

Designing Mobile-Decision Support System for Credit Determination at Village Credit Institutions to Improve Credit Management Efficiency

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Abstract: Village Credit Institution (LPD) has an important role in collecting public funds and channeling loans as the main source of income. However, LPD Desa Adat Sibang Kaja still faces serious obstacles in credit management, including bad debts and the lack of utilization of information systems in the analysis and decision-making process. So far, credit assessment has been done manually and subjectively, making it prone to delays and the risk of non-performing loans. To answer the challenges, this research offers a solution in the form of building a mobile-based credit determination decision support system using the Waterfall software development method. The system is designed to assist the admin in managing applicant data, assessment criteria, and reports, while the survey team can enter the assessment data directly. The results show that the system is able to provide a faster, more accurate, and transparent analysis of creditworthiness. Prospective debtors can also monitor the results of credit applications directly, thereby increasing the transparency aspect. The implementation of this system is proven to improve the efficiency of credit management, reduce the risk of bad debts, and support the sustainability of LPD businesses through more measurable and professional credit management.

Keywords: Decision Support System; Credit Management; Waterfall Method; Mobile Application; Village Credit Institution.

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Introduction

Lembaga Perkreditan Desa (LPD) is a village-owned financial institution that has an important role in collecting public funds as well as channeling credit. LPD Desa Adat Sibang Kaja, which was established in 1992, has made credit the main source of income. The large contribution of credit to income confirms that the smoothness and quality of credit is a major factor in maintaining the sustainability of the LPD business. However, conditions in the field show that there are still serious obstacles, including the existence of bad debts and the lack of utilization of information technology in credit management [1]–[3].

The main problem faced by LPD Desa Adat Sibang Kaja is the lack of utilization of information systems in the credit analysis and management process. So far, the credit assessment process is still carried out manually and relies on subjective considerations from related parties. This subjectivity is further strengthened by the personal closeness between employees and prospective debtors, as well as differences in assessment priorities from three authorized sections (credit section, LPD chairman, and supervisory body). As a result, the decision-making management process is long,

inefficient, and potentially leads to the risk of non-performing loans[4]–[9].

To answer these problems, the solution offered is to build a digital-based Credit Determination Decision Support System designed with the Waterfall software development method [10]–[13]. The Waterfall method was chosen because it provides a structured and systematic workflow, starting from requirements analysis, system design, implementation, testing, to maintenance. With this system, it is expected that the credit assessment process can be carried out more quickly, accurately, and objectively, thereby minimizing the risk of non-performing loans and improving credit management performance in LPDs.

The purpose of this research is to produce a mobile-based decision support system that can help LPD Desa Adat Sibang Kaja in analyzing creditworthiness precisely and transparently. [14]With an integrated system, LPDs are expected to be able to optimize credit management, accelerate loan realization, and maintain business sustainability through improved credit quality management that is more measurable and professional.

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Method

This research uses the Waterfall method [15] as an approach in designing and developing a credit determination decision support system at LPD Desa Adat Sibang Kaja. The Waterfall method was chosen because it is able to provide a systematic, structured, and easy-to-understand workflow, so that each stage can be carried out sequentially properly. The stages of the method include:

Needs Analysis

At this stage, identification of system needs is carried out through observation, interviews, and data collection related to the business process of granting credit at LPD. The focus of the analysis is how the credit assessment process is currently carried out, the obstacles faced, and the criteria that must be met so that credit is eligible for distribution. The result of the analysis is a list of functional and non-functional requirements of the system to be built, such as the need to assess eligibility based on credit criteria, generate reports, and provide recommendations.

System Design

The purpose of knowing these processes is to understand the course of the system as a whole and the obstacles that may exist during system development, namely:

Functional Requirements : The functional needs of the Credit Determination Decision Support System for Customers with the Profile Matching Method at LPD Desa Adat Sibang Kaja Mobile-based, namely the login feature as security to protect the system where users must enter a username and password based on the user's authority. Admin can perform data processing consisting of user data, customer data, criteria data and reports. Team Survey can process assessment data when conducting surveys to the field.

Implementation

The implementation stage is carried out by building a system according to the design that has been made. The system is developed in the form of a mobile-based application so that it can be accessed easily by the LPD. At this stage, the coding process is carried out using the appropriate programming language and framework, as well as integrating the database to support the process of storing and processing credit data.

Testing

After implementation, the system is tested to ensure all functions run as needed. Testing is done using the Black Box Testing method to test the main functions, such as the credit data input process, feasibility analysis, calculation of recommendation results, and report generation. Tests were also conducted directly by LPD users to ensure the system is easy to use and in accordance with operational needs.

Results and Discussion

System Analysis

An overview of the credit determination decision support system using the profile matching method at the mobile-based LPD Desa Adat Sibang Kaja describes the flow of the system to be designed. The credit application business process starts from the prospective applicant applying for a loan, then the admin can manage applicant data, users, criteria, and also reports. Then the survey team

conducts an assessment of the prospective debtor. Then the admin and also the survey team will get the results of the assessment of the prospective debtor. Then prospective debtors will know the results of the credit determination support system assessment of their loan application.

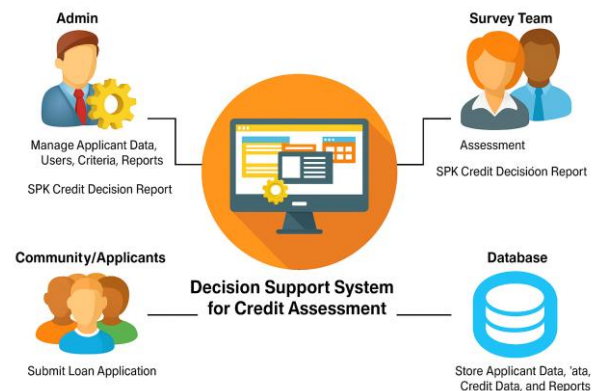


Figure 1. System Overview

Furthermore, there is a draft class diagram of the system as follows

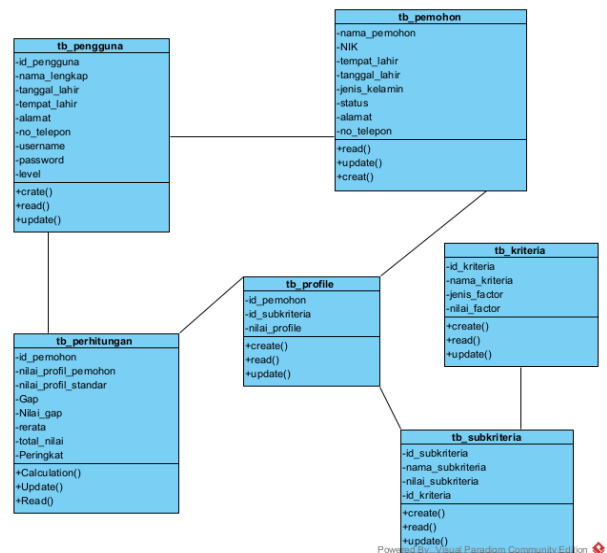


Figure 2. Class Diagram Design

Mobile-DSS Implementation



Figure 4. Main Page

After the admin has successfully logged in, the application will display the main page which contains the Applicant, User, Criteria and Report menus.

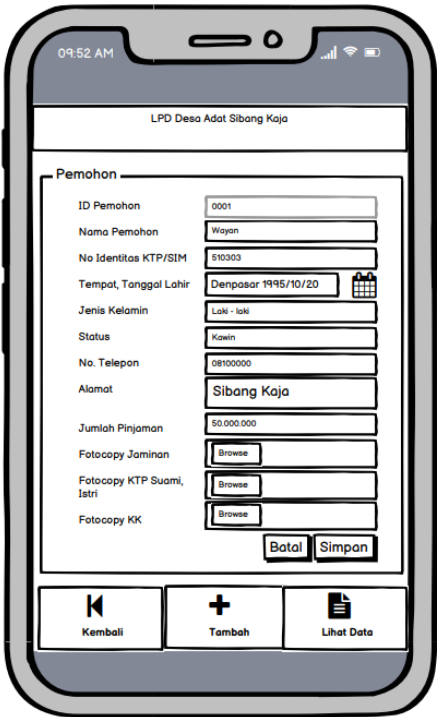


Figure 5. Applicant Form Page

The admin then selects the save button and the application will save the applicant data to the database. The following is a web view for the applicant page. When the Admin selects the Applicant menu, the application will display a list of applicant names that have been inputted by the admin for later calculation of creditworthiness. The admin can then add change and search data on this page.

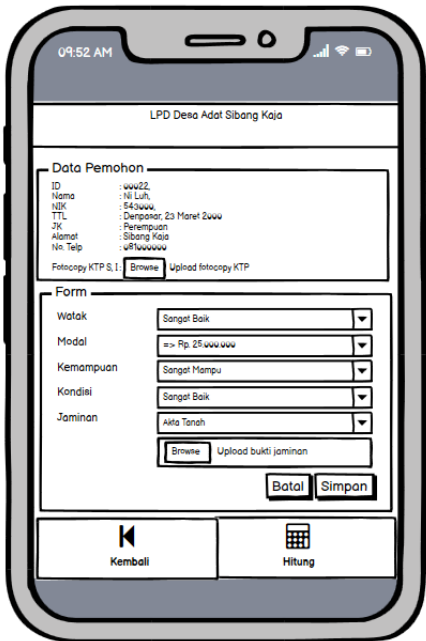


Figure 6. Assessment Data Page

After the credit applicant value data entered by the Team survey is complete, then the survey team can select and press the save button. After that the survey team will press the calculate ranking button then the application will calculate according to the Profile Matching method and save it to the database.

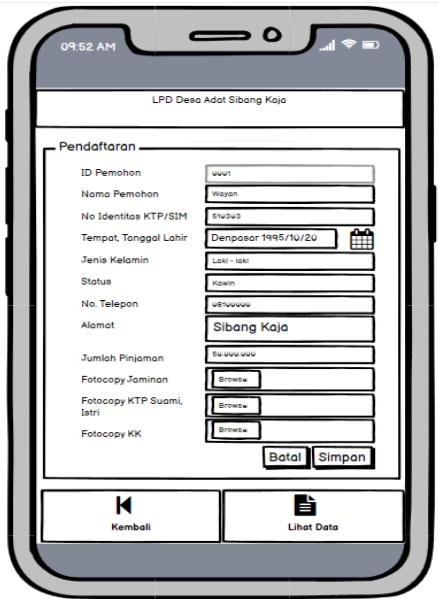


Figure 7. Credit Applicant Registration Page

Then if you want to see the data that has been inputted by the applicant, then the applicant can check the details of the credit application data.

Discussion

The decision support system for determining credit at LPD Desa Adat Sibang Kaja is designed to provide solutions to overcome credit assessment problems that have been carried out manually and are prone to subjectivity. With this mobile-based system, the credit assessment process can be done more quickly, objectively, and well documented.

The system's business process starts with a prospective applicant applying for a loan through the application. The submitted data will be verified and managed by the admin, who is in charge of entering applicant information, managing user data, assessment criteria, and compiling reports. Furthermore, the survey team conducts a direct assessment of prospective borrowers according to predetermined criteria. The results of this assessment are processed by the system to produce a creditworthiness report that can be accessed by both the admin and the survey team. Prospective debtors can also find out the final results regarding the status of their credit application.

In addition, the system design also describes the Class Diagram, which shows the relationship between entities in the system, such as applicant data, users, criteria, reports, and assessment results. This diagram shows that the system is designed with an integrated structure, making it easier to manage data and information flow.

In the implementation stage, the application displays several main pages. Figure 4. The Main Page shows the main menu consisting of applicants, users, criteria, and reports. This page becomes the

navigation center for the admin to manage the system. Furthermore, Figure 5. The Applicant Form page is used to enter data on prospective credit applicants, where the stored data will be used in the eligibility calculation process. The assessment process is shown in Figure 6. Assessment Data Page, where the survey team enters the criteria value of each applicant. Once the data is complete, the system performs an automatic calculation using the method embedded in the system, then saves it into the database. These results will be used as the basis in the ranking process of prospective debtors. Finally, Figure 7. The Credit Applicant Registration page provides access for prospective debtors to check the application data that has been entered. This shows the transparency of the system, as the applicant can monitor the status and details of their application directly.

Overall, this system not only simplifies the credit administration process, but also provides added value in the form of time efficiency, calculation accuracy, and increased objectivity in decision making. Thus, the application of this decision support system has great potential in supporting LPD credit management to be more professional and sustainable.

Conclusion and Suggestions

This research successfully designed and implemented a mobile-based credit determination decision support system at LPD Desa Adat Sibang Kaja using the Waterfall software development method. This system is able to overcome the problems of subjectivity, delays, and limitations in the credit assessment process that was previously carried out manually. Through the integration of applicant data management features, criteria, and reports, the system provides a faster, more accurate, and transparent analysis process. In addition, the test results show that the application can be used by both the admin and the survey team in determining creditworthiness. With this system, LPD Desa Adat Sibang Kaja is expected to improve the quality of credit management, minimize the risk of bad debts, and maintain business sustainability through more professional and efficient credit management.

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