The Design of Application for Accelerating Funding Proposal Selection Using the Object-Oriented Hypermedia Design Method

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ABSTRACT

The Savings and Loans Unit (USP) is an economic business that provides loans in the form of money for village community business activities for individuals or groups considered productive. The process of borrowing funds is carried out by submitting a loan proposal with terms predetermined by the USP. The purpose of this research is to make an application design for accelerated loan proposals using the Object-Oriented Hypermedia Design Method (OOHDM), which can be implemented in the recommendation system for funding loan proposal selection. OOHDM is used in the design of web applications that are oriented towards building large hypermedia. This research produces a web-based application design whose access rights can be used by the USP as an admin as well as a lending decision-maker and a fund user/borrower submitting a loan proposal.

Keywords: *Object-oriented hypermedia design method, savings, and loan units, application design*

1. INTRODUCTION

The Savings and Loans Unit (USP) is an economic business that provides loans in the form of money for village community business activities, both for individuals and groups that are considered productive. The process of borrowing funds is carried out starting with submitting a loan proposal with the conditions determined by the USP. The selection of proposals using the criteria set by the USP.

Selection of proposals with certain criteria can use the application by ranking based on the highest value of the selected proposals, it can record the track record of borrowers (track records), both those with problems and those that are smooth in payment [1]. Web-based selection application with large hypermedia requires a method in its design, one of the methods that can be used is OOHDM. OOHDM is an object-oriented software approach method with an application model used to build large hypermedia applications. In a web application that uses the concept of the OOHDM method consisting of a conceptual model, a navigation model, an interface model, and implementation, so that analysts and

developers can concentrate on one concept at a time, these four concepts are carried out separately to get a more modular and reusable design [2].

This study makes an application design for accelerating the selection of loan proposals using the OOHDM method which can be implemented in the USP loan selection recommendation system which includes data storage of users, system users carried out by the manager (admin) and the user (borrower).

Previous research [3], used the OOHDM method in its design to be implemented in school academic information systems. This method was successfully applied in system implementation by developing the OOHDM design concept into four stages, namely: requirement gathering (a method based on user activity), conceptual design (in the form of output, namely class, and the relationship of the system), navigation design and abstract interface design.

Other researchers who use the OOHDM method in web design are the school alumni web [4], and the laboratory web [5], who also apply four stages in their design. This method has also been successfully

implemented on the website by adding database design and modification to integrate the interface with the database as well as adjusting system interaction patterns with users.

Research related to proposal selection, conducted by [6], aims to assist managers in selecting loan proposals. Two assessors carried out the proposal selection. Proposals are sorted from proposals that have the highest value, decision making also goes through deliberation to reach a consensus from the manager. The result of this research is a recommendation system based on ranking.

Another relevant study was conducted [7], aimed at building a decision support system to measure the severity of depression, anxiety, and stress disorders. This disorder has a total of 42 items/symptoms known as DASS-42. In this study, a Group Decision Support System (GDSS) model was built which allows psychologists to collaborate in providing preferences regarding the priority of disorders that will occur if certain items/symptoms are known according to DASS-42. Preference is given in an ordered vectors format. The result is to accommodate the preferences of decision-makers in giving weight to influence. Anxiety disorders and stress disorders have very similar symptoms so that for several items/symptoms in DASS-42 there are quite significant differences. Research on decision support that has been carried out uses one object for one problem.

Taking into account the review of previous studies, this study makes an application design for accelerating the selection of loan proposals using OOHDM which can be implemented in a decision support system that has a database for users, and the user has a login to see his history.

2. METHODS

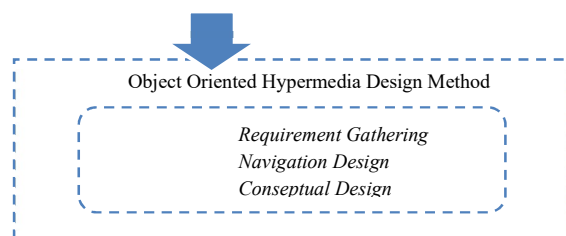In designing a loan proposal selection application design, the methodology used is as follows [8], [9]:

Figure 1 Research procedure

At the analysis stage, problem identification is carried out through a survey. From the survey results, data needed for the selection of loan proposals are data of potential beneficiaries, proposal data, collateral data, USP employee data.

In designing a loan proposal selection application design, the methodology used is web engineering design using OOHDM with stages requirement gathering, navigation design, conceptual design [10], [11]. The design that has been made is poured in the form of making a website for selecting loan proposals for funds

2.1. Stages of Requirement Gathering

At this stage, an analysis of the functional requirements of the application will be designed and then proceed to the design stage. The data needed at this stage is information related to the loan fund proposal selection system and the parties involved in selecting proposals by the loan fund manager. This stage consists of the role and task identification, scenario specification, use case specifications, and user interaction diagram specification (UID).

2.1.1. Role and Task Identification

The proposal selection application consists of Administration (admin) people who have full rights to manage the application, the Chair of USP is the person in charge of all management activities, here the Head of USP can see the results of the selection and reports. Beneficiaries are users who have an account to upload proposals and view various information related to proposals.

Role and task identification of each actor is presented in table 1 [12].

Table 1. Role and task actor

Actor	Task
Admin	1. Admin manages application user accounts 2. Admin manages the requirements for submitting a loan proposal 3. Admin manages information about the results of proposal selection
Chairman of the USP	1. The USP Chairperson sees the results of the selection 2. The Chairperson looks at the user data
Utilizers	1. The user registers to get an account 2. The user uploads the proposal requirements to the web. 3. The user does manage personal data 4. Beneficiaries get information on the results of selecting proposals

2.1.2. Scenario Specification

It is a narrative explanation of how the application is used to complete the tasks of each actor, this scenario is presented in Table 2.

Table 2. Scenario specification

Actor	Scenario
Admin	1. Manage User Accounts 2. Admin to add, delete user accounts. 3. Manage Terms 4. Admins make additions, gratuities, and change the terms of submission of proposals by applicable rules. 5. Manage information on the results of selecting proposals 6. On the information menu of the proposal selection, the admin adds information according to the results of the selection.
Chairman of the USP	1. See the results of the selection 2. The Chairperson of the USP can see the results of adding information on the results of the selection made by the Admin. 3. Viewing user data 4. The USP Chair looks at the list of beneficiaries registered in the database.
Utilizers	1. The user registers to get an account 2. The User registers by filling in account name, password 3. The user uploads the proposal requirements to the web. 4. After logging into the application the user can submit a proposal by uploading the conditions that have been determined. 5. The user does manage personal data 6. Information on user data is managed by the user himself. The user can fill in the data according to the conditions of the problem 7. Beneficiaries get information on the results of selecting proposals 8. Information on the results of selecting proposals can be seen in each user account

It is a grouping of scenarios in functional units in UML, the use-case specification in this study consists of use case managing user accounts presented in table 3, Registration use cases are presented in table 4, Use case selection of proposals is presented in table 5, Use cases Information on the results of proposal selection is presented in Table 6, User interaction specification diagram (UID) which is presented in Figure 1.

Table 3. Use case specification manage user accounts

Use-case: Manage User Accounts
Scenario: Admin (1)
Roles/ Actor: Admin
Description: 1. The system application display on the Admin account displays user data that can be managed by the admin 2. Admin can overwrite and delete users.

Table 4. Use case registration

| Use-case: Benefits of registering to get an account |
|---|
| Scenario: Admin (2) |
| Roles / Actor: Admin |
| Description:
1. Select the registration menu. The system displays the registration form.
2. Fill in the user name and password. Then choose the list.
3. Registration successfully displays the home page. |

Table 5. Selection of proposal use cases

Use case: Results of proposal selection
Scenarios: Admin (3) / Chair of USP (1) / User (4)
Roles: Admin / Chair of USP / Beneficiary
Description: 1. The beneficiary proposes a loan 2. The user enters the document in the application 3. The system will determine the eligibility of loan applications based on the completeness of documents and past loan payments arrears. 4. Admin will input the selection results of loan applications, 5. The user can see the results of the loan application whether it is accepted or not. 6. The USP Chair can see loan applications, loan selection results, and user loan documents.

Table 6. Use case information on the results of proposal selection

Use-case: Information on the results of proposal selection
Scenario : Admin (3) / Head USP (1) / User (4)
Roles : Admin / Head USP / User
Description: 1. On the menu in the account, each role displays information about the proposal selection. 2. Information on the results inputted by the admin

2.1.3. User interaction diagram specification (UID)

UID is used to link the design between the designer and the user. The following picture is the UID of the user account registration [13] (figure 2).
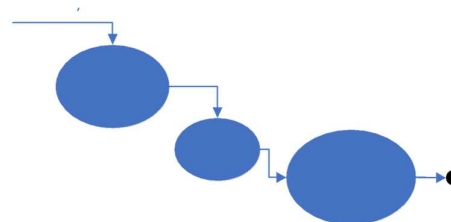
Figure 2. User account registration UID

Admin will input user data and grant user access rights. There are two levels of access rights to users namely admin is a user who has full rights to the management of the application and ordinary users are users who can only view information. After the user gets a username and password, then the user can log in to the application.

The user submits a loan to the application, then the user will input documents or requirements for submitting a proposal. The system will determine the eligibility of a loan application based on the completeness of documents and past loan payments arrears. admin prints a list of user names whose proposals will continue to survey potential beneficiaries.
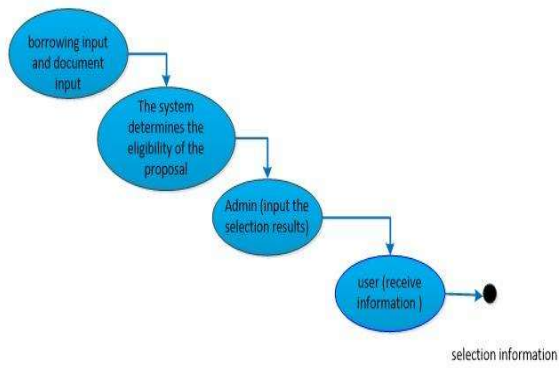
Figure 3. UID for proposal selection

After the survey the next step is village deliberation. after there are results, the admin enters the results of the proposal selection in the application, each role can see the information on the selection results of the proposal.
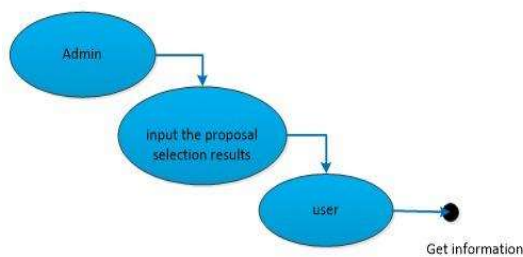

Figure 4. UID of proposal selection results

3.2. Conceptual Design

The conceptual design describes the relationships between tables in a database. The design table includes user tables, user tables, Agama tables, loan tables, document tables, and collateral tables. The relationship between tables is stated in the form of an entity-relationship diagram [14], [15].

Each table has a primary key that characterizes each table. The main key is symbolized by an underlined oval attribute. every related table has the same attributes.
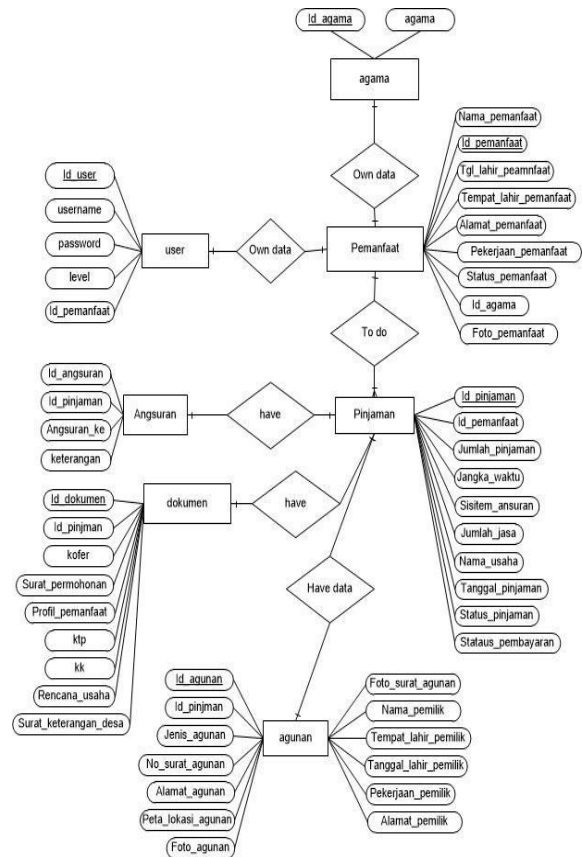

Figure 5. ERD application for proposal selection

3.3. Navigation Design

This stage consists of designing a navigation system that is a class diagram and a navigation structure diagram. In this system, the application has a master data menu which includes the religion sub-menu, USP manager, head of USP, BPD, village assistants. The User menu includes managing user accounts. The user data menu includes the user data management sub-menu, profile view, and loan data. on loan, data can make additional loans. enter requirements and information about the status of submitting a proposal. The document print menu has submenus for installment plan forms, purchase plans, and inventory lists as shown in figure 6.
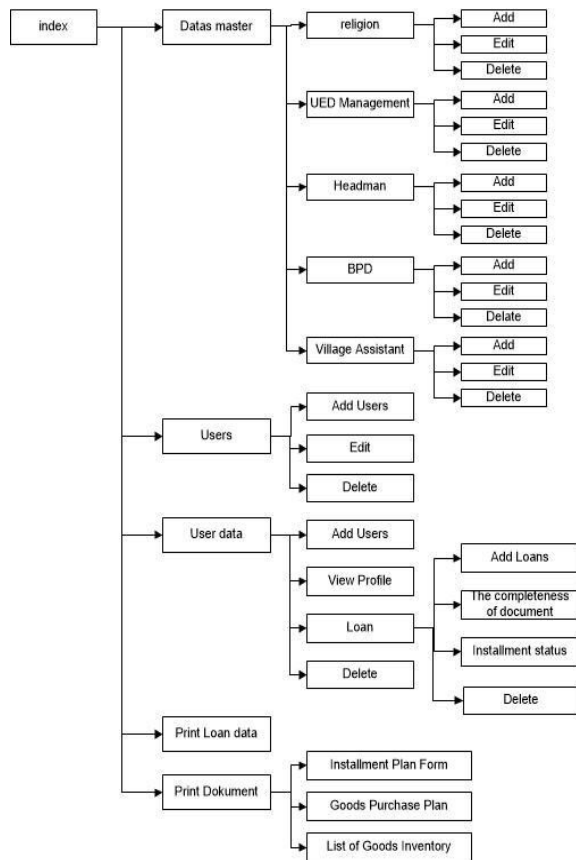
Figure 6. Application navigation structure

3. RESULTS AND DISCUSSION

The design using OOHDM is expected to help the users to access information about the proposal submission and assist the admin in selecting the proposal for the first stage.

3.1. Prototype Application

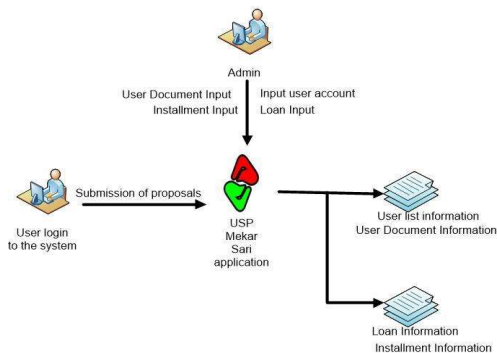Following are the results of the prototype selection of loan fund proposals, which are presented in Figure 7

Figure 7. Results of the prototype design of fund proposal selection Applications

3.2. User Account Management View

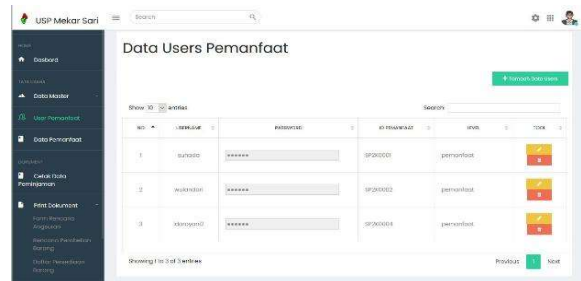Account management is carried out by the admin, the admin can add, delete user account data.

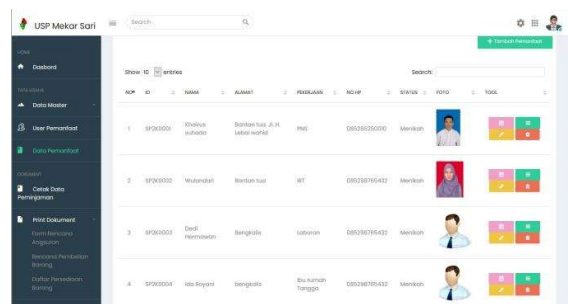**Figure 8.** User account management

Figure 9. List of user accounts

3.3. User Registration View

Data of beneficiaries who make loans are recorded in the add user data menu.
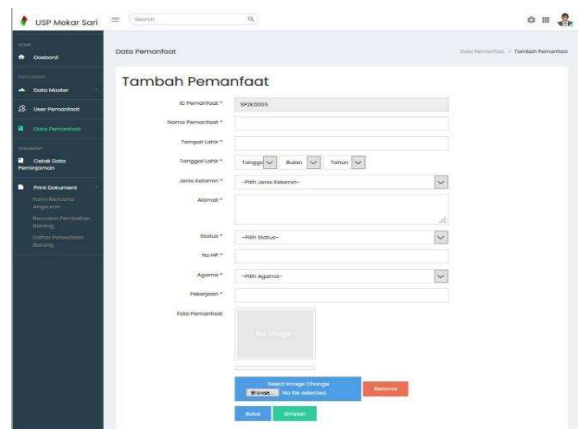

Figure 10. User registration

3.4. Proposal Selection View

After recording the data, the user can proceed to submit a proposal. The user brings the complete submission in the form of a soft file. All data must be filled in according to their needs. The system manages

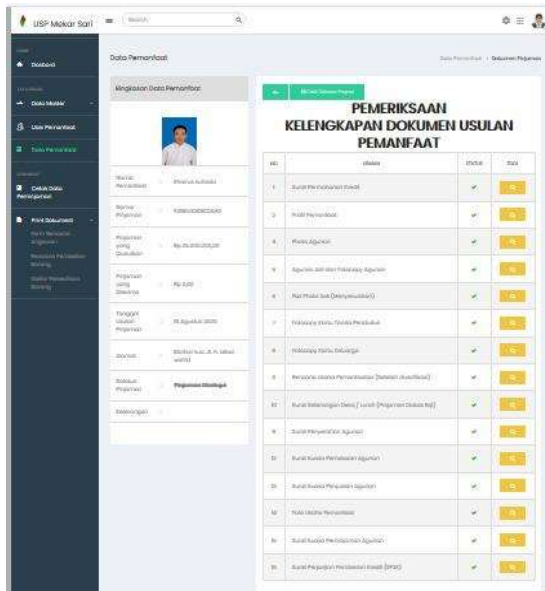recommendation proposals to be continued or not. This can be seen in Figure 11.

Figure 11. Proposal selection management

Funding proposal approval information is presented in Figure 12.
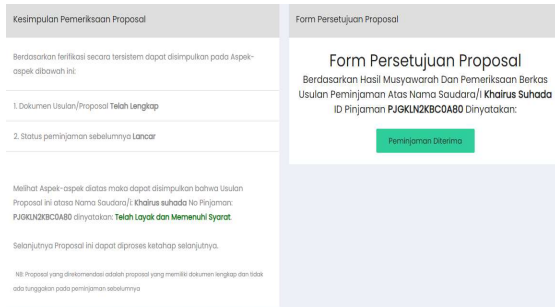

Figure 12. Approval of the proposal

4.1 View Of Information On The Results Of Proposal Selection

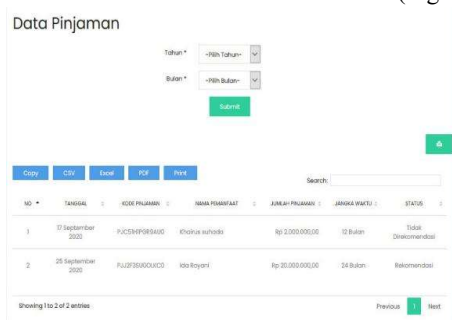View of recommended and non-recommended proposal information can be seen in loan data (Figure 13).

Figure 13. Information on the results of proposal selection

4. CONCLUSIONS

The results of the design using the OOHDM method that has been made can be implemented in making web-based systems by adding database designs as needed and codifying the design into a program to integrate the database with the interface and adjust the interaction pattern of the system with the user.

The design has been implemented in a web-based fund lending proposal selection system that has three access rights, input features in the form of data on borrowers of funds, and output features in the form of printable proposals and information on whether to accept or reject proposals, with a process in the system in the form of recommendation on the feasibility of a loan proposal.

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