

The Challenges of System Usability Scale (SUS) for Testing the Interface of Android Mobile Application of Hiking

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Abstract. E-commerce or online marketplaces are increasingly popular and raise high attention from audience, which has been shown through large number of transaction, comparison, collection and many more interaction in the online activity. Due to the huge benefit and potential income, many startups see the opportunities to be part of it by establishing online service and product in the form of web application. It is very important to take note that user acceptance become the essential factors that influence the successes of product or service implementation, which mostly indicated through good design of UI (User Interface) and UX (User Experience) of the applications. Thus, this study wants to explore the user acceptance by utilizing usability testing with five scale mechanism through 8 (eight) participant from various background. The result indicated good level of acceptance with average score of 80.3 from ten type of question about the characteristics of usability.

Keywords: Online activity, Startup, User interface, User experience

1. Introduction

At most situation, user have tendency to utilize certain application based on its looks and its feel. This, designers come into the picture to provide user experience, which has been used to measure usability, satisfaction, and content contained in the application as well the user interface as the representative to visualize the process flow and the function. Basically, the design process of current technological developments play a role in solving every problem in human daily life both personal and community as well as providing systematic approach to have replay-ability, in respect of continuous improvement. There is no exception in the design concept of thinking and principle both start-up companies and even the large companies with the existence of attempt to satisfy the community to be able to sell and buy goods or products freely and online without having to visit a shop physically. The rise of e-commerce makes people finally start switching to online shopping while in its development, e-commerce is not only related to buying and selling transactions but also as an item rental business. No exception in the rental of climbing equipment or outdoor activities that have considerable business potential, considering that today there are more people who like to climb mountains. Currently the application of climbing equipment has not been found in Indonesia, so the students in Telkom University see the opportunities to provide business solutions in the climbing equipment leases to allow climbers find relevant information easily and meet their climbing needs effectively by developing the Kudaki application. Thus, user interaction become the main priority to be made as the specification of the application to achieve business processes that match with mental model of target user. The essence of any business is

to offer a pleasant and useful experience for the audience who have desired on easy to use and learn for the attribute of mobile application in respect to present better experience in the utilization process. In accordance with the literature and research that has been done, the author designs, analyses and evaluates the process of making an application display in accordance with the UI / UX design methodology used in making the Kudaki application interface. Then, the usability testing has been conducted to check the how certain users can perform well and complete specific task in anticipating possibility of mistakes and errors when they find the difficulty within the mobile system.

2. Methods

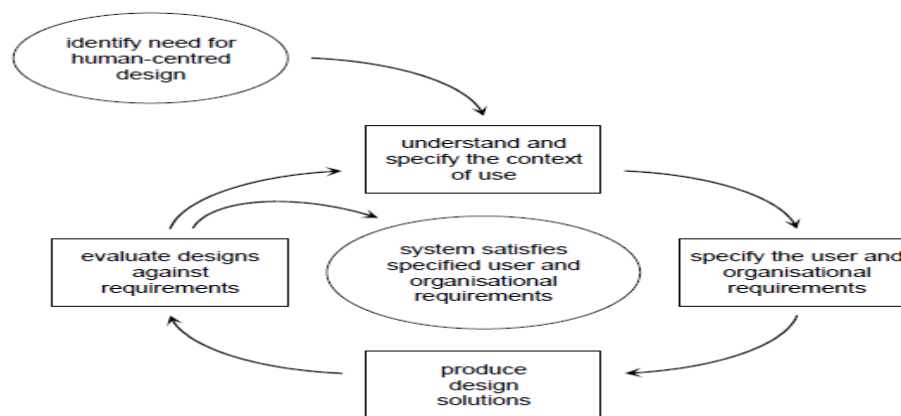


Figure 1 User Centered Design Process

The concept of UCD is the user as the center of the system development process, and the objectives or characteristics, context and environment of the system are all based on user experience [4]. It is accordance with the description above, the process describes the process of User Centered Design with the details of the explanation are as follows:

1. Specify the context of use: This is about the environment of use, and the tasks that uses for the product. At this stage do the interface planning process, build a good concept for an interface, then build an interface roadmap that defines concepts, characteristics from the user to the target usability.
2. Specify user and organisational requirements: Determine usability success criteria for products in terms of user tasks. Then determine the design guidelines and limitations. At this stage it has the purpose of finding the user's problem, after that it makes a description of the terms of the assignment that contains the needs of the user when doing activities on the application. Next will be validation of all the needs that will be determined which ones should be used.
3. Produce design solution: Combining HCI knowledge (visual design, interaction design, usability) into design solutions. This stage is focusing in designing the form of application prototype simulation with the aim of providing solutions based on needs that have been analyzed from the previous stage.

Evaluate designs against user requirements: The use of design is evaluated on the user's task. At this stage is the stage where the final evaluation of the design that has been designed and then tested again to the target user is done. After that all prototype designs from the design are applied to the application development stage by the developer.

3. Result and Discusiion

The UI / UX often juxtaposed together as a single unit, but actually these two things can be interpreted differently if separated. Simply put, the UI refers to matters relating to the appearance of an application's interface to the user, and UX is more to how the experience can be felt by users when using an application. According to ISO 9241-210, user experience (UX) is the perception and response of the

user as a response from the use of a product, system or service. The user experience is that the user is satisfied with the use of the product, as well as the vision and safety of the product. UX cannot be developed by designers, but designers can develop products that can create UX. It is about meeting customer needs appropriately. Then produce products that can make users happy to use in the form of a simple display. A good user experience is to provide something that exceeds the expectations of users who use the products we build. User Interface (UI) is part of an interactive computer system that communicates directly with users. The UI itself is growing with a larger portion or piece of software in a computer system because of the rapid use of computers. A web browser is a client, application or software that enables a user to interact with the application or the web and view information on the page. The user interface technology incorporates the concepts of visual design, design development and visualization. The purpose of the user interface is to increase usability and of course user experience. In Figure 1 above shows the difference between UI and UX, where the UI shows more how a design can be seen visually both from color, layouts, to typography. While UX shows how designs are designed viewed from interactions, scenarios to research carried out in designing interface designs. In the meantime, a person is a user model presented as a particular person. They are not real people, but are directly summarized from observations of real people. One of the key factors that makes a character successful as a user model is personification.

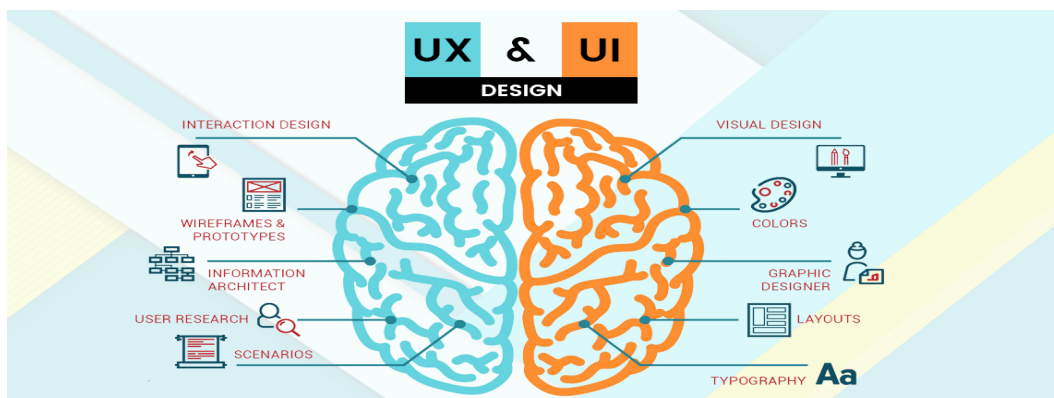


Figure 2 Differences between UI and UX

The System Usability Scale can be used to take quick measurements of how people feel the usability of a system. This proved to be a very simple and reliable tool to use when evaluating the usability of a system [1]. Usability testing is generally used Question techniques for users / users with forms like questionnaire, observation field, SUS forget information about the quality of the system which are made [7]. SUS is a standard questionnaire that measures user satisfaction in using a system [8]. According to Jeff Sauro [2], SUS is a questionnaire with 10 items, each with five scales. Odd numbered items have a positive tone; Even numbered item tones are negative. Then the questionnaire that will be designed is adjusted based on indicators of usability on the System Usability Scale (SUS).

Table 1. SUS Questionnaire Items

NO	Questionnaire Items	NO	Questionnaire Items
1	I want to use this system often	6	I think there is a lot of inconsistency in this system.
2	The system turned out to be unnecessarily complicated.	7	I imagine that most people will learn to use this system very quickly
3	I think the system is easy to use.	8	I found the system very cumbersome to use
4	I think I need the support of a technical specialist to use this system.	9	I am very confident when I use the system
5	I have found activities with various guides to be well integrated.	10	I had to learn a lot before I could switch to this system

Based on the table above shows the indicator questions from SUS. Calculation of the results of usability testing with the SUS instrument is carried out by following the following rules:

1. Every statement with an odd number, the respondent's answer scale is reduced by 1.
2. Each statement with an even number is 5 minus the respondent's answer scale.
3. The results of a scale of 1 to 5 (five become the most positive response).
4. Sum the respondent's answer scale and multiplied by 2.5.
5. Determine the average answer of all respondents.

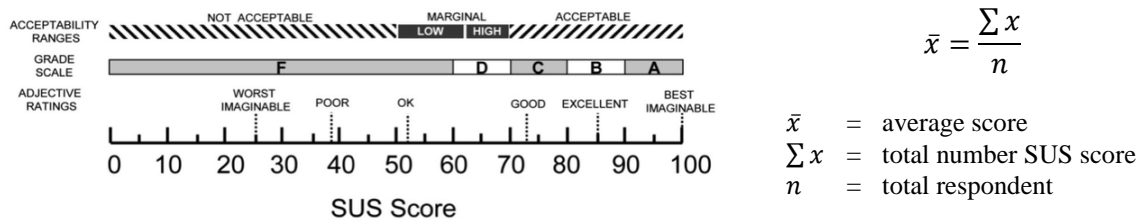


Figure 3 SUS

SUS calculations can be formulated as shown above where the average score is obtained from the number of SUS scores then divided by the number of respondents. After getting the final results of the respondent's assessment, the next step is to determine the grade as the conclusion of the assessment results as found in the picture above. One example of how SUS toughness can be seen in the journal Validation Of The System Usability Scale (Sus): Sus In The Wild [9]. Following are the 8 Golden Rules principles according to Ben Shneiderman [3], in respect to what strives first is a consistency, which plays an important role by helping users familiarize themselves with the abusive views of products built to help them achieve their goals more easily. By providing the same standard information, ensuring users can find out other information without having to learn it again. Secondly, by allowing frequent users to use shortcuts with more utility, the method requires faster shutdowns. Then you need a shortcut to shut down. Thus, users can more quickly and easily navigate and implement the interface. Thirdly, offer informative feedback so that consumers know at any time where they are and what is happening. Each action requires appropriate and readable user feedback. Fourthly, design dialogs to yield closure where emphasize the concept of do not let users guess. Users must be told what they have done. For example, consumers will appreciate the "thank you" message and purchase receipt when they complete an online purchase. Fifthly, the presentation of minor system errors should be designed directly, but when a defective error occurs, be sure to provide the user with detailed and simple instructions for solving problems quickly and quickly. For example, there is a text field tag where the user forgets to enter the password in online format. Tips that allow for simple brokerage building procedures should aim to provide users with open behavior. This should be done after one action, data recording, or the entire procedure. Seventh, internal support for controls allows users to become active. Users feel the establishment of the ideal control that takes place in the digital space. Eighthly, reduce short-term memory load, which the interface must be as simple as possible with the right hierarchy of information. It's always easier to remember getting to know something, because getting to know something includes tools that help us access our great memory and allow relevant information to appear. For example, we often find that multiple choice question forms are easier than answering short questions in tests because they only require us to know the answers rather than remember them from our memories.

4. Conclusion

Usability test results from the respondents' assessment can be seen in the table 1 where it was given by the respondent in accordance with the level of acceptability, grade scale and adjective rating categories shown as below while the sneak peak of the Kudaki interface included. At the core result, it can be summarized as:

1. At the acceptability level; the result indicated that it is acceptable.

2. At the level of grade scale; the result indicated that it falls under the category B.
3. At the adjective level; the result indicated that the rating is included as an excellent category.

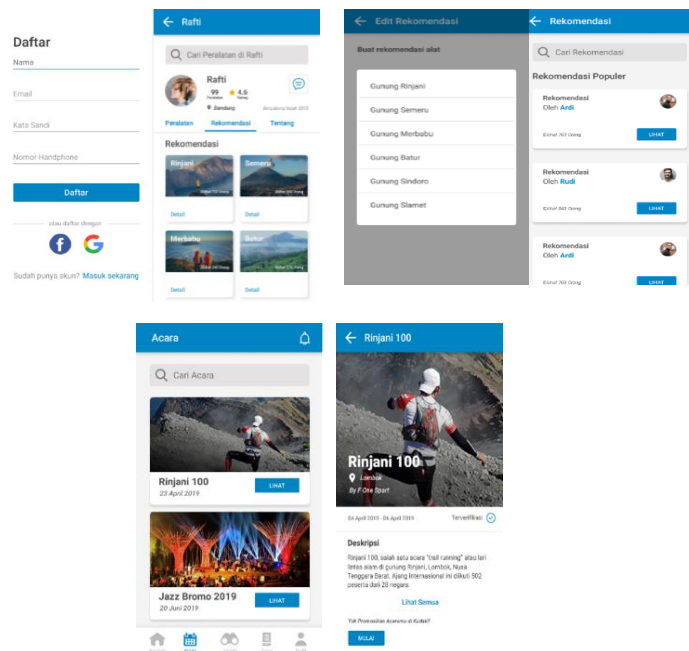


Figure 4. Kudaki Application Interfaces

Table 2. SUS Score Result

No	Respondents	Score										Sum	(Sumx2.5)
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10		
1	R1	4	4	3	4	4	4	4	3	4	4	38	95
2	R2	3	4	4	2	3	1	2	2	3	3	27	68
3	R3	2	3	3	3	4	2	3	4	3	3	30	75
4	R4	2	3	3	3	4	2	3	4	3	3	30	75
5	R5	3	3	4	4	4	4	3	3	3	1	32	80
6	R6	4	4	3	4	4	4	3	3	4	3	36	90
7	R7	4	4	4	4	3	2	4	3	3	3	34	85
8	R8	3	3	4	3	3	2	3	3	3	3	30	75
Final Score												80.3	

As shown in the table 1, it showed that second respondent gave lowest score compare to the other with the total of 68 while the first respondent has the highest score among all with 95. The huge gaps of difference of the user interpretation regarding the quality of design can be tolerated due to different user stories, especially related to the habits and likeness. The selection of the testers has been considered certain aspects such as skill, experience, age, ethnic and hobby for the purpose of diversification and to verify the understandability and accessibility of the application.

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