

Application Of The RAD (Rapid Application Development) Method To Develop A Website-Based E-Mudharabah Savings And Loans System

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Abstract:

Background: However, the problems faced by MSME business actors are limited access to capital, mastery of information technology and marketing. Sharia banks can provide support to customers in running their business by financing mudharabah schemes and avoiding business practices that are considered haram in Islam. Mudharabah is an alternative way of financing according to Islamic sharia principles. Mudharabah partnership is an Islamic business partnership based on trust financing with capital owners as funders and business managers. Capital financing strategy for MSME business actors by submitting financing to investors to be analyzed first by a consultant using the e-Mudharabah system so that advice and capital control is given to MSME business actors provided by investors.

Materials and Methods: Research procedures regarding the development of a website-based e-Mudharabah management information system using the Rapid Application Development method. The Rapid Application Development method is an object-oriented approach to system development that includes a development method and software. Rapid Application Development uses an iterative (repetitive) method in developing systems where the system working model is constructed at the beginning of the development stage with the aim of determining user requirements. User Acceptance Testing (UAT) aims to test the system in a real environment and usage scenarios before the system is accepted and implemented by involving users in testing, User Acceptance Testing (UAT) helps build a system that meets user needs and expectations, increases implementation success, and provides significant added value for the organization or entity that uses the system.

Results: Through this research, an information system has been successfully developed that can make it easier for MSME business actors to obtain capital financing schemes from all lines easily via the e-Mudharabah website. Rapid Application Development and UAT methods provide the structured framework and validation needed to ensure the system being developed meets end user needs. Thus, this research makes an important contribution to the development of an effective and useful information system for investors, consultants and MSMEs. This management information system is expected to make it easier for MSME business actors to obtain capital financing schemes from all lines easily via the e-Mudharabah website.

KeyWord: Website, e-Mudharabah, Management Information System, Rapid Application Development

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I. Introduction

The development of MSMEs in Indonesia has great potential to continue to contribute to inclusive economic growth, community empowerment, innovation on a local and national scale. The increase in the number of MSMEs in Indonesia must be supported by several factors so that these businesses can develop rapidly. Micro, Small and Medium Enterprises (MSMEs) have a role in supporting national economic growth with local scale, local resources and simple production processes whose products are sold locally[1]. MSMEs account for the majority of employment, support local economic growth, and contribute to income redistribution. In terms of using current technology, MSME business actors can use various fields including procurement of raw materials, production processes, marketing stages and promotion of the products produced. The use of technology is now widely used in terms of marketing and product promotion[2].

The development of creative economy Micro, Small and Medium Enterprises (MSMEs) has the potential to increase employment opportunities and the number of businesses. Based on data from the East Java Dinkop (2023) the number of MSMEs in East Java is 9.78 million. The accommodation and food and drink provision sector amounted to 819.4 thousand (17.74%)[3]. There is currently no exact data on the number of MSMEs that utilize the mudharabah scheme, either from the East Java Dinkop or BPS because providing

mudharabah services is a right for MSMEs to capital providers, the majority of which are provided by Sharia Banks. However, the problems faced by MSME business actors are limited access to capital, mastery of information technology and marketing[4]. Sharia banks can provide support to customers in running their business by financing mudharabah schemes and avoiding business practices that are considered haram in Islam. Mudharabah is an alternative way of financing according to Islamic sharia principles[5]. Mudharabah partnership is an Islamic business partnership based on trust financing with capital owners as funders and business managers. Capital financing strategy for MSME business actors by submitting financing to investors to be analyzed first by consultants using the e-Mudharabah system so that advice and capital control is given to MSME business actors provided by investors[6].

The Rapid Application Development method is a model developed for developing website and mobile-based software. The Rapid Application Development method is a method that includes flow stages or a process, namely Requirements Planning, System Design, System Development Process, Product Implementation or Completion[7]. So it is necessary to develop a system based on the e-Mudharabah website using the Rapid Application Development method and the User Acceptance Testing (UAT) method, which is one part of the testing method for measuring the usability of a product or system and focuses on technical aspects, taking into account emotional aspects and psychology of user experience. Therefore, this research develops an e-Mudharabah website-based system using the User Acceptance Testing method. This research aims to make it easier for MSME business actors to obtain capital financing schemes from all lines easily via the e-Mudharabah website. MSME business actors can provide sales reports or capital movements used through the e-Mudharabah website-based system[8].

II. Material And Methods

Research Location: The research location is in East Java among MSME actors with consultants and financiers.

Schedule: This research was conducted for 4 months starting from August to November 2023.

Data Sources: The data source used in this research is primary data which includes research that requires information data from sources first called respondents. Data or information is obtained orally using interview and observation methods.

Types of Data: The types of data used in this research are:

1. Qualitative data is data in the form of words, not in the form of numbers. Qualitative data is data in the form of verbal sentences that provide information about the condition of something through statements or words.
2. Quantitative data is data in the form of numbers or numbers that are used to find the total quantity of an object to be studied.

Techniques of data Collection: The data collection techniques used for this research are as follows:

1. Observation Method, namely direct observation of the objects studied by MSME actors in East Java.
2. Interview method, namely a data collection method by asking and distributing several questions related to the problem being studied.
3. Library Method, namely literature study by collecting sources related to the discussion in the research.

Research Steps: In this research, researchers used RAD (Rapid Application Development) as a method for system development. The RAD (Rapid Application Development) model is a system development method that is flexible to change needs during the project, has a development duration, identification of error risks that tend to be faster and project success is greater.

Analysis Requirements:

At this stage the researcher analyzes the data that has been collected and studies what data is needed to design the e-Mudharabah application and summarizes it into a running information media system in the form of a flow map in the hope that it will make designing this application easier.

1. Hardware
 - a. Laptops
 - Lenovo Ideapad 330
 - 7th Generation AMD A9-9425 APU
 - 14.0" LCD
 - 8GB DDR4 RAM
 - 1TB HDD

2. Software

- 1) MySQL is used as a Database.
- 2) The programming language used by Codeigniter.
- 3) Draw.io is used to create Use case Diagrams and DFDs.
- 4) Microsoft Word Office 2021 is used to create reports.

Methods

RAD (Rapid Application Development)

Research procedures regarding the development of a website-based e-Mudharabah management information system using the Rapid Application Development method. The Rapid Application Development method is an object-oriented approach to system development that includes a development method and software[9]. Rapid Application Development uses an iterative (repetitive) method in developing systems where the system working model is constructed at the beginning of the development stage with the aim of determining user requirements. In normal information system development, it takes a minimum of 180 days, but using the RAD method, the system can be completed within 30-90 days[10]. The following are the stages of the Rapid Application Development method as in Figure 1 below.

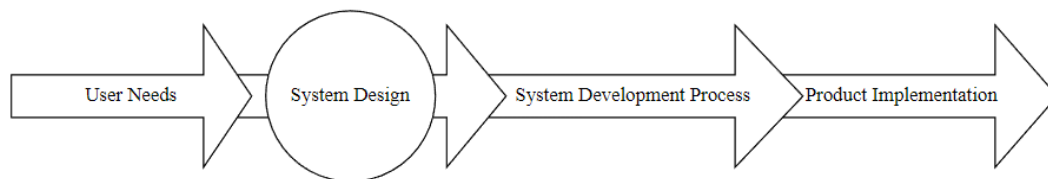


Figure 1: RAD (Rapid Application Development)

1. User Needs

This first stage is system development, identifying problems, objectives, background and collecting data obtained from system users aimed at identifying and understanding the final goal of the system and the desired and necessary information needs. Users and analysts hold meetings to identify the goals of the system and information needs to achieve the goals. At this stage, the most important thing is the involvement of both parties[11].

2. System Design

In the system design stage, the activeness of the users involved is very important to achieve the goals because at this stage the design process and design improvement process are carried out repeatedly if there are still design inconsistencies with user needs that have been identified in the previous stage. The output of this stage is software specifications which include general system organization, data structures, and so on. The output of this stage is a software specification which includes general system organization, data structure and others[12].

3. System Development Process

In this third stage of system development, the programmer or system developer must carry out activities and monitor the system that is running usefully and consider feedback from users or clients.[13].

4. Product Implementation

This stage is the stage where the programmer applies the design of a system that was approved in the previous stage. Before the system is implemented, a testing process is first carried out on the program to detect errors in the system being developed. At this stage, it is customary to provide feedback on the system that has been created and obtain approval regarding the system[14]. This stage is the stage where the programmer develops a program design that has been approved by users and analysts. Before being applied to an organization, a testing process is first carried out on the program to see whether there are errors or not. At this stage, users usually provide feedback on the system that has been created and obtain approval regarding the system[15].

User Acceptance Testing (UAT) Kuesioner

The questionnaire uses a Likert scale, which is distributed to system users. This is one of the methods carried out during user acceptance testing (UAT). Users can choose the features and multimedia elements

developed in the application, based on the conditions that have been met. After the questionnaire responses are received, the data is tabulated with each Likert point response. User Acceptance Testing describes User Acceptance Testing (UAT) as a system testing stage carried out by developers involving users[16]. This process produces documents as proof that users accept the application development and consider their needs to be met based on test results. From the definition above we conclude that User Acceptance Testing (UAT) is the testing stage of the Waterfall method where relevant end users test the software system to ensure that the system meets business needs and user requirements. User Acceptance Testing (UAT) aims to test the system in real environments and usage scenarios before the system is accepted and implemented by involving users in testing, User Acceptance Testing (UAT) helps build systems that suit user needs and expectations, increase implementation success, and provide significant added value for the organization or entity that uses the system[17].

III. Result

UCase Diagram

Use Case is a diagram that explains what entities are involved in the application. In the diagram below there are three entities, namely investors, consultants and MSME players. Investors log in to the Website page, then check the graph of the capital status of MSME players, input capital applications for MSME players and check the history of search mutations to find out which MSME players have been given capital. Consultants log in to the Website page, then analyze the applications and capital. from each MSME actor before being reported to investors. MSME players log in to the website page, then register the biodata of MSME players to apply for capital to investors, check the capital status graph of MSME players, check the search mutation history to find out which MSME players have been given capital as in Figure 2 below.

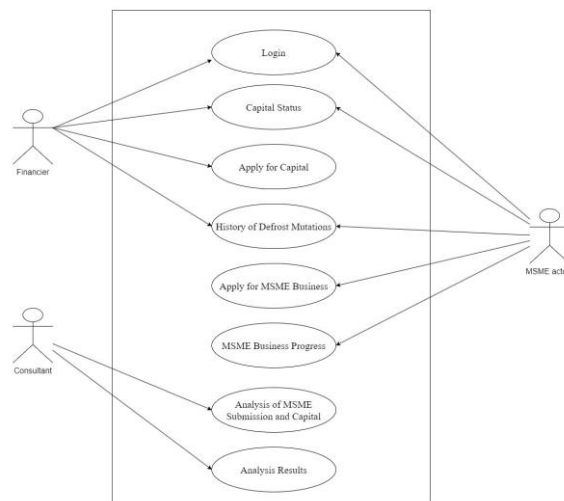


Figure 2: Ucase Diagram Website e-Mudharabah

Data Flow Diagrams (DFD)

Use Case is a diagram that explains what entities are involved in the application. In the diagram below there are three entities, namely investors, consultants and MSME players. Investors log in to the Website page, then check the graph of the capital status of MSME players, input capital applications for MSME players and check the history of search mutations to find out which MSME players have been given capital. Consultants log in to the Website page, then analyze the applications and capital. from each MSME actor before being reported to investors. MSME players log in to the website page, then register the biodata of MSME players to apply for capital to investors, check the capital status graph of MSME players, check the search mutation history to find out which MSME players have been given capital as in Figure 2 below.

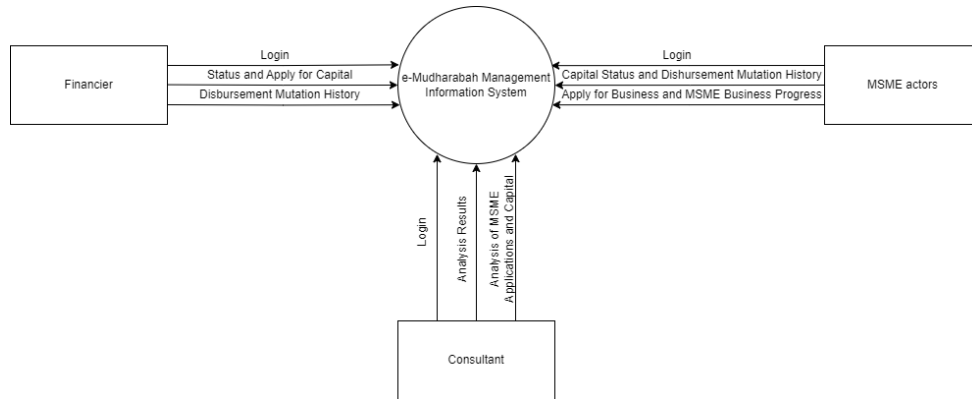


Figure 3: Data Flow Diagram (DFD) Website e-Mudharabah

Implementation System

The e-Mudharabah website is a website-based management information system that manages capital schemes for MSME players who apply for capital. This website was developed using the Codeigniter framework with a MySQL database. The e-Mudharabah website can be accessed on the Google Chrome, Mozilla Firefox and other browser applications via laptop or mobile phone. The display form on the e-Mudharabah website is as follows:

a. e-Mudharabah Login Display

The e-Mudharabah Login display is the initial page on the e-Mudharabah management information system which can be accessed by investors, consultants and MSME players as in Figure 4 below.

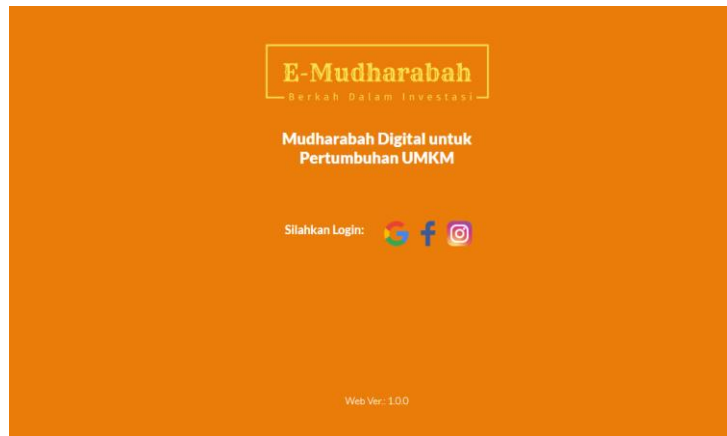


Figure 4: e-Mudharabah Login Display

b. e-Mudharabah Dashboard Display

The e-Mudharabah Login display is the initial page of the e-Mudharabah management information system where those who can access are investors, consultants and MSME players as in Figure 5 below.

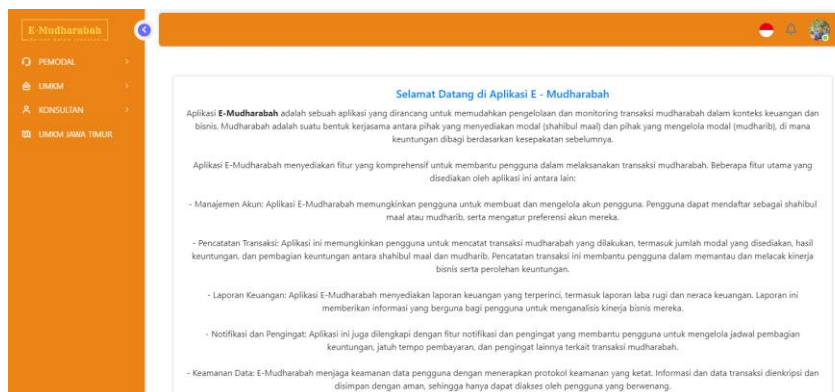


Figure 5: e-Mudharabah Login Display

c. Capital Progress Percentage Display

The Percentage of Capital Progress display is a page in the form of a graph of the capital status of MSME players who apply for capital to investors as in Figure 6 below.



Figure 6: Capital Progress Percentage Display

d. Display of the Investor Application Form

The Investor Submission Form display is a page that contains input for MSME players who apply for capital to investors which contains the investor's identity section, the investor's financial data, investment objectives and risk profile as in Figure 7 below.

Figure 7: Display of the Investor Application Form

e. Display of the Mutation History Form for Disbursement of MSME Capital Funds

The Display of the Mutation History Form for Disbursement of MSME Capital Funds is a page which contains a table of disbursement of capital funds for MSME actors who have submitted and been approved by investors as shown in the picture and for the Printed Display of the Mutation History of Disbursement of MSME Capital Funds as in figure 8 below.

NO.	TANGGAL PENCAIRAN	NAMA UMKM	JUMLAH PENCAIRAN
1	2023-01-05	UMKM A	Rp. 10.000.000
2	2023-02-15	UMKM B	Rp. 8.000.000
3	2023-03-20	UMKM C	Rp. 12.000.000

Figure 8: Display of the Mutation History Form for Disbursement of MSME Capital Funds

f. Display of the MSME Submission Form

The MSME Submission Form display is a page that contains input for new MSME players who have joined to apply for capital to investors which contains the MSME identity section, MSME financial data, business plan, objectives for needing capital and basic risk analysis as in Figure 9 below.

Figure 9: Display of the MSME Submission Form

g. Graphic display of capital progress percentage

The Capital Progress Percentage Graphic Display is a page in the form of a graph of the capital status of MSME players who apply for capital to investors in the MSME section as in Figure 10 below.

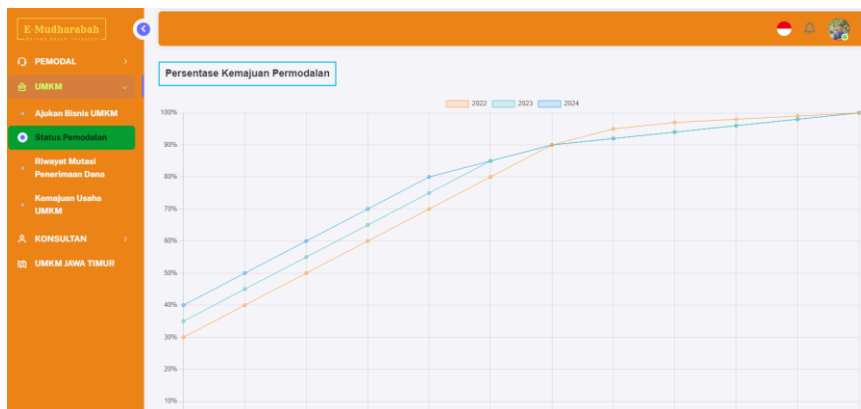


Figure 10: Graphic display of capital progress percentage

h. Display of the Mutation History Form for Disbursement of MSME Capital Funds

The display of the Mutation History Form for Disbursement of MSME Capital Funds is a page containing a table of disbursement of capital funds from MSME actors who submitted and have been approved by investors in the MSME section as in Figure 11 below.

NO	TANGGAL PENCAIRAN	JUMLAH PENCAIRAN
1	2023-01-05	Rp. 10.000.000
2	2023-02-15	Rp. 8.000.000
3	2023-03-20	Rp. 12.000.000

Figure 11: Display of the Mutation History Form for Disbursement of MSME Capital Funds

i. Display of the MSME Sales Report Upload Form

The MSME Sales Report Upload Form display is a page that contains uploaded sales reports from MSME players which function to record all sales from MSME players so that they know the progress of the MSME business as in Figure 12 below.

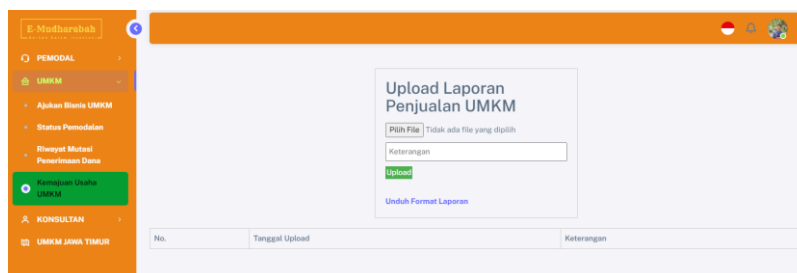


Figure 12: Display of the MSME Sales Report Upload Form

IV. Discussion

UAT System Testing (User Acceptance Testing)

To find out user responses to the website that has been created, testing is carried out using a questionnaire which will then be distributed to investors, consultants and MSME players, then the form contains a statement in testing the User Acceptance Test (UAT) method, there is a calculation formula used to determine the response respondents to the system created. The value weights given are as in Table 1 below.

Table 1: Respondent Rating Weight

Value Weight	Information
1	Strongly Disagree
2	Don't agree
3	Agree
4	Strongly agree

Table 2: Respondents' Questions and Answers

No	Question	SS	S	TS	STS
1	Tampilan visual keseluruhan website sangat bagus, simple dan meanrik	10	5	0	0
2	Navigasi di website ini sangat mudah	14	1	0	0
3	Fitur yang ada di website ini sangat bermanfaat	15	0	0	0
4	Saya dapat menemukan informasi sesuai keinginan di website ini dengan mudah	13	2	0	0
5	Website ini sangat responsive saat digunakan di PC maupun di handphone	14	1	0	0
6	Fitur Login mudah untuk masuk ke dalam bagian website ini	15	0	0	0
7	Penginputan data di website ini mudah dan simple	14	1	0	0
8	Laporan grafik di website ini mudah dipahami	15	0	0	0
9	Penggunaan website bisa dilakukan dimanapun	14	1	0	0
10	Saya nyaman menggunakan website ini	13	2	0	0

Table 2 shows the answers to the questionnaire given to MSME actors for the websites that have been created. From the results we get from the table data above, we then carry out percentage calculations as in Table 3 below:

Table 3: Respondents' Questions and Answers

No	Question	Mark				Amount	Average	Percentage
		SS x5	S x4	TS x3	STS x1			
1	The overall visual appearance of the website is very good, simple and attractive	50	20	0	0	70	4.6	92%
2	Navigation on this website is very easy	70	4	0	0	74	4.9	98%
3	The features on this website are very useful	75	0	0	0	75	5	100%
4	I can find the information I want on this website easily	65	8	0	0	73	4.8	96%
5	This website is very responsive when used on a PC or mobile phone	70	4	0	0	74	4.9	98%
6	The Login feature makes it easy to enter this section of the website	75	0	0	0	75	5	100%
7	Entering data on this website is easy and simple	70	4	0	0	74	4.9	98%
8	The graphic reports on this website are easy to	75	0	0	0	75	5	100%

	understand							
9	Website use can be done anywhere	70	4	0	0	74	4.9	98%
10	I am comfortable using this website	65	8	0	0	73	4.8	96%

Table 3 shows the final calculation results of all existing data. It can be concluded that the proposed e-Mudharabah Website information system is acceptable among MSMEs.

V. Conclusion

In this research, a Website-based e-Mudharabah management information system was developed using the Rapid Application Development and User Acceptance Testing (UAT) methods. The main aim of this research is to make it easier for MSME business actors to obtain capital financing schemes from all lines easily via the e-Mudharabah website. MSME business actors can provide sales reports or capital movements used through the e-Mudharabah website-based system. In the implementation process using the Rapid Application Development method, it is a system development that is flexible to change needs during the project, has a development duration, identification of error risks tends to be faster and project success is greater. UAT testing is also performed to validate the system and ensure that the system meets end user requirements. Through this research, an information system has been successfully developed that can make it easier for MSME business actors to obtain capital financing schemes from all lines easily via the e-Mudharabah website. Rapid Application Development and UAT methods provide the structured framework and validation needed to ensure the system being developed meets end user needs. Thus, this research makes an important contribution to the development of an effective and useful information system for investors, consultants and MSMEs. This management information system is expected to make it easier for MSME business actors to obtain capital financing schemes from all lines easily via the e-Mudharabah website.

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