

Saving and Loan Information System of Cempaka Cooperative Web Based

by Mira Ziveria

Submission date: 27-Sep-2022 03:53PM (UTC+0700)

Submission ID: 1910267072

File name: and_Loan_Information_System_of_Cempaka_Cooperative_Web_Based.pdf (1.35M)

Word count: 4403

Character count: 23903

Saving and Loan Information System of Cempaka Cooperative Web Based

Elena Caroline¹, Mira Ziveria²

^{1,2}Faculty of Creative Industry, Institut Teknologi dan Bisnis Kalbis
Pulomas Selatan Street 22nd Lots, East Jakarta, 13210, Indonesia

¹elenacaroline@yahoo.com

²mira.ziveria@kalbis.ac.id

Abstract - Cempaka Cooperative is a type of savings and loan cooperative that perform members data management and their conventional transaction, so it has the risk of data inaccuracies and the length of time required for data management. This study aims to build a savings and loan information system on Cempaka Cooperative in web based using prototype system development method which includes system analysis that use flowchart, system design that use Unified Modeling Language (UML) modeling, encoding that use Hypertext Preprocessor (PHP) programming language, data storage using MySQL, and system testing that use black box testing. The results of this study is a system that can be used to manage data member, savings transactions, loan transactions, cash withdrawal transactions, and loan installment transactions.

Keywords—saving and loan, prototype, UML, PHP, MySQL

I. INTRODUCTION

Cooperative is a business entity consisting of persons or legal entity cooperative with the base of its activities based on the principle of cooperatives as well as a people's economic movement based on the principle of kinship and can be an alternative financing to increase working capital and investment for small and medium entrepreneurs. Savings and Loans cooperatives are cooperatives with savings and loan services business for their members. Savings and loan cooperatives carrying out their activities based on the principle of kinship are useful to educate members to actively save regularly and can form their own capital from the savings and can also lend funds to cooperatives for venture capital [1].

The Cempaka Cooperative was founded by the unifying ties of regional and environmental people at St. Paskalis Church on July 22, 2001 and located at St. Paskalis Church, Jakarta, Indonesia. The initial capital amount is Rp 430,000 and the member's deposit until December 2016 is Rp 339,343,650. The management of Cempaka Cooperative is currently led by Mr. Tjhin Wie Nen. The number of officers in charge of running cooperative activities each week amounted to 3 people, namely Mrs. Margaret Christine, Mrs. Mary Magdalena Juniati, and Mrs. Tan Giok Kiaw. Members of the Cempaka Cooperative are the people whose residence is under the aegis of the Parish of Cempaka Putih, the Church of St. Paskalis which is divided into 10 regions and each region is divided into 5 to 7 neighborhoods. Area coverage starts from Sumur Batu, Kemayoran, Serdang, Cempaka Baru, Harapan Mulia, Rawa Selatan, Grogol, Tanah Tinggi, Rawa Sari, Mardani, Kali Baru, and Cempaka Putih (Cempaka Putih Barat, Cempaka Putih Tengah, Cempaka Putih Utara, Cempaka Putih Timur). In Desember 2016, total members are 186.

The main activity of Cempaka Cooperative is to provide saving and lending services for its members. Cempaka Cooperative has several facilities to serve the member's savings and loan transactions such as member book, credit slip and debit slip. The cooperative officers also have a data card as their data storage container for recording each of member's savings and loan transaction data. Any savings and loan transaction data recorded in the member book, it will be recorded also on the data card. Currently the system that runs in Cempaka Cooperative is still run conventionally such as recording data of the members, saving transaction data, loan transaction data, payment transaction data of loan installment and cash withdrawal transaction data.

From all analyzes of the current process of savings and borrowing activities, researchers get summarized some obstacles experienced by officers so far i.e (1) Search saving and loan data members will require a longer time, especially when members do not remember the number of member book (*Buku Anggota* or BA) because officers will search the member data one by one based on member's name; (2) Assignment of BA number to new member still by manual means officer must check the last BA number so it also takes a longer time; (3) In the registration of new members, to ensure that the prospective member has not been registered in the membership of the cooperative, the officer shall first check the data of the registered member. After member data is checked, the new officer can process the registration of candidate member data. Although there has never been a double member data error on Cempaka Cooperative, the process still takes a little longer; (4) Officers must perform repetition in recording data saving and loan that is in member book, data card, credit slip and debit slip. The officer also repeats the recording again on the final recap of the day, transferring the data from the credit slip (*Slip Uang Masuk* or SUM) to the summary of SUM and data from the debit slip (*Slip Uang Keluar* or SUK) to the summary of SUK. Recording of data repeatedly will take longer and may result in inaccurate data; (5) In making a data report member, officers must enter or update member data from a member book or data card into Microsoft Excel. In making savings and loan reports, officers should also include or update the savings and loan data of each member from SUM summaries and summary of SUK or from member books and data cards. Report generation activities on the current system also take longer.

Based on the above problems, the formulation of the problem in this research is how to build web-based savings and loan information system on Cempaka Cooperative that can help the cooperative officers in performing data processing members, savings transactions, loan transactions, cash

withdrawal transactions and loan installments quickly and accurate.

II. LITERATURE REVIEW

In this section the researchers cite references related to the research theme from various sources such as journals and books such as about saving and loan cooperatives, related previous research, information system, prototype system development method, database, MySQL software, system flowchart, Unified Modeling Language, web and black box testing.

A. Information System

Information Systems is a system within the organization that brings daily transaction management needs, supports operations, managerially, and strategic activities of an organization and provides certain outside parties with the required reports [2].

B. Method of Prototype Development System

Prototype method is a system development method that presents a complete picture of the system and the user can see the modeling of the system from the display side and procedural techniques to be built. Stages of prototype method that is identification and analysis of system requirements, system design, software coding, testing and system implementation [3].

C. Database

The database is a related set of data that connect each other logically and an explanation of the data, designed to find the data needed by organization. Database design is divided into 3 phases: conceptual, logical, and physical database design. Entity Relationship Model is used as a tools of communication between database designers and users of the system during the analysis or design phase of the database development process in the framework of the development of information systems as a whole. Entity Relationship Diagram is a diagram to illustrate the conceptual design of the conceptual model of a relational database [4].

MySQL is a relational database software that is Relational Database Management System (RDBMS) that uses database language Structure Query Language (SQL) [5].

D. System Flowchart

System flowcharts are used to simplify a set of processes or procedures to facilitate user understanding of the information. The design of a flowchart should be concise, clear, and logical. System flowchart symbols can be categorized into 4 parts namely input and process, output, storage, and others [6].

E. Unified Modelling Language (UML)

UML is the standard specification language used for documenting, specifying and building software. UML is a methodology in developing object-oriented systems and is also a tool to support system development. Tools used in object-oriented design based on UML include Use Case Diagrams, Activity Diagrams, and Class Diagrams [7].

F. Web

The Web is a collection of pages displaying text data, motionless or motion picture data, animation data, sound, video and or all of them, both static and dynamic, forming a series of interconnected buildings in which each is linked to a hyperlink [8].

G. Black Box Testing

Black box testing is software testing for functional requirements. This test aims to check whether the application is running as expected [9]. There are two ways of testing with black box testing that is (1) alpha test is to test the system directly by way of trial data, that is by entering the appropriate data or correct and also with the wrong data; and (2) beta test method is system testing done objectively that is direct to general user by using questionnaire to know opinion of respondent to built system. The results of the test will be written on the given questionnaire [10].

H. Previous Research

There is a relevant previous research that is the research that produces information systems that can help improve the efficiency of work in Cooperative Mitra Mandiri which facilitate treasurer in recording transactions of cooperative members using Waterfall system development method [11].

III. RESEARCH METODOLOGY

This section will describe the research materials, system development methods, and testing methods.

A. Research Materials

During this research, researchers conducted interviews with the heads of cooperatives and cooperative officers to find out every process of recording and processing of savings and loan data that run in Cempaka Cooperative until current date, the obstacles often faced by the heads of cooperatives and the officers with a system that runs in the current, and the expected needs of the new system development. Researchers also make direct observations for 2 months in the Cempaka Cooperative to see the practice and flow of processes undertaken by cooperative officers in serving the needs of member transactions.

B. System Development Methods

Researchers undertake the development of a new system in the flow of savings and loan activities process in Cempaka Cooperative by using the method of prototype system development. The steps taken are analysis, design, encoding, testing, and system implementation.

C. Testing Methods

Test method used is black box testing, where the user considers the software is a black box that sees software from the front end side only without knowing what the contents or codes in the black box. Testing to know that the software performs the function as expected. Testing is documented in written form and aims to check whether the application is running as expected. Functional testing involves how well the system performs its functions including user commands, data manipulation, search and business processes, screen users, and

integration. The framework of Cempaka Cooperative development is illustrated in Figure 1.

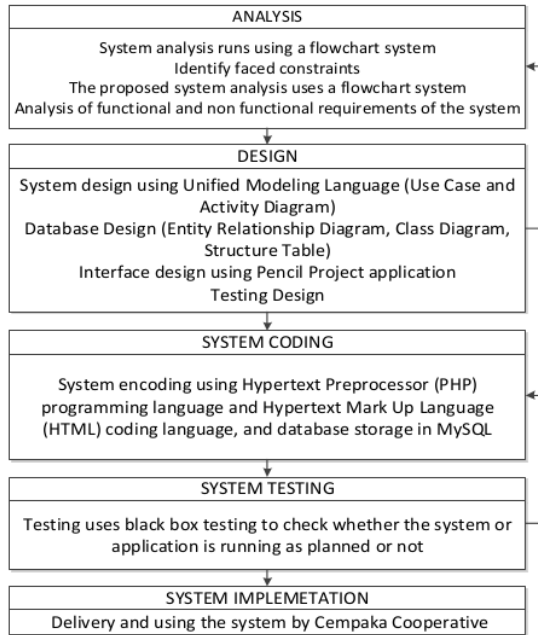


Fig. 1 Framework of Developing Cempaka Cooperative System

IV. DISCUSSION

In this section will be explained about the system analysis, system design, system coding results and test results that have been conducted.

A. System Analyses

In performing analysis on the system that is currently running conventionally used flowchart to be able to describe the work flow process and data performed. There are several flowcharts generated from the analysis of the current system i.e member registration process, savings process, loan process, loan installment payment process, cash withdrawal process, end of day recap process, member data reporting process, and process of making savings and loan report. The saving process flowchart on the old system can be seen in Figure 2.

B. Proposed System Analysis

In the proposed system, the main recording and processing of data and transactions conducted on the system so as to facilitate officers and heads of cooperatives in doing savings and loan activities as well as in making a summary of money coming in and money out and preparing reports. However, in this proposed system, the member book will still be used because the member book is still a formal requirement of the Cempaka Cooperative organization as well as a proof of membership for Cempaka Cooperative members. Every time the transaction, after the officer to input data into the system, the officer only copy the data once in the book members. On the right-hand side of each row of data in the member book there is a paraf column. During the conventional system that

has been running, the column is only filled by the officers. However, in the system that the researcher proposes, officers and members will equally give paraf to the column. The ink color of the pen used by officers and members to give the initials can be differentiated. Initial is a proof of receipt that the transaction has been completed.

In performing analysis on the proposed system used flowchart to be able to describe the flow of work processes and data performed on the proposed system. There are several flowcharts generated from the proposed system analysis namely member registration process, savings process, loan process, loan installment payment process, cash withdrawal process, end-of-day recap process, member data reporting process, and savings and loan reporting process. The saving process flowchart on the proposed system can be seen in Figure 3.

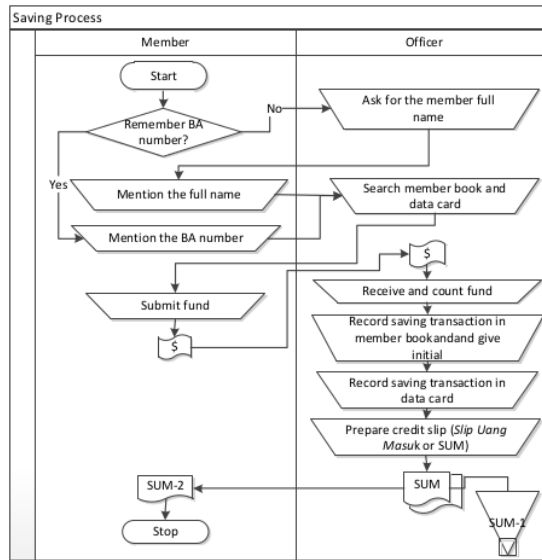


Fig. 2 Flowchart of Saving Process on Old System

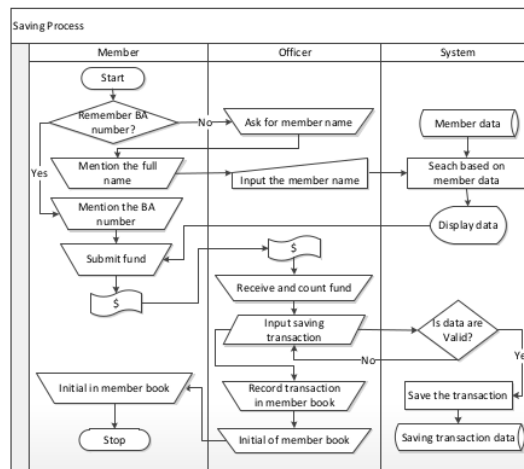


Fig. 3 Flowchart of Saving Process on Proposed System

C. Requirements Analysis

Functional requirements are necessities that contain functions that the system can perform. In the system to be proposed there are 2 users of officers and heads of cooperative. There are several functions for each user that will be displayed in the menus of the designed application along with the features in each function. Functional requirements for officers and heads of cooperatives are described in Table I.

TABLE I
FUNCTIONAL REQUIREMENTS

OFFICER AND HEAD OF COOPERATIVE	
Function	Description
Login	To enter the system
Member data processing	<ul style="list-style-type: none"> • Input, edit, and delete member data. • Search member data based on BA number or member's name. • Display the detail of member private date in PDF form. • Display member's saving transaction data in PDF form. • Display member's loan transaction data in PDF form.
Saving transaction processing.	<ul style="list-style-type: none"> • Input saving transaction. • Delete or cancel saving transaction. • Search saving transaction based on BA number.
Loan transaction processing.	<ul style="list-style-type: none"> • Input loan transaction. • Delete or cancel loan transaction. • Change the status of loan transaction to paid-off loan. • Search loan transaction based on BA number or loan number.
Loan installment transaction processing	<ul style="list-style-type: none"> • Input loan installment transaction • Delete or cancel loan installment transaction. • Search loan installment transaction based on BA number or loan number.
Cash withdrawall transaction processing	<ul style="list-style-type: none"> • Input cash withdrawall transaction • Delete or cancel cash withdrawall transaction. • Search cash withdrawall transaction based on BA number.
HEAD OF COOPERATIVE	
Function	Description
Admin data processing	<ul style="list-style-type: none"> • Input, edit, and delete admin data. • Search admin data based on username or admin name.

From data processing and conducted transactions, the system will produce output that can accessed by officers and head of cooperatives as follows: (1) Summary of entry money and cash outflow. Search and display data of all transactions daily based on selected date in PDF form; (2) Member data reports. Search and display member data from start of cooperative establishment to selected date in PDF form; (3) Savings and Loans Report. Finding and displaying total deposits (principal savings, mandatory savings, voluntary

savings) and remaining loan of all members from start of cooperative establishment to date selected in the form of PDF and Microsoft Excel.

Non functional requirements is a requirement that refers to the tools used in running a system, can be seen in Table II.

TABLE II
NON FUNCTIONAL REQUIREMENTS

Tools	Non Functional Requirements
Hardware	<ul style="list-style-type: none"> • 1 unit of HP Pavilion 14-AC186TU Core i3-5005U, RAM 4GB notebook • 1 unit of Mouse
Software	<ul style="list-style-type: none"> • Windows 7 or Windows 10 Operating System • Mozilla Firefox Browser. • XAMPP V.3.2.1 (phpmyadmin, apache, MYSQL). • Adobe Reader PDF and Microsoft Excel. • Notepad++
Security	<ul style="list-style-type: none"> • The application system with <i>password</i>. • The pages on the application system can not be directly opened without login.
Notification	<ul style="list-style-type: none"> • Used to display notification of success or failure of functions that run on the system. • Used to display information in filling in the columns when sending data are not filled. • Used to display information to confirm changes and deletion of data.

D. System Functional Design

In performing system functional design, UML is used use case diagram and activity diagram. Use cases diagram describe simply the main functions of the system and the various users that can interact with the system [12]. From the discussion conducted with the user, obtained the necessary needs on information systems to be used such as the functions contained in the system, the purpose of the functions provided, the actors or users who can use these functions, as well as interaction between actor with the function. There are two actors who can interact with the system and perform the existing functions of the head of the cooperative and the officer as described in Figure 4.

Head of the cooperative has a special function that can register officers to admin applications and perform other data processing such as edit, delete, and search data. All other functions can be done by the head of the cooperative and officers. In the main functions there are also features of data processing and transaction processing such as edit, delete, and search data. In view report function, the head of cooperative and officer can search member data report and savings and loan report based on selected date, then report will be displayed in PDF form with period of time from start of cooperative stand up to date selected. To view the sums of money coming in and out, users can search for a summary of the money based on the date selected, the incoming and outgoing summarized sum will be displayed in PDF format and contains information about all transactions made on the

day as well as information about the amount of cash inflow and cash outflow there that day.



Fig. 4 Use Case Diagram

Activity Diagram describes the workflow or activity of a system or business process [13]. By using activity diagrams, workflow or process designed on the system in Cempaka Cooperative. There are several work processes on the system i.e. login, admin registration, member registration, savings transaction, loan transaction, loan installment transaction, cash withdrawal transaction, incoming and outgoing cash sum, member data report, and savings and loan report. Activity Diagram of Deposit Transactions may be dumped on Figure 5.

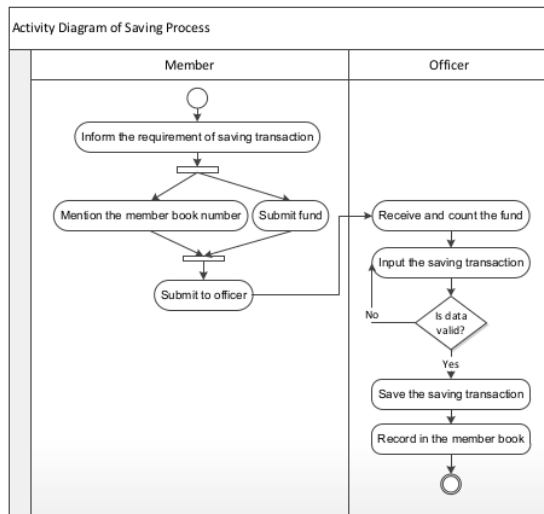


Fig. 5 Activity Diagram of Saving Process

E. Database Design

Database design is divided into 3 levels: conceptual level using Entity Relationship Diagram (ERD), logic level using Class Diagram, and physical level using Table Structure. ERD is described in Figure 6 and Class Diagram is depicted in Figure 7.

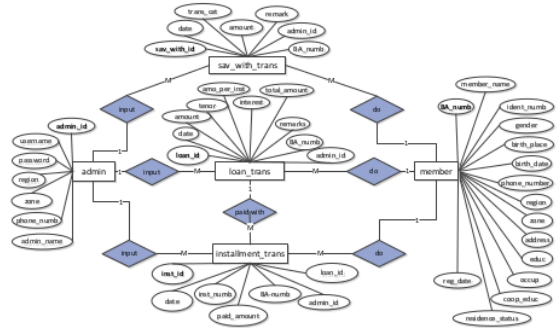


Fig. 6 Entity Relationship Diagram

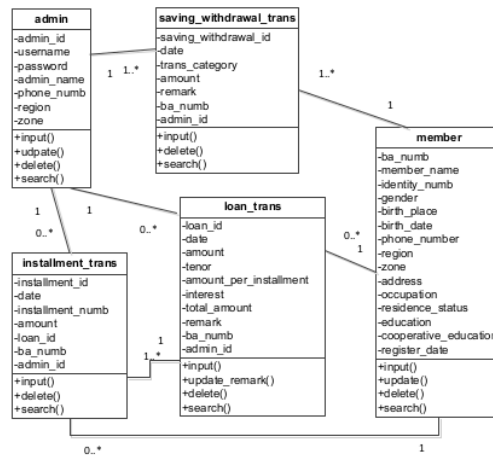


Fig. 7 Class Diagram

No more than 3 levels of headings should be used. All headings must be in 10pt font. Every word in a heading must be capitalized except for short minor words as listed in Section III-B.

F. Interface Design

Interface design is built using Pencil Project application. Designed interface for the system is the main page and login design, homepage, members, member registration form, saving transaction, savings transaction input, loan transaction, loan transaction input, cash withdrawal transaction, cash withdrawal transaction input, loan installment transaction, installment transaction, member data report, savings and loan report in pdf, savings and loan report in Microsoft Excel, summary of cash inflow and cash outflow. Figure 8 is the interface design for saving transactions.

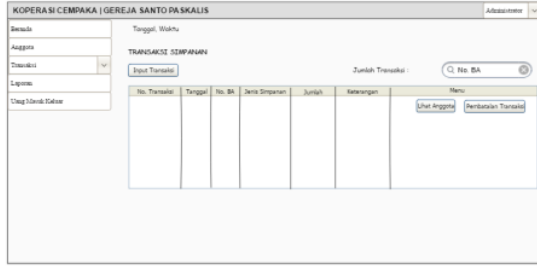


Fig. 8 Interface Design untuk Transaksi Simpanan

G. System Encoding Results

Some examples of system encoding results can be seen in Figure 9 for login interfaces, Figure 10 for the transaction interfaces stored, and Figure 11 for the data report saving and loan interface in PDF form. Login interface is the main page of the application. This page serves as an entrance for officers and heads of cooperatives to use applications. Login is done by entering username and password. The transaction interaction of deposits contains all transactions that have been performed or stored on the system. At the top left of the table there is a menu to perform input transactions, at the top right of the table provided features to search transactions and displayed information on the number of transactions available. On each transaction line is provided menu to cancel the transaction. Also provided menu to view details of data members who make transactions because the table only inform BA number of members who make the transaction. Interface of savings and loan data report in pdf format contains information about total deposits and residual loan of each member based on period from start of cooperative stand up to date selected in PDF form.



Fig.9 Login Interface

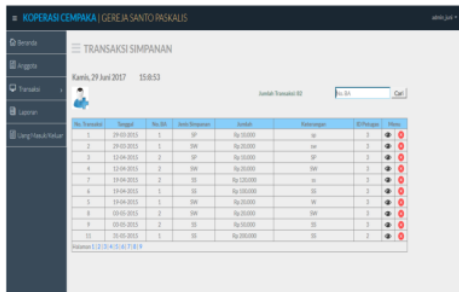


Fig.10 Interface of Saving Transaction

LAPORAN SIMPAN PINJAM ANGGOTA KOPERASI CEMPAKA GEREJA SANTO PASKALIS Per Tanggal: 29-06-2017

No. BA	Nama Anggota	Simpanan			Total Simpanan	Sisa Pinjaman
		Pokok	Wajib	Sukarela		
1	Bernadette Frisca	10.000	430.000	800.000	1.240.000	0
2	Monika Della Rosa Pratiwi	10.000	340.000	370.000	720.000	0
3	Franciskus Andy Susanto	10.000	440.000	2.400.000	2.850.000	1.650.000

Fig.11 Interface of Savings and Loans Data Report in PDF Format

H. System Test Results

The system was tested using black box testing. The result of system testing is for login function, admin data, member data, savings transaction, loan installment transaction, cash withdrawal transaction, sum of money entry and exit, member data report, and savings and loan report, all can run as planned.

IV. CONCLUSIONS

After conducting research and development of savings and loan information system at Cempaka Cooperative web based can be concluded that (1) system can be built with prototype development method with stages of analysis, designing, coding, testing and implementation; (2) The system can be used to manage member data, savings transactions, loan transactions, cash withdrawal transactions, and loan installment transactions and generate sums of entry and exit money, member data reports, and savings and credit reports.

REFERENCES

- [1] S. Juliasty, "Cerdas Mendapatkan dan Mengelola Modal Usaha", Jakarta: Balai Pustaka, 2009, p. 6
- [2] J. Hutahaean, "Konsep Sistem Informasi", Yogyakarta: Deepublish, 2014, pp. 8-10, 13-14
- [3] D. Rosmala, M. D. Djatmiko and B. Julianto, "Implementasi Aplikasi Website E-Commerce Batik Sunda Dengan Menggunakan Protokol Secure Socket Layer (SSL)", Jurnal Informatika, vol. 3, no. 3, pp. 60-61, 2012.
- [4] R. Yanto, Manajemen Basis Data Menggunakan MYSQL, Yogyakarta: Deepublish, 2016, pp. 30-52
- [5] Anisya, "Aplikasi Sistem Database Rumah Sakit Terpusat Pada Rumah Sakit Umum (RSU) 'Aisyiyah Padang Dengan Menerapkan Open Source(PHP-MYSQL)", Jurnal Momentum, vol. XV, no. 2, p. 51, 2013.
- [6] B. Soeherman and M. Pinontoan, Designing Information System, Jakarta: PT Elex Media Komputindo, 2008, pp. 134-138.
- [7] G. Urva and H. F. Siregar, "Pemodelan UML E-Marketing Minyak Goreng," Jurnal Teknologi dan Sistem Informasi, vol. I, no. 2, pp. 93-98, 2015.
- [8] A. S. Riyadi, E. Retnandi and A. Deddy, "Perancangan Sistem Informasi Berbasis Website Subsistem Guru di Sekolah Pesantren Persatuan Islam 99 Rancabango," Jurnal Algoritma, vol. IX, no. 40, p. 3, 2012.
- [9] J. Simamarta, Rekayasa Perangkat Lunak, Yogyakarta: Andi, 2010, p. 316.
- [10] Komarudin dan A. R. Riswaya, "Sistem Keamanan Web Dengan Menggunakan Kriptografi Message Digest 5/MD5 Pada Koperasi Mitra Sejahtera Bandung," Jurnal Computech & Bisnis, vol. VII, no. 1, pp. 39-40, 2013.
- [11] Tuwarno and R. A. Triono, "Sistem Informasi Simpan Pinjam Koperasi Mitra Mandiri Jetak," Journal Speed-Sentra Penelitian Engineerin Edukasi, vol. V, no. 4, pp. 18-19, 2012.
- [12] Suryasari, A. Callista dan J. Sari, "Rancangan Aplikasi Customer Service Pada PT. Lancar Makmur Bersama," Jurnal Sistem Informasi, vol. IV, no. 2, pp. 469-470, 2012.
- [13] G. Urva dan H. F. Siregar, "Pemodelan UML E-Marketing Minyak Goreng," Jurnal Teknologi dan Sistem Informasi, vol. I, no. 2, pp. 93-95, 2015.

Saving and Loan Information System of Cempaka Cooperative Web Based

ORIGINALITY REPORT

13%

SIMILARITY INDEX

12%

INTERNET SOURCES

7%

PUBLICATIONS

6%

STUDENT PAPERS

PRIMARY SOURCES

1	cdn.undiknas.ac.id Internet Source	1%
2	klik.ulm.ac.id Internet Source	1%
3	icee2020.tabrizu.ac.ir Internet Source	1%
4	ejournal.bsi.ac.id Internet Source	1%
5	repository.maranatha.edu Internet Source	1%
6	Febrianty, Hendra Hadiwijaya, D. Tri Octafian. "System Development Management E-School as a Students Information Media", Journal of Physics: Conference Series, 2021 Publication	1%
7	journal.unilak.ac.id Internet Source	1%
8	www.scribd.com Internet Source	1%

1 %

9

zombiedoc.com

Internet Source

1 %

10

is.its.ac.id

Internet Source

1 %

11

ejurnal.tunasbangsa.ac.id

Internet Source

1 %

12

library.binus.ac.id

Internet Source

1 %

13

www.researchgate.net

Internet Source

<1 %

14

A Suresti, R Wati, A Agustar, A Hasan.
"Importance Performance Analysis of Dairy
Processing Cooperatives for
Recommendations on Capacity Building for
Small and Medium Enterprises and
Cooperatives in the Regional Innovation
System of Padang Panjang City, West
Sumatra", IOP Conference Series: Earth and
Environmental Science, 2021

Publication

<1 %

15

ejournal.uniks.ac.id

Internet Source

<1 %

16

karyailmiah.unipasby.ac.id

Internet Source

<1 %

17	www.amrita.edu Internet Source	<1 %
18	ijies.sie.telkomuniversity.ac.id Internet Source	<1 %
19	jurnal.ulb.ac.id Internet Source	<1 %
20	id.123dok.com Internet Source	<1 %
21	repositori.usu.ac.id Internet Source	<1 %
22	www.slideshare.net Internet Source	<1 %
23	W Setiyaningsih, H L Purwanto, G Susanto, M Ahsan, A Y Eko, Y Trestiarso, D Daryanto. "Design of information systems of reporting the performance of honorary employees at the web based office of communication and informatics in Blitar Regency", Journal of Physics: Conference Series, 2021 Publication	<1 %
24	cis.ulster.ac.uk Internet Source	<1 %
25	repository.bsi.ac.id Internet Source	<1 %
26	thilakshids.medium.com	

Internet Source

<1 %

27 www.ijadis.org
Internet Source

<1 %

28 www.indiawebsitedesigndevelopment.com
Internet Source

<1 %

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off