

# CHAPTER I

## INTRODUCTION

This chapter consists of introduction of the problem in the background of the research, problem formulation, research objective, research scopes, and outline of report.

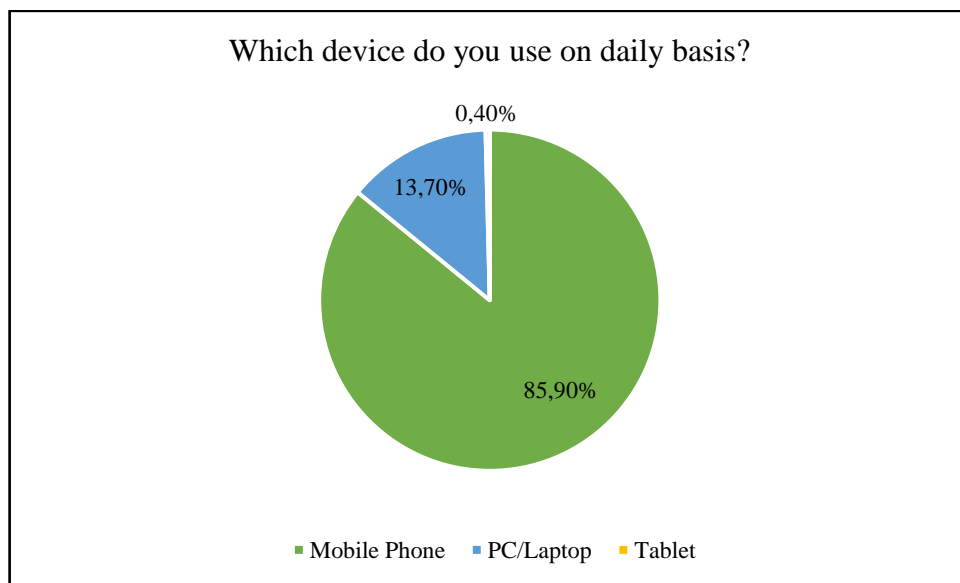
### 1.1 Background

Technological development is growing rapidly in this era. Almost everyone is using technology, such as smartphones, computers, etc. Humans, as the user, interact with technology through an interface. Therefore, it creates human-computer interaction. Human-computer interaction is a field of study that focuses on the interaction between human and computer (Fischer, 2001). The interaction is created through an interface which is called a user interface (UI) and the experience created by the interaction is called user experience (UX).

User interface (UI) is a display or an interface that is used by a user to interact with the system through commands or techniques (Joo, 2017). User experience (UX) describes how the user feels before, during, and after interacting with the system (Hartson & Pyla, 2019). User interface and user experience are inseparable since they complement each other. User experience is achieved through user interface. A responsive user interface creates a better user experience. Responsive design is a technique that allows a website to transform itself to any screen resolution. A study shows that users are more likely to accomplish the task better by using smartphones than laptops (Hussain & Mkpojiogu, 2015). Better task accomplishments will result in better user experience.

Portal Unand is an interface of Andalas University academic information system. It is a web-based app that has all the information related to academics and

it also helps students and academic staff to connect. A web-based app can be opened in both smartphones and desktops by using a web browser. Previous research showed that more than 96% of university students in Indonesia own a smartphone (Pratama, 2017). An initial survey was conducted to find out Andalas University's student preferences in technology and their thoughts on Portal Unand. The survey was conducted by using google form and the result was 85.9% of Andalas University's students use their phone on a daily basis. The chart can be seen in **Figure 1.1**.



**Figure 1. 1** Pie Chart of Unand's Student Device Preferences

**Figure 1.1** signified the fact that the mobile version of a website is widely used rather than the desktop version of a website. However, the Portal Unand Website doesn't adjust to the current types of mobile phone as it still uses the previous technology. Hence, Portal Unand is not responsive to the current screen resolution. Responsive design is a design that adjusts as the size of the window (Marsh, 2016). A website needs to be responsive in order to provide the best user experience for everybody. It can be seen in **Figure 1.2** that Portal Unand doesn't adjust to the current screen resolution.



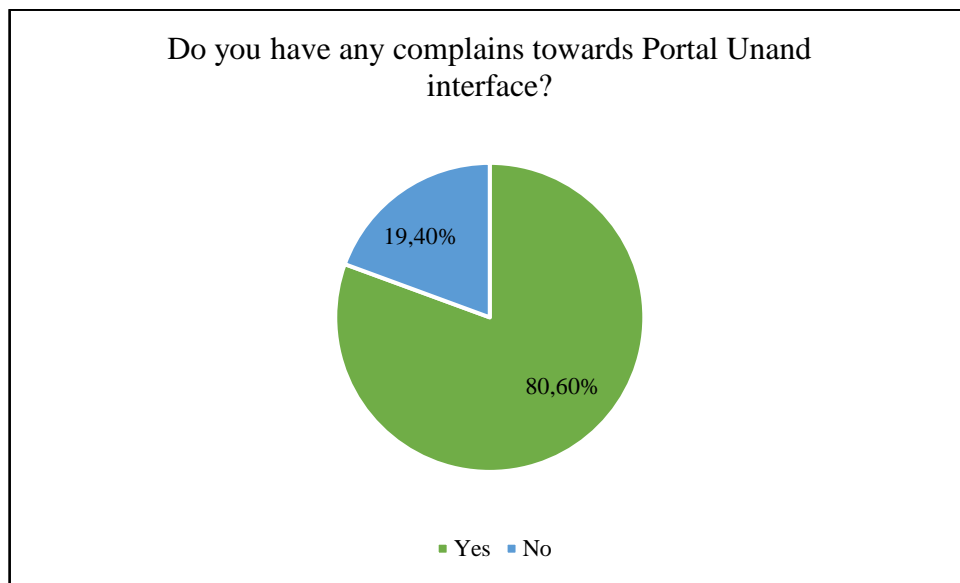
**Figure 1. 2** Portal Unand Login in Different Screen Sizes

As seen in the figure above, Portal Unand is not responsive to the current screen resolution. One of the examples of a responsive website is SIX ITB or ITB Academic Information System. The login screen of SIX ITB can be seen in **Figure 1.3**.



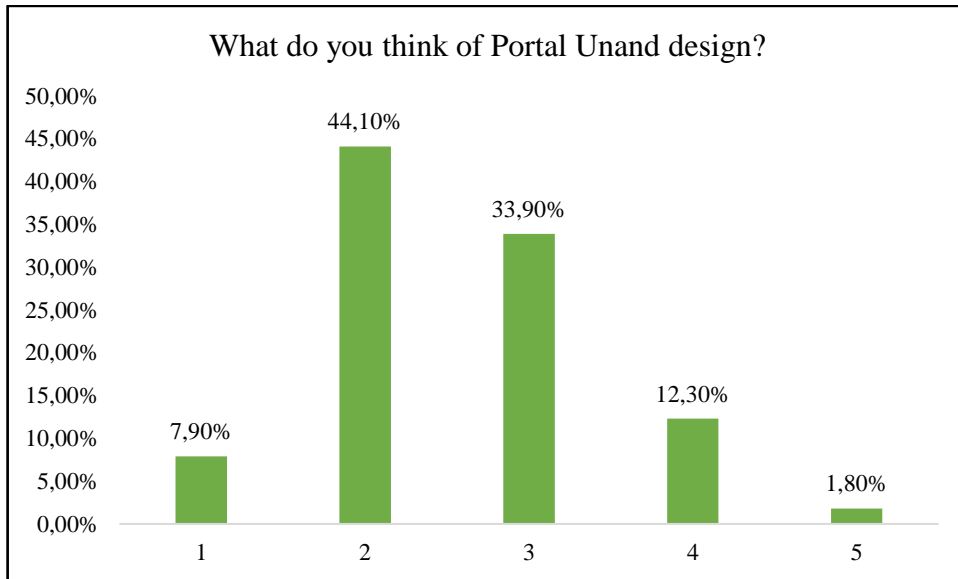
**Figure 1. 3** SIX ITB Login on Different Screen Sizes

**Figure 1.3** shows the example of a responsive website that adjusts to the current screen resolution. As seen in the figure, the design stretches and adjusts to the screen size so that it is easier for the user to use in any type of device. Based on this comparison, it can be stated that the Portal Unand website is not responsive to the current screen resolution. In the initial survey, the students were asked whether they have any complaints or not against Portal Unand. Their answer can be seen in **Figure 1.4**



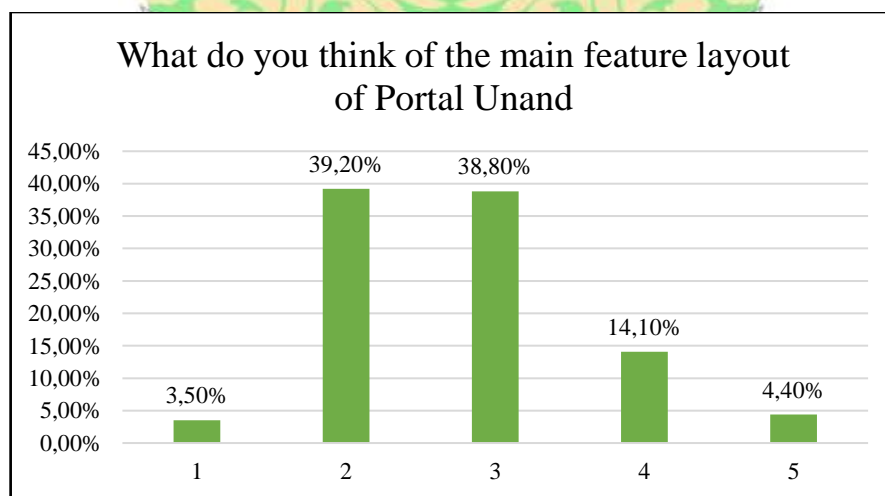
**Figure 1. 4** Unand’s Student Complaints Against Portal Unand Interface

According to the initial survey, 80.6% of the users have some complaints while accessing Portal Unand. There are 64.3% users that complained about having to zoom in/zoom out while using Portal Unand, 53.3% users stated that the design is not appealing to the eye, 46.7% users complained about the non-responsive design, 41.9% users experience difficulties in pressing the button, 35.7% said that the important features are not highlighted in the dashboard, and others complained about; the information that is not updated, too many texts on the home screen, and the server. These problems indicated that the users are not having the best experience while using Portal Unand especially due to the unresponsiveness of the website.



**Figure 1. 5** Unand's Students Assessment on Portal Unand Design

As user experience is highly related to user interface, the students were asked on their assessment of Portal Unand design as seen in **Figure 1.5**. A Likert scale is used from 1 to 5, with 1 as very unattractive and 5 as very attractive. Most students choose 2 as their answer with the percentage of 44.1%. Students were also asked about their reasons of choosing number 1 or 2 from the Likert scale, and the results were 53.3% about the old-fashioned design, 43.6% complained about the small letter size, 34.8% about the layout, 0.4% student said that they have to zoom in first in order to see the text, and others chose not to answer.



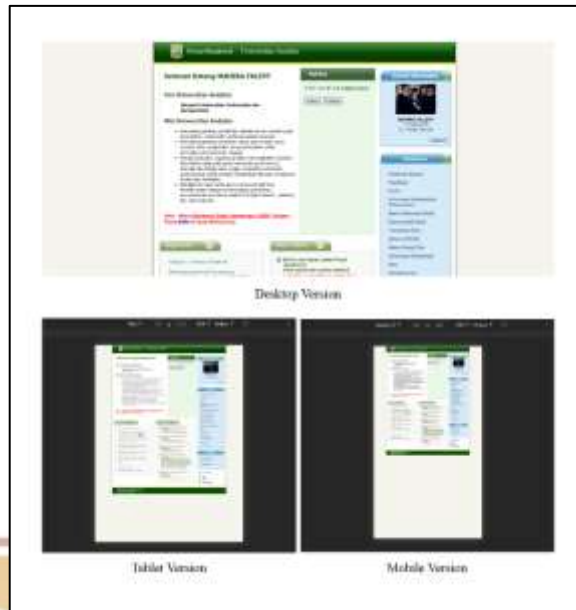
**Figure 1. 6** Unand's Students Assessment on Portal Unand Dashboard Layout

Another important part of the user interface is the layout. The students were asked on their assessment of Portal Unand dashboard layout and the results were 39.2% students choose 2 out of 5 from the Likert scale as seen in **Figure 1.6**. The reasons for that choice were 39.2% students stated that the important features were not highlighted and 39.2% students said that the dashboard was too crowded.

Based on the initial survey, it can be stated that Portal Unand has a non-responsive website, an old-fashioned design, and the important features were not highlighted in the dashboard. Therefore, these problems lead to unpleasant user experiences. These problems that the users were having were violating some of the UX law, such as Postel's law and Hick's law.

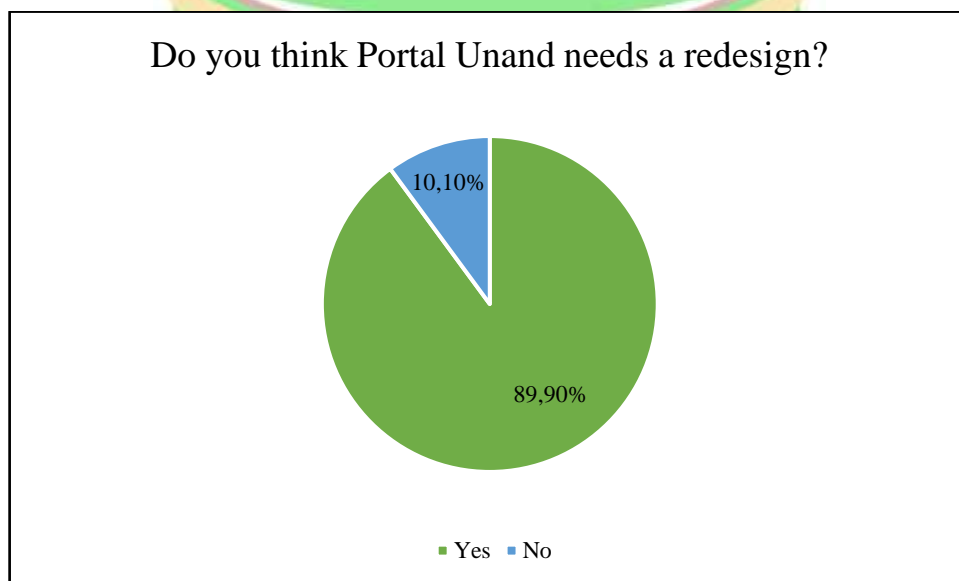
Postel's law, as one of the UX principles, explains an approach to design is to anticipate anything while providing a reliable and accessible interface. One of the examples of Postel's law is responsive design. (Yablonski, 2020). Most Portal Unand users use mobile phones on a daily basis. Mobile screens are relatively small because they create low visibility. Users had to do zooming and scrolling on their mobile phones in order to be able to use Portal Unand due to its non-responsive design. Non-responsive design also causes users to face difficulties while trying to log in or finding some features. This issue decreases user experience as it violates Postel's law. Therefore, a responsive user interface is needed in order to create a better user experience.

Another UX principle, Hick's law, describes human's behavior in making a decision. The complexity of choices available will take more time in decision making (Yablonski, 2020). Most Portal Unand users' goal was to check their study schedule or their student report. However, Portal Unand's dashboard was providing the users with too much information and it didn't highlight the important features. Portal Unand dashboard in different screens could be seen in **Figure 1.7**.



**Figure 1. 7** Portal Unand Dashboard in Different Screen Sizes

As seen in **Figure 1.7**, users were faced with too much information unrelated to their goals after they log in to the system. According to Hick's law, a busy interface that has unclear actions or difficult to identify and critical information that is hard to find will put higher cognitive load on the users (Yablonski, 2020). Therefore, simplifying the interface helps reduce mental strain on the user and will result in better user experience.



**Figure 1. 8** Unand's Students Thoughts on Portal Unand Redesign

In order to achieve a better experience for Portal Unand users, a redesign is needed. Students were asked their thoughts on Portal Unand redesign and 89.9% agreed that Portal Unand should be redesigned as seen in **Figure 1.8**. Redesigning Portal Unand by using a design process that focuses on users' needs will result in a better experience. Design thinking process is a method that focuses on the users. It involves users in each step of the process. Users' involvement will result in a design that meets users' needs. The new Portal Unand design is expected to fulfill users' needs, help users to reach their goals, and provide better user experience.

## 1.2 Problem Formulation

Based on the background above, the problem faced by users is non-responsive design and important features are not highlighted. These problems result in a not pleasing user experience. Therefore, the problem formulation for this research is how to improve user experience by involving users in redesigning Portal Unand.

## 1.3 Research Objective

The objective of this research is to create a new design prototype of Portal Unand that will solve users' problems, meet users' needs, and help users' reach their goals.

## 1.4 Research Scopes

The research scopes of this study are as follows.

1. The user experience is enhanced based on the user interface.
2. The research is done up to a high-fidelity prototype in mobile version only.
3. The prototype focuses on the top 3 main features of Portal Unand.



4. The research is qualitatively measured.
5. The research is done to the student version of Portal Unand.

## 1.5 Outline of Report

This report consists of three chapters with the following writing methodology.

### CHAPTER I INTRODUCTION

This chapter contains the background of the research, problem formulation, research objective, research scopes, and outline of report.

### CHAPTER II LITERATURE REVIEW

This chapter consists of literature review related to the topic. The literature reviewed are regarding human-computer interaction, user experience, user interface, design thinking process, usability, and usability testing.

### CHAPTER III RESEARCH METHODOLOGY

This chapter consists of methods done in order to do research such as preliminary study, literature study, problem identification, problem formulation, method selection, design thinking process, discussions, and conclusions.

### CHAPTER IV DESIGN THINKING PROCESS

This chapter consists of the design thinking process that is done in order to redesign the Portal Unand. The design thinking process consists of empathize, define, ideate, prototype, and test.

### CHAPTER V DISCUSSIONS

This chapter consists of discussions regarding the result of the design thinking process and usability testing. The design thinking process is conducted by using five steps, which are empathize, define, ideate, prototype, and testing. The testing is conducted by using usability testing.

### CHAPTER VI CONCLUSIONS

This chapter consists of the conclusions of the research that has been done and the suggestions for future research.

