



Analysis and Redesign of the Website User Interface of Universitas Faletahan Using the Design Thinking Method



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Abstract

The website of Universitas Faletahan as a media for the publication of information and documentation as well as one of the student information systems. Currently, several problems have been found on the Universitas Faletahan website. Among them are the appearance of the main page which is less organized and less organized, and page navigation which is still empty. For this reason, a design for improving the interface is carried out using the design thinking method. This method is known as a comprehensive thinking process that concentrates on creating a solution that begins with a process of empathy for a particular human-centered need. There are 5 stages in this method, namely Empathize, Define, Ideate, Prototype, and Testing. The recommended application is built in the form of a prototype using the Figma application. The prototype that was built was successfully tested on 11 respondents by using the System Usability Scale (SUS) test and the application prototype with a score of 60.

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1 Introduction

According to [Dipanegara \(2011\)](#), a website is a collection of web pages that have interrelated topics, sometimes accompanied by images, videos or other types of files. Websites have various functions, including websites for promotional media, marketing media, information media, educational media, and communication media ([Darmawan & Permana, 2013](#)). Websites have an important role for educational institutions, especially for universities, faculties, and departments (Study Programs) in conveying the latest information related to scholarships, competitions, academic and non-academic information, and the latest news about activities carried out by the campus.

The website of Universitas Faletehan as a source of information and documentation needed by students at Universitas Faletehan, underwent updates starting from the appearance of the website and the addition of academic information system features for student needs to for lectures, of course, students will always access the website. The information displayed on the website of Universitas Faletehan is information on the Profile of Universitas Faletehan, institutions, faculties, facilities, and information systems ranging from E-Learning, SIAKAD, Libraries, Faculty of Health Journals, SISTER, and SKPI with some pages that are still not accessible and display which is still changing when changing pages, making it difficult for students to find information and return to the initial menu. Improved User Interface and User experience by implementing usability testing can help overcome existing problems. To find out the extent of the usability of the website in meeting user needs, usability evaluation is needed as a solution to find out the usability problems of the website ([Castaneda et al., 2007](#); [Hsu et al., 2017](#); [Palarivattom & Kochunni, 2015](#)).

The design thinking methodology is used as the foundation stage in this design. The features designed refer to the existing Faletehan University website. This is done so that the use of the website becomes more effective and efficient in terms of users. Usability Testing. This method will focus on how users use the website. Usability testing is done by giving a series of test tasks that must be done by the user. The purpose of assigning tasks to users is to assess task achievement, observe user behavior in interacting with the website, and explore usability problems when users do a task. Evaluation using Usability Testing was carried out twice. The initial evaluation was carried out on the previous Faletehan University website design. While the final evaluation is carried out on the prototype design of the proposed new website design. To implement a good web design, it is necessary to evaluate the web design so that it can make it easier for users to obtain the desired information and make it easier for users to access the features provided. This research is expected to be able to provide website design recommendations through usability evaluation and assist the Faletehan University campus in making changes to website design by paying attention to usability problems from users ([Belanche et al., 2012](#); [Hillier, 2003](#); [Nantel & Glaser, 2008](#); [Sutcliffe et al., 2006](#)).

2 Materials and Methods

Design thinking

Design Thinking is a human-centered design approach to solving problems and bringing about new innovations. This method has several stages starting from collecting information about users, based on the information made about what users need, making creative solutions, building representations of the solutions offered, and testing the results of the representations that have been built so that they get feedback ([Fauzi & Sukoco, 2019](#)). In this research, first of all the test scenarios to be carried out are determined. After obtaining the appropriate scenario, the next step is to select respondents. The number and sources of respondents can determine the validity of the data that will later be collected. Furthermore, the data that has been collected will be calculated based on the calculations that will be used when determining the test scenario. From the results of this data calculation, conclusions will be obtained from the research conducted. The research steps carried out in this study can be seen in the following:

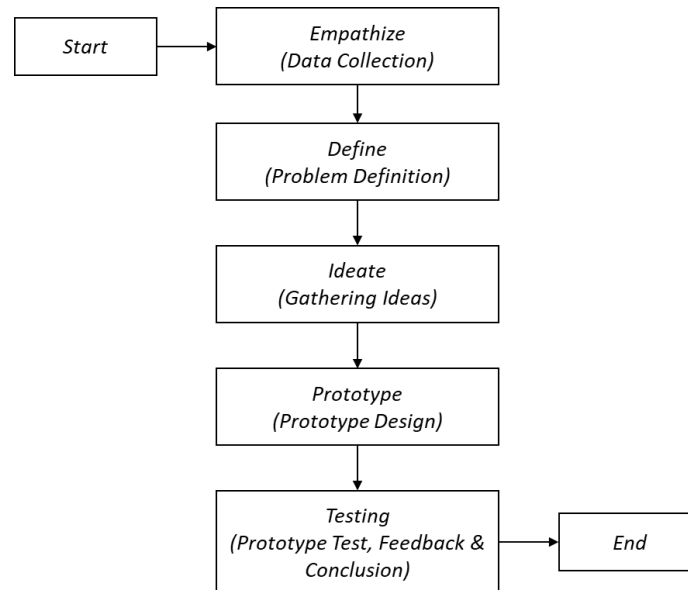


Figure 1. Design thinking methods

The object of this research is the website of Universitas Faletehan, as shown in the image below:

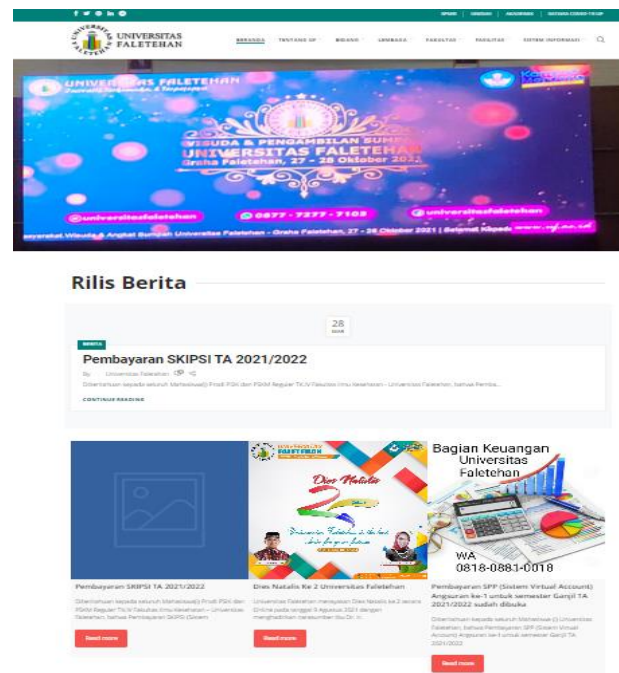


Figure 2. The existing design of Universitas Faletehan website

System usability scale

SUS is one of the most popular usability testing methods. SUS was developed by John Brooke in 1986. SUS is a usability scale that is reliable, popular, effective, and inexpensive. SUS has 10 questions and 5 answer options. The answer choices ranged from strongly disagree to strongly agree. SUS has a minimum score of 0 and a maximum score of 100.

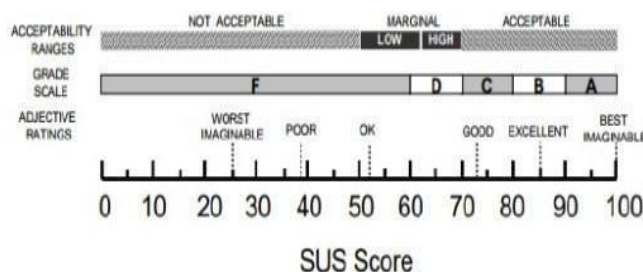
Table 1
SUS Questionnaires

| # | Questionnaire Question |
|----|--|
| 1 | Has the university's website helped you get the information you're looking for? |
| 2 | I find this system complicated to use |
| 3 | Are you having trouble getting the information you're looking for? |
| 4 | In my opinion, the colors used on the website are inconsistent |
| 5 | In my opinion, the website of the university of faletehan already has a good layout design |
| 6 | I'm having trouble finding the information about the major I want to look for |
| 7 | I didn't have trouble finding the facilities on the faletehan university website |
| 8 | In my opinion, all the features on this website are not working properly |
| 9 | I can understand all the features on the website |
| 10 | When I enter the university's website, I can immediately find the latest news, agenda and videos |

For the SUS rule, each question has an odd number, the score is reduced by 1, while for an even number, the final score is 5 minus the question score obtained from the user. The SUS score is obtained from the sum of the scores for each question which is then multiplied by 2.5. In this case, the SUS value is obtained from the average value obtained from the respondents. Calculation of the average value using the following equation:

$$\bar{x} = \frac{\sum x}{n}$$

\bar{x} = average score
 $\sum x$ = total SUS score
 n = number of respondents



3 Results and Discussions

Empathize

This phase is the initial stage in the UI/UX design of the Universitas Faletehan website. The thing discussed in this phase is data collection. At the data collection stage, the researchers conducted observations, and interviews, and distributed questionnaires to students of Universitas Faletehan and to general users. That way the author gets the results of the questionnaire that has been filled in by the user. The following is a questionnaire that the author gives. Researchers distributed online questionnaires to find out the overall features of the website (Pereira & de FSM Russo, 2018; Chou, 2018; Lee & Kozar, 2012; Xavier, 2015). Questionnaires were distributed to 11 of the users, of which 2 were general users and 9 were students of Universitas Faletehan. After processing, the user's point of view regarding the website of Universitas Faletehan, in general, is obtained, namely:

- 1) The information provided is rarely updated
- 2) Layout design that is not well organized
- 3) Pages that still don't have content
- 4) There is no explanation about the information system.

Define

The defined process is the process of getting user opinions and understanding user needs, then a user persona is created with a target user of 3 people. In each persona describes the identity such as name, and status, then contains the goal, and frustration of the current state of knowledge of technology.



Figure 3. Persona view

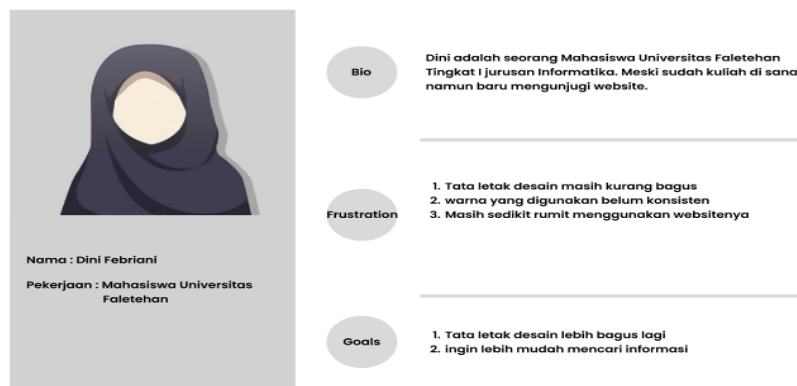


Figure 4. Persona view

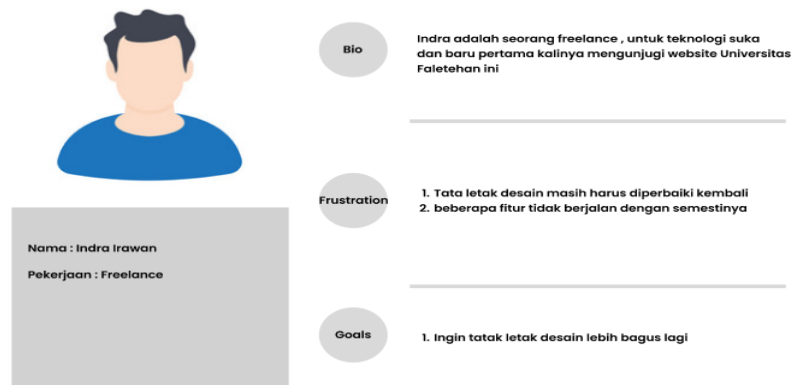


Figure 5. Persona view

Ideate

At this stage, the process of collecting ideas through brainstorming is carried out which aims to get ideas for solving existing problems. The collection of ideas shown in Figure 6. Brainstorming results have been filtered first based on the similarity of ideas that emerged in the brainstorming process. The results obtained in collecting ideas through brainstorming are as follows:



Figure 6. Process of collecting ideas

Prototype

The prototype stage is where the design of the appearance of a website is carried out and implements the idea to produce a visual display prototype in the form of low and high-fidelity wireframes.

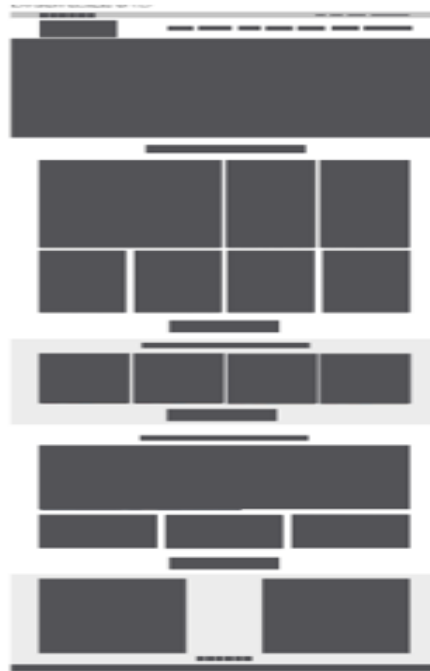


Figure 7. Wireframe low fidelity



Figure 8. Wireframe high-fidelity

Test

At this stage testing was carried out on 11 users consisting of students from the university and the public. This test is carried out by improving the design based on the results of testing on the prototype website of Universitas Faletehan. Tests are carried out to ensure whether the website meets the usability element by using the System Usability Scale (SUS). System Usability Scale (SUS) is used because it is a test that assesses the entire website (Kaya et al., 2019; Lazarova, 2018; Puspita, 2020; Sanjaya et al., 2021).

Table 2
New website design questionnaire score

| Calculated Score | | | | | | | | | | Total | Score (Total x 2.5) |
|---|----|----|----|----|----|----|----|----|-----|-------|------------------------|
| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | | |
| 3 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 20 | 50 |
| 3 | 2 | 1 | 2 | 3 | 3 | 4 | 3 | 3 | 1 | 25 | 63 |
| 3 | 4 | 1 | 4 | 4 | 4 | 3 | 4 | 3 | 0 | 30 | 75 |
| 4 | 4 | 1 | 3 | 4 | 3 | 4 | 3 | 4 | 0 | 30 | 75 |
| 2 | 2 | 2 | 1 | 2 | 3 | 2 | 2 | 2 | 2 | 20 | 50 |
| 3 | 3 | 2 | 0 | 3 | 4 | 3 | 3 | 2 | 0 | 23 | 58 |
| 3 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 22 | 55 |
| 4 | 4 | 0 | 4 | 4 | 2 | 2 | 2 | 4 | 0 | 26 | 65 |
| 4 | 3 | 1 | 4 | 2 | 0 | 1 | 2 | 4 | 1 | 22 | 55 |
| 3 | 3 | 1 | 3 | 2 | 1 | 2 | 2 | 2 | 1 | 20 | 50 |
| 4 | 3 | 1 | 3 | 4 | 3 | 4 | 2 | 3 | 1 | 28 | 70 |
| Average Score (The Final Result) | | | | | | | | | | | 60 |

The average score for calculating the old website is 60, so the score is in the OK category with a grade scale D. This means that usability based on the data gets a sufficient rating, but it still needs to be evaluated and developed further (Shirvanadi, 2021; Manik et al., 2021; Yusuf & Astuti, 2020; Ruzza et al., 2017).

4 Conclusion

This study shows the results of evaluating the appearance and performance of the university's website by using the System Usability Scale. Based on usability testing, the layout display of the latest design of Universitas Faletehan is good. A score of 60 is obtained, then the score is included in the OK category with a grade scale of D. This means that usability based on the data gets a sufficient assessment, but it still needs to be evaluated and developed further. Subsequent research re-analyzes the website of Universitas Faletehan by re-testing the user with more respondents and conducting interviews, and the process of redesigning the appearance of the website using a prototype without having to rebuild the website.

Conflict of interest statement

The authors declared that's they have no competing interests.

Statement of authorship

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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