Design and Construction of A Web-Based Employee Cooperative Information System Sinar Sejahtera

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Abstract— Digitalization has revolutionized business operations, cooperative functions including Karyawan Sinar Sejahtera Cooperative in Surakarta. Using manual methods, such as Excel, to manage savings, loans, and member data has led to inefficiencies, especially exacerbated by COVID-19. This study aims to design a website-based information system to address these challenges. Through interviews, the need for a more efficient, secure, and memberfocused system was identified. The research involves needs analysis, system design, website development, implementation, and evaluation. By improving operational efficiency and member welfare through IT application, this research combines practical and academic approaches to tackle digitalization challenges in cooperatives. Evaluation of the system will offer insights for further enhancements, contributing to cooperative development.

Keywords— digitalization, cooperative, information system, operational efficiency, website, evaluation.

I. INTRODUCTION

Digitalization in the present era brings significant changes in various sectors of life, this occurs due to technological advancements as the evolution of time [1]. In the increasingly developing technological era, information systems play a very important role in human life, one of

which is to increase productivity and efficiency in the community's economic sector [2]. Now digitalization has become an unavoidable necessity in this era. The acceleration of this digitalization era is caused by information technology rapidly becoming a standard component of modern companies [3].

The acceleration of digitalization has led and organizations, businesses many including cooperatives, to start digitalizing their operations [4]. This change is important for them to provide the best service. Cooperatives, as one of the propeople business entities, many of them still operate manually and have not switched to using modern systems [5]. New technology from this digitalization is used to improve the effectiveness of cooperative work and can be used to make better decisions and control the data collected [6]. Therefore, it is important to create a website to improve efficiency and performance cooperatives.

Karyawan Sinar Sejahtera Cooperative is a savings and loan cooperative located in Surakarta. The current system is still not computerized, so savings, loan reports, and so on are still done manually through Microsoft Excel [7]. The lack of accuracy in inputting data and financial reports can also hinder the effectiveness and efficiency of cooperative operational processes.

II. LITERATURE REVIEW

Information System

An information system is an instrument consisting of interconnected elements designed to gather, process, store, and provide information in order to facilitate decision-making and manage activities within an organization. Information systems typically take the form of software, hardware, computer networks, databases that are integrated to achieve predetermined goals. Therefore, information systems, in general, are integral parts of organizations that always require subsystems for the process of gathering, processing, storing data, and distributing information [8].

Cooperative Information System

The concept of a cooperative entails an association comprising individuals or legal entities, allowing entry and exit flexibility for its members, who collaborate as a family. Etymologically, "cooperative" derives from the word "cooperation," which involves working or striving together. Hence, cooperation can be interpreted as working together or making joint efforts for mutual benefit. Generally, a cooperative is understood as an association of individuals who voluntarily join forces to advocate for the improvement of their economic wellbeing through the establishment of a democratically managed enterprise [9]. With the rapid advancement of technology, cooperatives are also evolving to keep pace with technological trends. Therefore, cooperatives need to develop savings and loan information systems to minimize errors inherent in manual systems, thereby enhancing members' trust levels. Cooperative Savings and Loan Information System is a data processing mechanism designed to facilitate the processing of data and transactions within the scope of savings and loans, aiming to generate accurate information [10].

PHP

PHP is one of the web programming languages created by and for web developers. In late 1994, Rasmus Lerdorf, a software developer and member of the Apache team, designed and released PHP for the first time. The initial purpose of developing PHP was simply to track visits to Rasmus Lerdorf's personal website. PHP has since been specifically developed to create web-based applications. In addition to being free, PHP is also easy to learn by anyone. PHP is a programming language used to run web pages and is often used to manage information on the internet. PHP stands for Hypertext Preprocessor, a serverside web programming language that is free of charge. PHP is a programming language integrated with HTML and runs on the server [11].

XAMPP

XAMPP is a free software that can be run on various operating systems, consisting of a set of programs bundled together. This text explains that this software functions as an independent server that operates on its own computer (localhost). Its components include the Apache HTTP Server program, MySQL database, and language interpreters written using PHP and Perl. The name XAMPP is short for X (four types of operating systems), Apache, MySQL, PHP, and Perl. This program can be downloaded for free under the GNU General Public License. It serves as a simple web server to accommodate dynamically changing web page displays. You can obtain it by downloading it directly from its official website [12].

MYSOL

MySQL is a database management system that uses SQL language as a bridge between the database server and software, and it is a relational database management system (RDBMS) like SQL Server. This system helps users to search for and access specific data within a database, and it allows for executing queries on multiple tables

simultaneously. MySQL, with its opensource nature, offers users flexibility and adaptability in development according to their needs. MySQL is widely chosen in development web-based web and applications because it can handle large volumes of requests and transactions simultaneously. In MySQL, a database consists of one or multiple tables. Tables consist of rows, and each row contains one or multiple columns. There are several methods to manage MySQL databases through the DOS prompt [13].

Codeigniter

CodeIgniter is a framework comprising various library files, classes, and runnable infrastructure inspired by the Ruby on Rails Framework. Utilizing CodeIgniter as the framework for developing a cooperative website offers numerous benefits and relevance. CodeIgniter is one of the popular and robust web development frameworks that can aid in the development of web applications, including cooperative web applications. By employing CodeIgniter in the development of a cooperative website, it brings advantages as a structured framework with high performance and various features that accelerate development process, ensuring security and stability in the daily operations of the cooperative [14].

III. METHOD

1. Data Collection Method

To tackle the aforementioned issues, the author adopts the Qualitative Data Collection approach. This method is utilized to examine system requirements using diverse data collection techniques. These techniques encompass a range of approaches, such as:

1. Interview

To obtain additional data, this approach involves interaction with Mrs. Rina, who serves as the cooperative manager. During this interaction process, the author receives relevant input regarding issues in the cooperative environment as well as the dayto-day management of cooperative activities. This also assists in designing the website that will be created to enhance operational efficiency.

2. Observation

Surveys or observations involve direct actions by researchers to gather relevant data. In this context, the researcher conducts direct observations at the location where the employees of Karyawan Sinar Sejahtera Cooperative work in the city of Surakarta.

3. Literature review

A literature review, also known as a literature study, is an accurate method of data collection where the main subject is the research object itself. This technique involves exploring theories that have been discussed in previous research and are relevant to the topic being studied. Literature reviews are used to explore and detail sources of writing relevant to the research.

2. Location and Research Objects

The research is conducted at Jl Slamet Riyadi no. 136, Timuran Village, Banjarsari Sub-district, Surakarta, with postal code 57131. Why choose the above location? Because the project to develop the website for the Employee Cooperative Information System of Sinar Sejahtera Cooperative is aimed at facilitating and expediting the ongoing activities within the cooperative. The location above is chosen for testing purposes. The primary interview subject in this research is Mrs. Rina, the main manager of Sinar Sejahtera Cooperative.

3. Development method application

In the research to develop the websitebased application for Sinar Sejahtera Employee Cooperative, the Waterfall method of application development approach is employed. The Waterfall method is a sequential and structured approach in information system development, more suitable for software development with stable specifications.

Essentially, the Waterfall approach involves steps carried out sequentially. This means that each step must be completed before moving on to the next, and so forth.

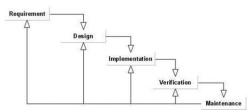


figure 1 Waterfall Method

figure 1 below This is explanation stage waterfall method:

1. Requirements

The initial stage is the Analysis phase, which involves understanding the needs of users to create a web-based information system for Sinar Sejahtera employee cooperative

.2. Design

This multi-step process focuses on program design, including data structures, software architecture, interface representation, and coding procedures. The design phase is also intended to provide an overview of what needs to be accomplished. This design stage translates the software requirements from the requirements analysis stage into a design representation, allowing the program to be implemented in the next phase.

3. Implementation

In this stage, the earlier design is translated into the actual program that will be created. The program is developed in the form of a website using programming languages, including JavaScript, for the web-based Information System at Sinar Sejahtera employee cooperative.

4. Testing

After completing the coding stage, the program is tested to ensure that the system works well and meets the specified requirements.

5. Maintenance

After the software is installed and can be used effectively, routine maintenance and bug fixes are performed to ensure the system operates smoothly.

4.Flowchart

In general, flowcharts are used to illustrate the workflow or process within a system. In the development of a cooperative website, flowcharts can be utilized to design the interaction flow between users and the website, starting from the member registration process, savings management, balance checking, to loan application and installment payment processes. Flowcharts assist developers in visually understanding how various processes and functions of the website will operate.

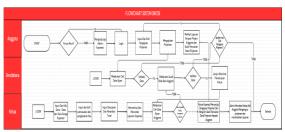


figure 2 Flowchart of Cooperatives

It is evident that to access the main menu of the system from the homepage, login is required. If the user doesn't have login access or is a cooperative member, they contact the cooperative admin to obtain a login account. Login is mandatory for every system access, and after login, the user will be directed to the main dashboard page of the system There are Three different levels of user access in the cooperative system which are for member, treasurer, and admin.

4. Use Case Diagram

A use case diagram is typically used to illustrate the interaction between users (actors) and the system within various usage scenarios or use cases. In the development of a cooperative website, a use case diagram can identify the needs of cooperative users, such as login, viewing

savings information, applying for loans, and viewing cooperative cash reports. The use case diagram also assists in designing the functionality of the website with a focus on user experience.

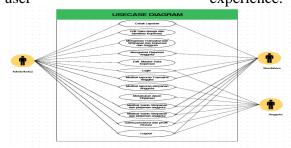


figure 3. Use Case diagram Cooperatives
System

In figure 3, In the Use Case Diagram of Sinar Sejahtera Cooperative the Information System, there are three types of actors: treasurer, cooperative member, and cooperative admin, each with specific roles and access rights in the system's features. Cooperative members, as actors with the lowest access rights, can only apply for loans online and view some reports related to their loan applications without being able to add or delete data. The treasurer has a higher level of access than the members. The treasurer has access to view and make decisions regarding first-level applications from members, view member data, edit profiles, change passwords, and logout.

6. Entity Relationship Diagram

Entity Relationship Diagram (ERD) is the diagram used For show connection between entity or object in something system or database. Entity Relationship Diagram (ERD) is also used in database design for show data structures and relationships between entity, figure 4 below is the ERD from the Ray Shop website natural

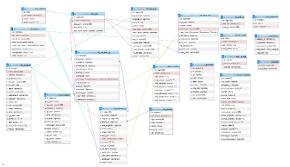


figure 4. Entity Relationship System diagram Cooperatives System

IV. RESULTS AND DISCUSSION

Based above on the problem background, the design of the Cooperative Savings and Loan Information System (SIKOSI) at CIMB Niaga Bank first aims to cooperative facilitate members conducting online savings and loan transactions. This system involves two user Cooperative groups: Members and Cooperative Managers. Members can perform transactions, view transaction history, and access personal information, while Managers have high-level access to manage member data, verify loans, and manage financial reports. The technologies used include PHP, Bootstrap, and MySQL as the DBMS.

7. System Design

Sinar Sejahtera employee cooperative website is developed using **PHP** JavaScript, programming, **MySOL** database, and Bootstrap. It is hosted on a web-hosting service, allowing easy access for users across various browsers. The program is executed through web hosting, accessibility for all users. enabling Administrators have the capability to review loan request from member, add, delete, or edit data. The members have the capability to request for loan funds.

8. System Required Analysis

Based on the Q&A with the cooperative owner, the desire is to have new cooperative features such as transaction history, loan reports. password modification, member savings reports offer convenient access, transparency, and improved control over members' financial transactions, thereby enhancing member satisfaction and involvement within the cooperative. Furthermore, these functionalities aid the cooperative's chairperson and treasurer in efficiently and effectively managing and making financial decisions concerning the cooperative. The login feature and website security system also offer strong data protection for members and cooperative information. Consequently, this cooperative website has delivered substantial benefits to involved parties in terms of operational efficiency and cooperative management.

A. Home view

The original Sinar Sejahtera employee cooperative website is accessible online



figure 5. Home Page Admin

In figure 5 above is appearance beginning from the Sinar Sejahtera employee cooperative website on this home page admin can do many thing towards the cooperatives data, such as add, edit, delete, and print pdf report of almost all cooperative data and money management repots. Admin also has the authority to provides and change details about the cooperative setting and important data such as cooperatives biodata and interest rate of loans.

Loan application page



figure 6. Loan application page

In figure 6 you can see a picture of the loan application page for cooperative members. Here the chairman or admin of the cooperative makes the final decision whether to approve member loans or not. The chairman of the cooperative will refuse a member's loan if the cooperative's cash at that time is insufficient or there are other interests. This application page also has the same printing features as the loan application page on the treasurer's side.

Loan Details Page



figure 7. Loan application page

In figure 7 you can see a detailed page of installments and loans for each member of the cooperative. The chairman of the cooperative here is tasked with recording and monitoring every installment and loan that has been made by cooperative members. After the admin presses the details button on the loan and installment data page, the loan details page will appear. Here the admin can also validate the payment in full if cooperative members immediately pay the entire loan they have made.

B. Member home view



figure 8. Home Page Member

In figure 8 above you can see the results of the cooperative member dashboard display. Here members can see their profile data, transaction history, see the status of the loan application that the member has made. Cooperative members can also see a brief report on the history of savings balances, credit bills and information containing the member's transaction history.

Request loan page



figure 9. Request loan page

In figure 9 you can see an figure of the website page used by cooperative members to make loan applications to the cooperative. Members can borrow money with installment options that they determine themselves.

C. Cashflow report page



figure 10. Cashflow report page

In figure 10, you can see page of the cooperative members' cash data report where the cooperative chairman can see if there are any overdue installment payments from members. In this report, the cooperative chairman can monitor the installment payment status of cooperative members, making it easier for them to identify if any members are experiencing delays or inability to pay installments. This is important in managing the cooperative's finances and ensuring that cash flow remains stable.

D. Member savings report



figure 11. Member savings report

which can be seen in figure 11, This savings report is presented based on the time period chosen by the cooperative chairman. Using this report, the cooperative chairman can view and analyze the savings made by cooperative members during a specific period. This allows them to monitor the progress of member savings over time and make appropriate decisions for cooperative financial management.

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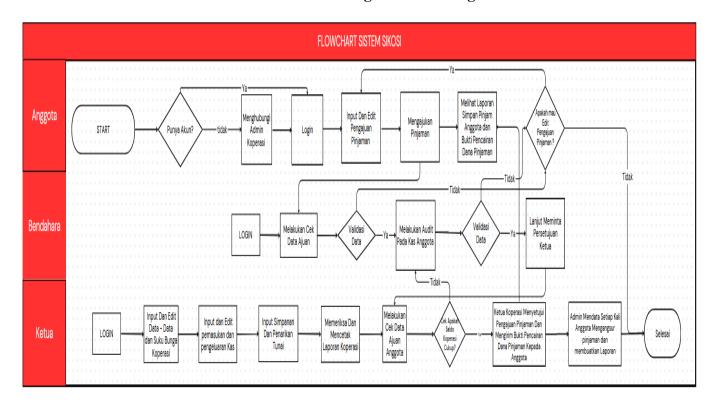


Figure 2 Flowchart of Cooperatives

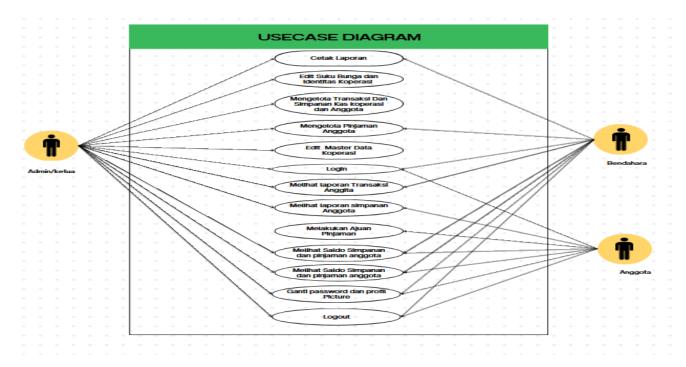


Figure 3. Use Case diagram Cooperatives System

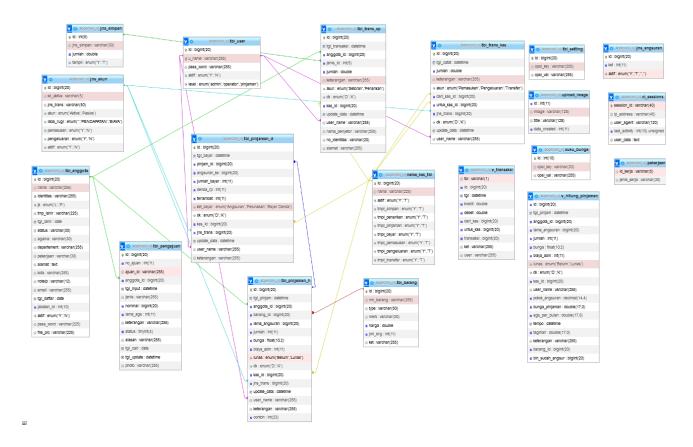


Figure 4. Entity Relationship System diagram Cooperatives System

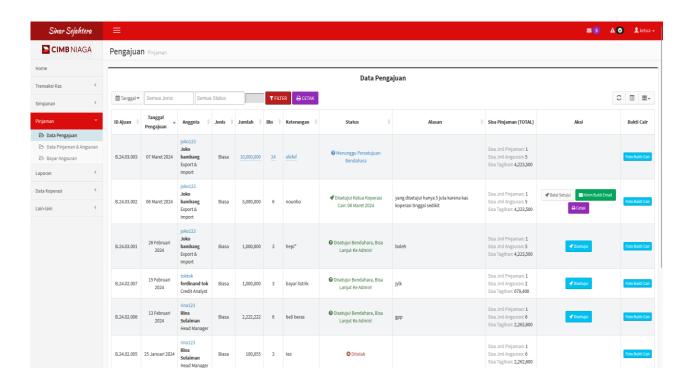


Figure 6. Loan application page

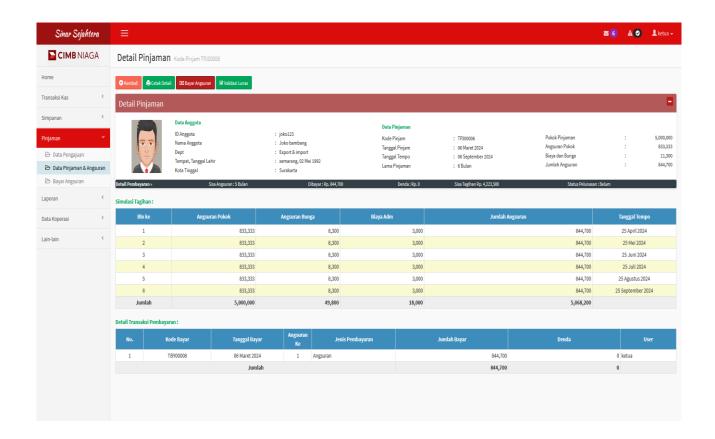


Figure 7. Loan application page

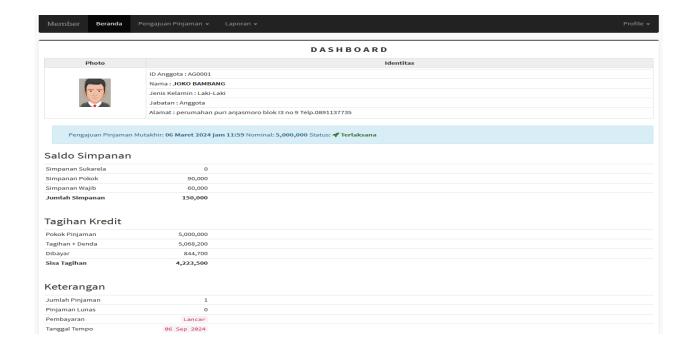


Figure 8. Home Page Member

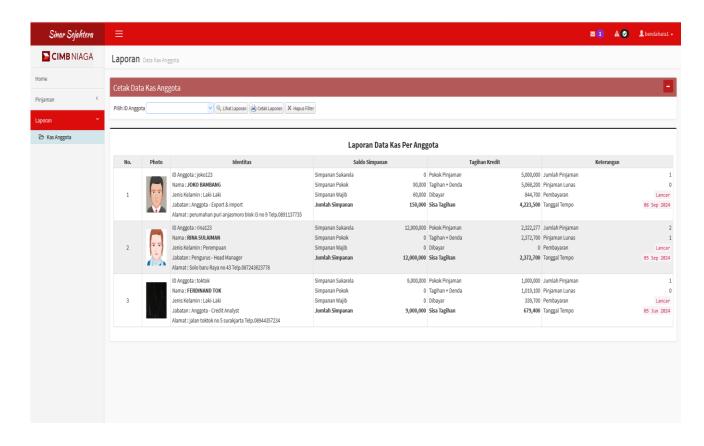


Figure 10. Cashflow report page



Figure 11. Member savings report

Based on the data and the results of developing the Sinar Sejahtera Employee Cooperative Information System Based on Website, it can be concluded that the implementation of this system successfully enhanced the effectiveness and efficiency of the cooperative's operations. By integrating all processes from member registration to financial reporting into one system, there has been a reduction in human errors and the workload of administrative staff. Cooperative members also benefit from easy access to information and transactions through the website, enabling them to manage their membership, monitor savings, and apply for and track loan statuses more efficiently. Data integration also improves the accuracy and security of member data, instilling trust in the cooperative among its members. Therefore, the implementation of the Sinar Sejahtera Employee Cooperative Information System Based on Website has provided significant positive impacts in enhancing operational performance and service delivery to cooperative members.

The evaluation results of the website conducted among the cooperative chairman or administrator, cooperative members, and cooperative treasurer conclude that the Sinar Sejahtera Employee Cooperative website provides significant benefits in facilitating savings and loan activities simplifying within cooperative, the cooperative data management, enhancing the quality and effectiveness of services provided to cooperative members.

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WEBSITE TESTING

The evaluation of the SIKOSI website is conducted by the chairman or administrator of the cooperative, cooperative members, and the cooperative treasurer, with the evaluation results as follows.

No.	Question	Answer		
1	How can the use of this website help the Sinar Sejahtera Employee Cooperative? (for the chairman)	The use of the website at the Sinar Sejahtera Employee Cooperative provides significant benefits in facilitating savings and loan activities within the cooperative, simplifying cooperative data management, and improving the quality and effectiveness of services provided to cooperative members.		
2	In your opinion, what are the advantages of this website for you in managing the cooperative? (for the chairman and treasurer)	The use of the Sinar Sejahtera Employee Cooperative website greatly facilitates cooperative owners and administrators in monitoring or managing the amount of member savings and loans, thus facilitating the chairman and treasurer in managing the cooperative.		
3	How do you find the process of adding, editing, or deleting data on the cooperative website	The CRUD admin feature on this website is very user-friendly and helpful in cooperative management.		

	when using the admin feature? (for the chairman)	
4	How can this website help you make good decisions regarding the approval of loan applications from cooperative members? (for the chairman and treasurer)	This website facilitates the chairman and treasurer in evaluating and approving or rejecting loan applications online, speeding up the decision-making process.
5	What is your opinion about the existing login system feature, does it provide benefits or enhance security for the cooperative? (for the chairman)	This feature is very useful and important in safeguarding member data, financial transactions, and other cooperative information from unauthorized access or misuse.
6	What are the advantages of this website for you in handling member loan installment payments in the cooperative?	The website facilitates handling member loan installment payments.

	(for the	
	(for the chairman)	
	Chairman)	
	What are the	
	advantages	
	of this	
	website for	
	you in	701 1 to 1
	handling	The website greatly
	cooperative	assists in providing
	members in	information on when
7	providing	the loan disbursement
	detailed	date is to the chairman
	information	and cooperative
	on the date	members.
	the loan	
	funds are disbursed?	
	(for the	
	treasurer)	
	What is your	
	opinion	The login feature
	about special	works effectively as
	features,	needed, providing
8	such as the	benefits in terms of
	cooperative	security in accessing
	login	the cooperative.
	system? (for	-
	the treasurer)	
9	How does	
	the loan	
	application	
	feature on	The loan application
	this website	feature greatly helps in
	help you as	applying for funds at
	one of the	the Sinar Sejahtera
	cooperative	Cooperative.
	members?	
	(for the	
	Member)	

		-	
10	What is your opinion about the login feature on this website? (for the Member)	The login feature provides convenience and ease, both in terms of security and member privacy.	
11	What is your opinion about the ease of accessibility provided by this cooperative website? (for the Member)	This website helps facilitate access to information about member accounts, such as savings balances, transaction history, and loan status, anytime and anywhere through the website, without the need to visit the cooperative office directly.	
12	What are the advantages of this website for you in conducting savings and loan activities in the cooperative? (for the cooperative)	This website can increase accessibility, convenience, and transparency in conducting savings and loan activities in the cooperative.	
13	What is your response to specific website features, such as transaction history, loan reports, password change, and savings reports? Do you find these features beneficial as	Overall, these features provide easy access, transparency, and better control over member financial activities, increasing satisfaction and engagement among cooperative members.	

a cooperat member (for the	ive ?	
Member)	

Based on the evaluation results of the SIKOSI website conducted among the cooperative chairman or administrator, cooperative members, and cooperative treasurer, it can be concluded that the Sinar Sejahtera Employee Cooperative website provides significant benefits in facilitating savings and loan activities within the cooperative, simplifying cooperative data management, and enhancing the quality and effectiveness of services provided to cooperative members. Features such as transaction history, loan reports, password change, and savings reports offer easy access, transparency, and better control over members' financial activities, thereby increasing satisfaction and engagement among cooperative members. Moreover, these features also assist the cooperative chairman and treasurer in efficiently and effectively managing and making financial decisions regarding the cooperative. The login feature and security system on the website also provide adequate protection member data and cooperative information. Thus, this cooperative website has brought tangible benefits to all involved parties in terms of efficiency and cooperative management.