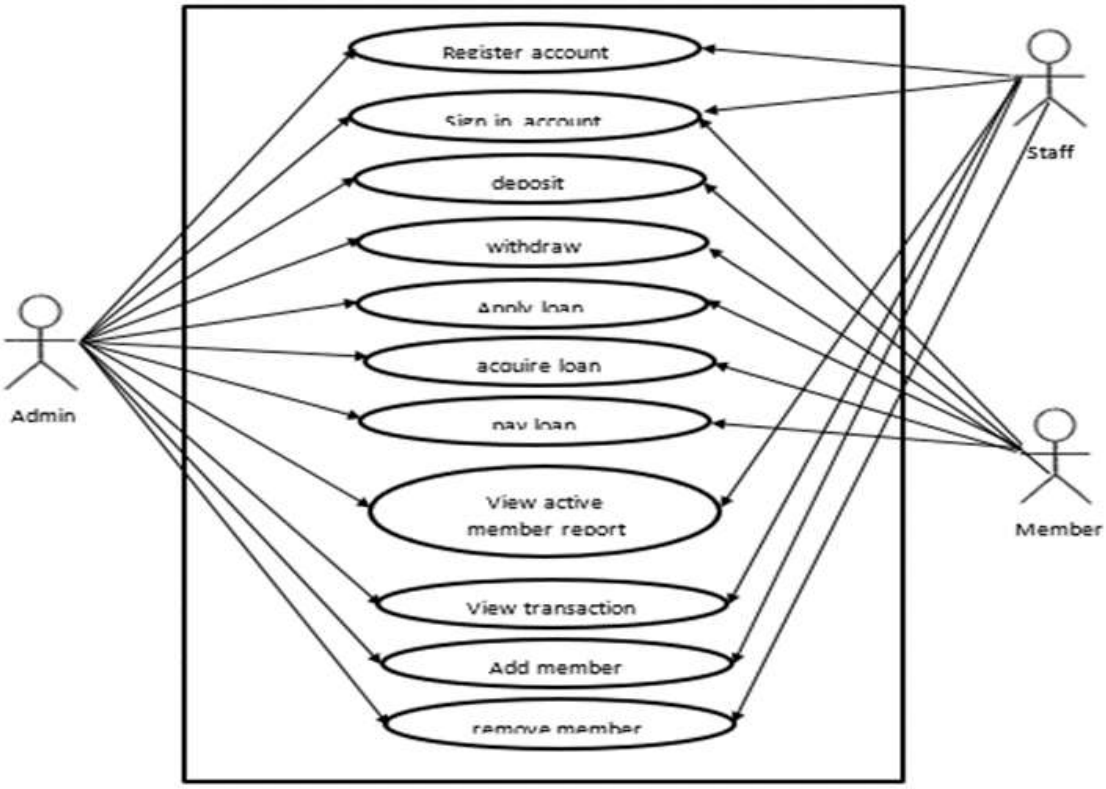

Fig. 2 – Use Case Diagram

4.2 Entity – Relationship diagram

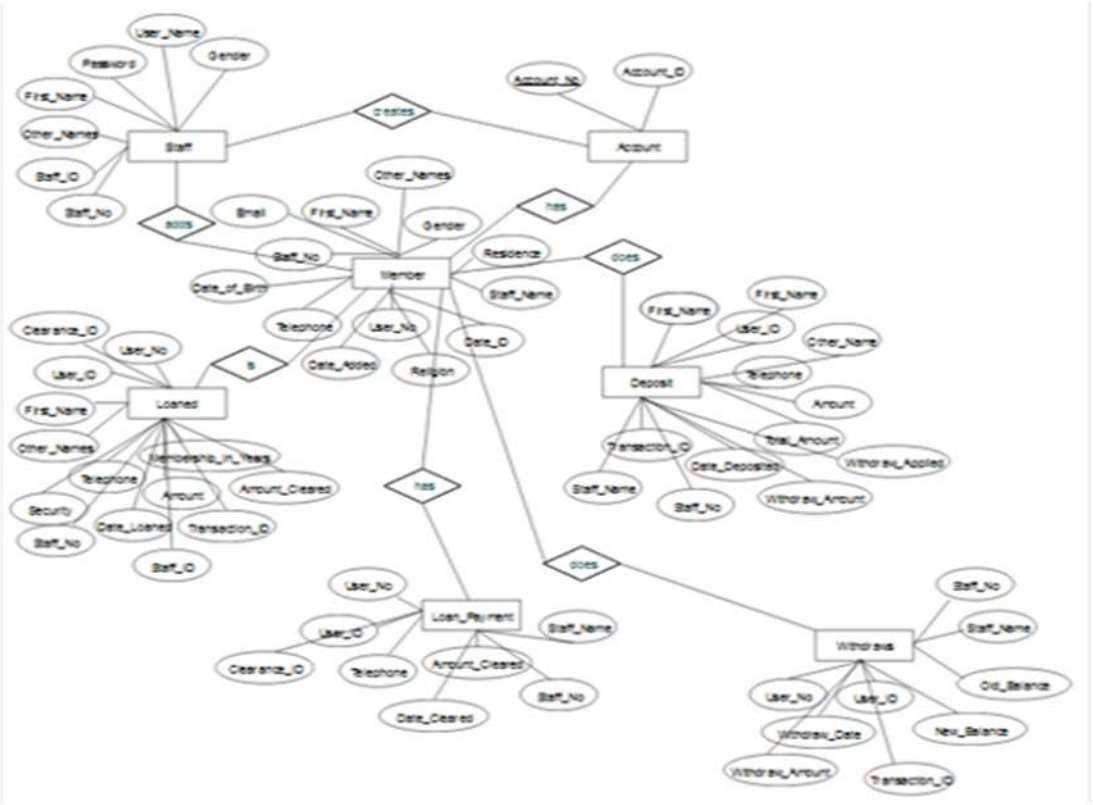

Fig. 3 – Entity Relationship Diagram

5. System Implementation

5.1 Database Implementation

A database was created with the name saccos. It has six tables namely all_clients, deposits, loaned, loan_payments, staff, and withdraws.

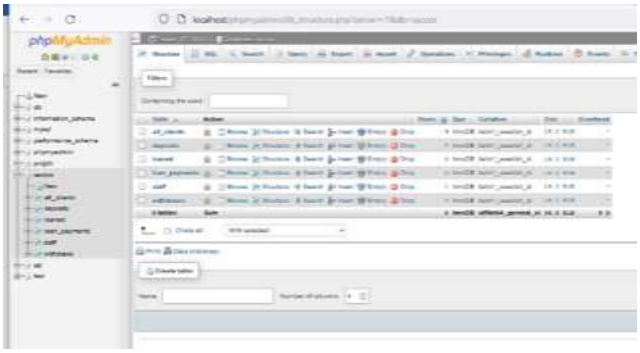

Fig. 4 – Database Implementation

5.2 Interface Implementation

5.2.1 User registration

This is an interface that allows a person who is not yet registered to be registered. User has to provide first name, other names, gender, password, confirm password, and username. User submits information by pressing a confirm button.

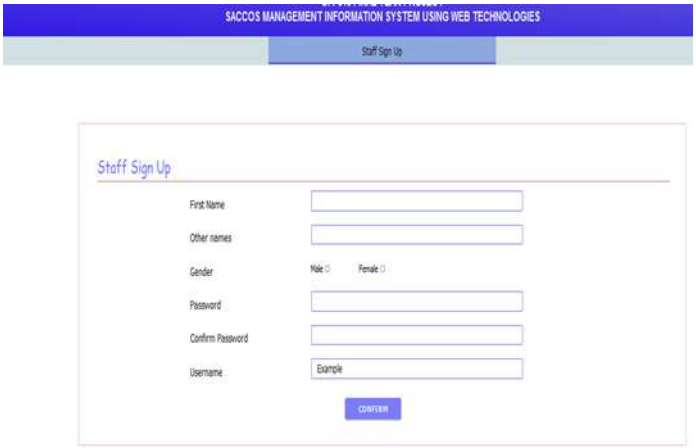

Fig. 5 – User Registration

5.2.2 User Sign in

This is the first interface that allows user to login into the system, if he has an account. User types username and password in the required fields, then clicks confirm button.

Fig. 6 – User Sign in

5.2.3 Dashboard

Fig. 7 – Dashboard

Fig. 7 above shows the system dashboard. It is a gateway to various modules. It shows five modules which are; member registration, deposits and withdraws, loan acquisition, loan payment, and reports.

5.2.4 Member registration

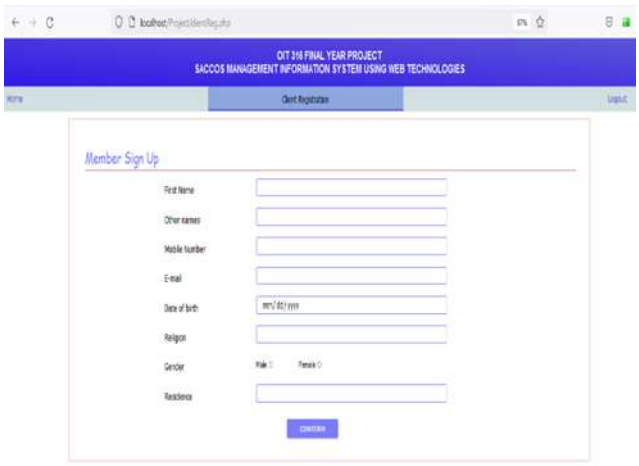

Fig. 8 – Member Registration

Fig. 8 shows member registration. Member has to provide his/ her relevant details. The details are captured and stored on the database.

CONCLUSION

SACCOS Management Information System was implemented using PHP, Apache, MySQL, and Visual Studio Code. Requirements were gathered from Sifa SACCOS Ltd, which is located in Iringa region. This is a community-based SACCOS with the common bond of members from Iringa municipality. The study is useful in increasing efficiency and effectiveness of the SACCOS procedures. It has automated member registration, deposits and withdraws, loan acquisition, loan payment, and reports modules.

Author calls upon many SACCOs to adopt to changing technology as it will enable them to increase efficiency of their processes and serve many customers. It will also enable them to manage member's information and manage their records.

Acknowledgment

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