

Research Article

Development of an e-Mudharabah Website Using the System Usability Scale (SUS) Method

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Abstract.

At present there is no definite data regarding the number of MSMEs that utilize the Mudharabah scheme from both the East Java Cooperative Office and BPS because the provision of Mudharabah services is the right of MSMEs to provide capital, which is mostly provided by Islamic banks. Problems faced by MSME business actors include limited capital costs, deepening information technology and marketing. So it is necessary to develop a website-based e-Mudharabah system using the waterfall method and the system usability scale (SUS) testing method. The results of research on the e-Mudharabah website using the SUS testing method, obtained the results of respondents from investors, consultants, and MSME actors. The average conversion result was obtained with a result of 81,125 with the description "Excellent" with a B value scale where the conversion results were applied using the SUS method.

Keywords: website, e-Mudharabah, UMKM, waterfall method, system usability scale

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1. 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. MSMEs account for a large share of employment, support local economic growth, and contribute to income redistribution. In utilizing technology, MSME business actors can take advantage of various areas, including the production process, marketing stages and product promotion on a website [1].

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 Office of Cooperatives (2023) the number of MSMEs in East Java is 9.78 million. Accommodation and provision of food and drink sector amounted to 819.4 thousand (17.74%) [2]. 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 [3].

So it is necessary to develop a system based on the e-Mudharabah website using the Waterfall method and the System Usability Scale (SUS) method which is one part of the testing method for measuring the usability of a product or system and focusing on technical aspects, taking into account the emotional and psychological aspects of user experience [4]. This research developed a website-based e-Mudharabah system using the System Usability Scale method. MSME business actors can provide sales reports using the website-based e-Mudharabah system [5].

2. Discussion

2.1. Waterfall method

Research procedures regarding designing a Website-based e-Mudharabah management information system using the waterfall method. This development method is linear from the initial stage of system development to the final stage of system development. Therefore, the waterfall method must be sequential, each step cannot be executed simultaneously. Each step depends on the results of the previous steps and their respective tasks. Application development used in this exploration is to utilize the waterfall strategy. In the System Development Life Cycle Waterfall there are several stages as shown in Figure 1 below [6].

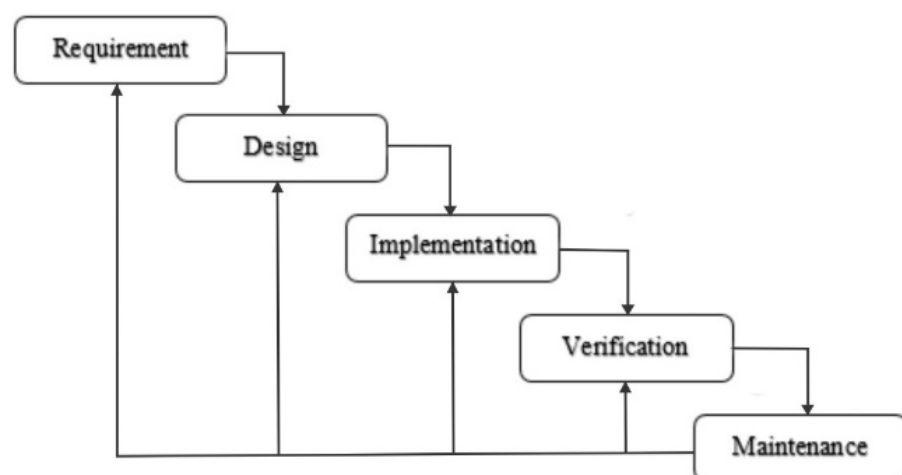


Figure 1: Waterfall method.

The following is an explanation of the development stages using the waterfall method in Figure 1:

a. Requirement. At this stage, an analysis is carried out to find out what needs are needed to design an Information System ready for collaboration for competition participation.

b. Design. At this stage, the system is designed starting from use case diagrams, activity diagrams and database design.

c. Implementation. At this stage, coding is carried out to create a web-based information system based on the design that was created previously at the system design stage.

d. Verification. At this stage, testing of system functionality is carried out whether it is working as expected or not.

e. Maintenance. At this stage, after testing, the application will get any things that must be fixed in further development.

2.2. Usability

Usability which means easy to use well. Usability evaluation is carried out to assess the interaction between technology products and their users (end users). Usability has 3 aspects, namely: Effectiveness, regarding whether users can complete their tasks in using the system and can achieve goals. Efficiency, how much resources are needed to achieve goals. Satisfaction, the level of user comfort in achieving goals. Usability measurements depend on the user's ability to complete a series of tests.

2.3. System Usability Scale (SUS)

The system usability scale (SUS) is a method that can evaluate usability, one of which is on a website. SUS does not require complicated calculations and takes a long time with a score of 0-100. Consists of ten questions by John Brooke. The questionnaire used for testing the SUS (System Usability Scale) system is a usability measurement that shows the survey consists of 10 questions, each question has 5 Likert points as the answer.

2.3.1. Questionnaire list

The following is a list of questionnaires for respondents with a range of scores used in the SUS ranging from 0 to 100 for questionnaire questions as seen in table 1 below.

TABLE 1: SUS Question table.

No	Question	SD	D	A	SA
1	I will use this system again				
2	I find it difficult to use this system				
3	I find this system easy to use				
4	Help from other people or technicians is needed to access this system				
5	I feel that the facilities in this system have functioned according to their function				
6	In this system there are many things that are inconsistent or inconsistent				
7	I have a feeling that this system will be quickly understood how it is used by others				
8	I feel the system is still causing confusion				
9	There are no obstacles that I feel in accessing this system				
10	I have to get used to it first before accessing this system				

2.3.2. Questionnaire assessment

The following is a questionnaire assessment of respondents for answers with four Likert scales as in Table 2 below.

TABLE 2: Likert scale answer table.

Weight/Scale	Answer Choices
1	Strongly disagree (SD)
2	Disagree (D)
3	Agree (A)
4	Strongly agree (SA)

Using four Likert scale answers aims to avoid neutral or hesitant answers which could create doubt for researchers in drawing conclusions, SUS score obtained can be concluded using 3 aspects[7]. The grade scale is grouped into 5 grades, namely grade A with a score between (90-100), B with a score between (80-90), C with a score between (70-80), D with a score between (60-70), and F with a score below 60. The

three main aspects of determining the results of the SUS adjectives rating, grade scale, and acceptability range are as shown in Figure 2 below[8].

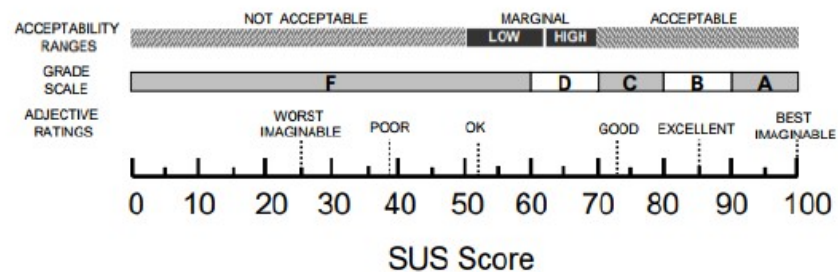


Figure 2: SUS value.

2.4. Method of collecting data

The data collection process was carried out for 1 month after the development of the e-Mudharabah website was completed. The next process after development is testing. The questionnaire used is a valid questionnaire, specifically for conducting SUS testing.

The process of distributing the questionnaire was assisted by several teams. In this testing process, questionnaires were given to respondents from various groups, especially investors, consultants and MSME players. Data collection was carried out using the standard questionnaire answering method used for the SUS method. The questionnaire was distributed to 20 respondents to fill in the questionnaire directly, which was chosen randomly.

2.5. 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. The consultant logs in on the Website page, then analyzes 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 history of search mutations to find out which MSME players have been given capital as in Figure 3 below.

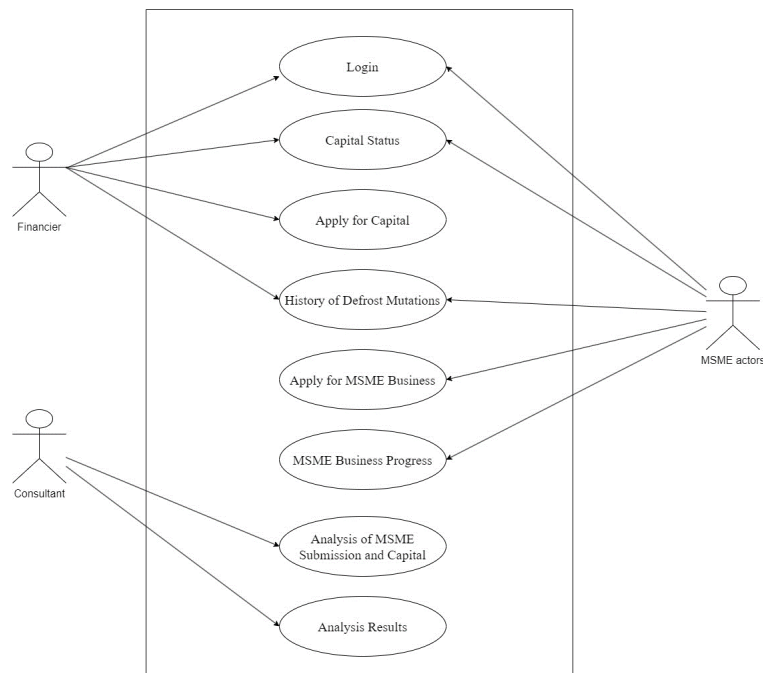


Figure 3: Ucase e-Mudharabah website diagram.

2.6. Website e-Mudharabah

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 browser application, Mozilla Firefox and others via laptops or cellphones. The display of the Form for the e-Mudharabah Website section is as follows:

2.6.1. 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.

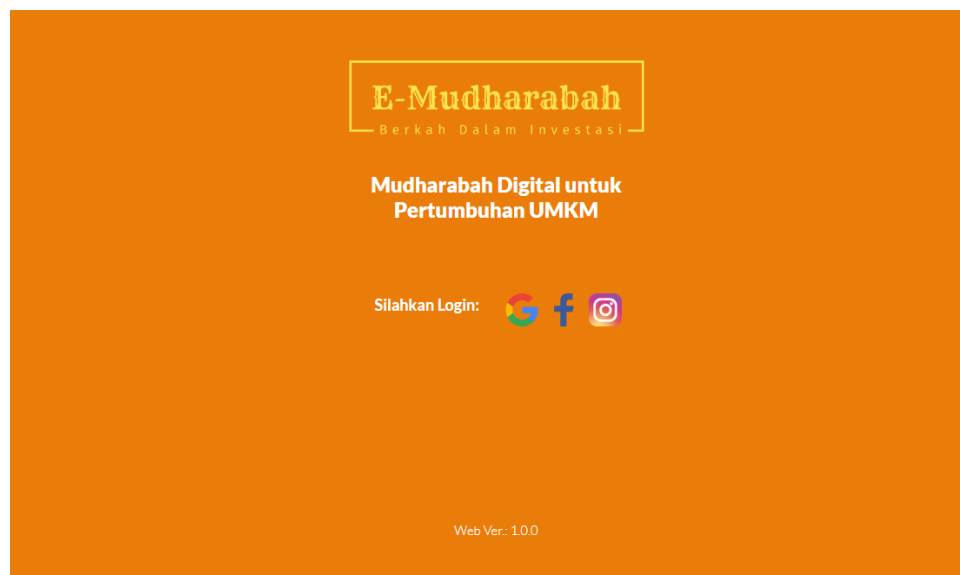


Figure 4: e-Mudharabah login display.

2.6.2. Display of the e-Mudharabah dashboard

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: Display of the e-Mudharabah dashboard.

2.6.3. Percentage display of capital progress

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.

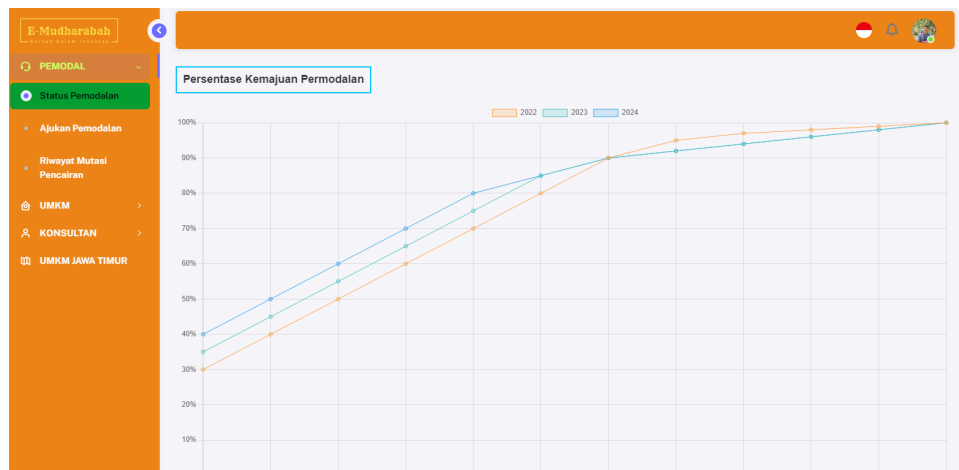


Figure 6: Percentage display of capital progress.

2.6.4. Display of the investor application form

The appearance of the Investor Application Form is a page that contains input for MSME actors who apply for capital to investors which contains sections on investor identity, investor financial data, investment objectives and risk profiles as shown in Figure 7 below.

Figure 7: Display of the investor application form.

2.6.5. Display of the history of movement of MSME capital fund disbursement forms

The display of the Mutation History Form for Disbursement of MSME Capital Funds is a page which contains a table of the disbursement of capital funds of 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 history of movement of MSME capital fund disbursement forms.

2.6.6. Display of the MSME submission form

The display of the UMKM Application Form is a page that contains input for new and joining MSME actors to apply for capital to investors which contains the MSME identity section, MSME financial data, business plans, goals for capital requirements and basic risk analysis as shown in Figure 9 below.

Form Ajukan UMKM ID: 114605184116837580467

NAMA PEMILIK UMKM: Fandi Yulian Pamuji
 EMAIL PEMILIK UMKM: fandyulian6@gmail.com

NIK: Masukkan NIK
 PROVINSI: Provinsi

KAB/KOTA: Kab/Kota
 KECAMATAN: Kecamatan

TANGGAL LAHIR: Tanggal Lahir
 BULAN LAHIR: Bulan Lahir

TAHUN LAHIR: Tahun Lahir
 NAMA PERUSAHAAN/UMKM: Masukkan Nama Perusahaan/UMKM

ALAMAT PERUSAHAAN/UMKM: Masukkan Alamat Perusahaan/UMKM
 NOMOR TELEPON: Masukkan Nomor Telepon

< Previous Next >

Figure 9: Display of the MSME submission form.

2.6.7. Graphic display of capital progress percentage

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

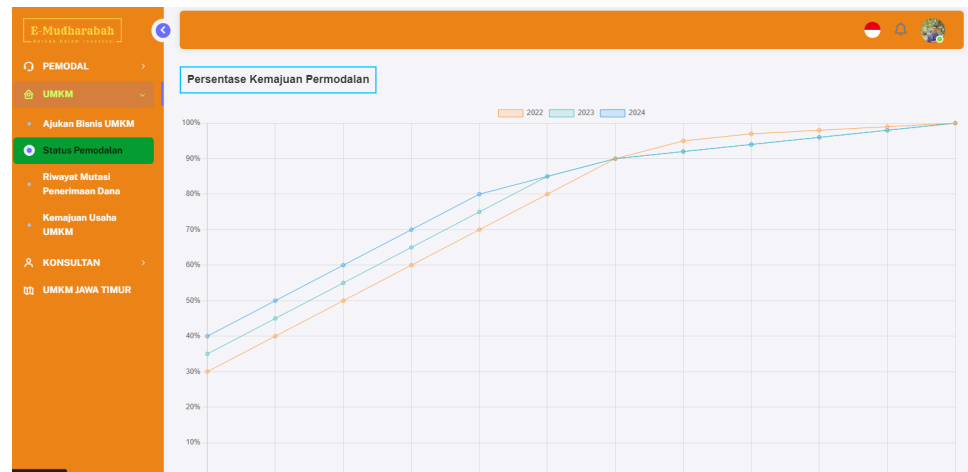


Figure 10: Graphic display of capital progress percentage.

2.6.8. Display of the history of movement of MSME capital fund disbursement forms

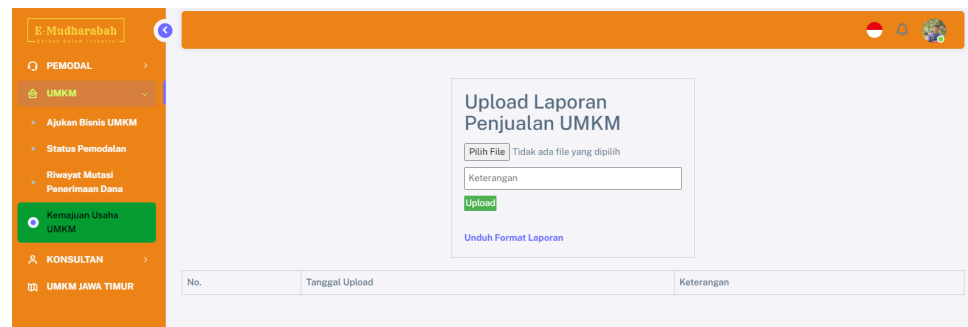
Display of the Movement History Form for Disbursement of MSME Capital Funds is a page that contains a table of disbursement of capital funds for MSME actors who have submitted and have been approved by investors in the MSME section as shown in Figure 11 below.

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 history of movement of MSME capital fund disbursement forms.

2.6.9. 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 ?? below.



labelF12

Figure 12: Display of the MSME sales report upload form.

2.7. SUS test results

The following is the result of the original data score after distributing the questionnaire to the investors, consultants and MSME actors as shown in Table 3 below.

TABLE 3: Table of respondents answer results.

Respondents	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	5	1	5	1	5	1	5	1	5	1
2	5	3	5	3	5	3	5	3	5	3
3	4	2	4	2	3	2	3	2	3	4
4	5	3	5	3	5	3	5	3	5	3
5	4	2	4	2	4	2	4	2	4	2
6	4	2	4	2	5	2	5	2	5	2
7	4	2	4	2	4	2	4	2	4	2
8	5	2	5	2	5	2	5	2	5	2
9	4	2	4	2	5	2	5	2	5	2
10	3	3	3	3	3	3	3	3	3	3
11	5	2	4	2	4	2	4	2	4	2
12	5	2	4	2	4	2	4	2	4	2
13	5	1	5	1	5	1	5	1	5	1
14	4	2	4	2	5	2	5	2	5	2
15	4	2	4	2	4	2	4	2	4	2
16	5	1	5	1	4	1	4	1	4	1
17	4	2	4	2	5	2	5	2	5	2
18	5	1	5	1	5	2	5	2	5	2
19	3	3	3	3	4	3	4	3	4	3
20	5	1	5	1	4	1	4	1	4	1

The next step is to perform calculations using the three available System Usability Scale (SUS) calculating rules. Then, the score results of each investor, consultant and MSME actor for questions Q1 to Q10 will be totaled. The total score will be multiplied by a factor of 2.5 to get the final System Usability Scale (SUS) score as shown in table 4 below.

TABLE 4: System Usability Scale (SUS) final results table.

Respondents	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Amounts	Mark (Amount * 2,5)
1	5	1	5	1	5	1	5	1	5	1	40	100
2	5	3	5	3	5	3	5	3	5	3	30	75
3	4	2	4	2	3	2	3	2	3	4	25	62,5
4	5	3	5	3	5	3	5	3	5	3	30	75
5	4	2	4	2	4	2	4	2	4	2	30	75
6	4	2	4	2	5	2	5	2	5	2	33	82,5
7	4	2	4	2	4	2	4	2	4	2	30	75
8	5	2	5	2	5	2	5	2	5	2	35	87,5
9	4	2	4	2	5	2	5	2	5	2	33	82,5
10	3	3	3	3	3	3	3	3	3	3	20	50
11	5	2	4	2	4	2	4	2	4	2	32	80
12	5	2	4	2	4	2	4	2	4	2	32	80
13	5	1	5	1	5	1	5	1	5	1	40	100
14	4	2	4	2	5	2	5	2	5	2	33	82,5
15	4	2	4	2	4	2	4	2	4	2	30	75
16	5	1	5	1	4	1	4	1	4	1	37	92,5
17	4	2	4	2	5	2	5	2	5	2	33	82,5
18	5	1	5	1	5	2	5	2	5	2	37	92,5
19	3	3	3	3	4	3	4	3	4	3	29	77,5
20	5	1	5	1	4	1	4	1	4	1	38	95
Average												81.125

Then after obtaining the average value, the next step is to apply the formula described earlier to calculate the average value. The method is to add up the values of all respondents that have been calculated previously, then divide the results by the number of respondents. The average score for this study's System Usability Scale (SUS) score was 81.125, the assessment category for this result is "EXCELLENT" with a B scale grade. Based on the usability aspect, it received a very good assessment and was considered appropriate or acceptable.

3. Conclusion

The results of this research use the development of the Waterfall method to measure the quality of the software created and ensure that everything that has been created can run with good performance. The results of the usability evaluation carried out on the e-Mudharabah Website using the System Usability Scale method obtained a score of 81.125, so the results assessment category is "EXCELLENT" with a scale value of B.

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