



The Evaluation of User Experience UPI Digital Business Website with Usability Testing Method and System Usability Scale

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ABSTRACT

The UPI Digital Business website, which has a domain at <https://bisnisDigital.upi>, is the official website of the Digital Business study program at Universitas Pendidikan Indonesia. According to the results of observing similarweb.com visitor traffic data, there are interesting findings related to the high bounce rate on the website, which is 71.35%. Likewise, from the results of informal observations of the closest website users, namely UPI Digital Business students, it was found that there were still complaints, one of which was difficulty finding some of the information needed because of the confusing navigation structure. The developer has never evaluated the experience of using the website, so it is not yet known how and how well the website can be used by current users. The research focuses on evaluating user experience in terms of ease of use by conducting usability testing and SUS tests with three aspects of ISO 9421-11 usability, namely effectivity, efficiency, and satisfaction. The result is that effectivity gets a grade "Bad" with score of 60%, efficiency gets a score of 38%, and satisfaction gets a score of 33 out of 100.

ARTICLE INFO

Article History:

Received 5 January 2024

First Revised 15 January 2024

Accepted 5 March 2024

Available online 25 March 2024

Publication Date 31 March 2024

Keyword:

User Experience,

Design Thinking,

Website,

Usability,

System Usability Scale.

1. INTRODUCTION

The development of information technology continues to experience a significant increase. This facilitates the daily activities and needs of humans and is proof of their ability to utilize their nature as intelligent beings. One of the results of this technological development is the birth of a technology called the website. The World Wide Web (W3), commonly known as a website, is a page that appears with the help of the internet and contains various types of information ([Sari et al., 2020](#)).

In line with the development of information technology that occurs today, the Digital Business study program of Universitas Pendidikan Indonesia (UPI), as a study program that is present in responding to the challenges of technological development and industry 4.0, contributes to the use of information technology by presenting an official website with a domain at <https://bisnisDigital.upi>. This website not only functions as a digital identity but also as a means and medium for student information and also for the general public about study programs, academics, and student activities that can be accessed anytime and anywhere.

According to the results of observations on the website, based on the latest traffic data from similar websites during December 2022, the UPI Digital Business website was recorded to have received 22,506 visits, with a percentage of 98, 24% accessed via smartphone, and only 1.76% via computer devices. A significant increase from November, which was only visited 5,897 times. However, there is statistical data that is in the spotlight, where it is noted that the UPI Digital Business website has a relatively high bounce rate, with a percentage of 71.35%. A high bounce rate on a website indicates that many visitors come but don't take much action on the website. This can refer to several things, such as a poor website appearance, being less comfortable for users, or because user needs are not met, so they decide to leave the website and switch to another website ([Putri & Zakaria, 2020](#)). Uncomfortable interface, related to perceived user experience.

Furthermore, findings were obtained from informal follow-up observations of the closest website users, namely UPI Digital Business students themselves, to find out the opinions and experiences felt by Digital Business students about the experience of using the UPI Digital Business website. As a result, there are still some complaints that are felt, such as the lack of clarity of the menu navigation structure, and it is still difficult to search and find some of the information needed. In addition, when students have difficulty finding information on the website, there is not much that can be done on the website, or the features provided on the website are not optimal for these conditions.

The findings of the observation of traffic data and users of the UPI Digital Business website are closely related to user experience, especially in terms of aspects of ease of use (usability). Visitors to the UPI Digital Business website still have difficulty finding some of the information they need on the website. Meanwhile, the UPI Digital Business Study Program website itself, until now, has never been evaluated for user experience. So, the developers and managers of the website do not know how and how well the website can be used by current users.

Based on this, it is necessary to evaluate the user experience of the UPI Digital Business website by focusing on the ease of use (usability). Usability measurement is carried out on 3 aspects of usability according to ISO 9421-11, namely Effectivity, Efficiency, Satisfaction ([ISO, 1998](#)) by conducting Usability Testing, as well as the System Usability Scale (SUS) test.

2. METHODS

The research method carried out in this study has been organized in the research flow diagram in the following.

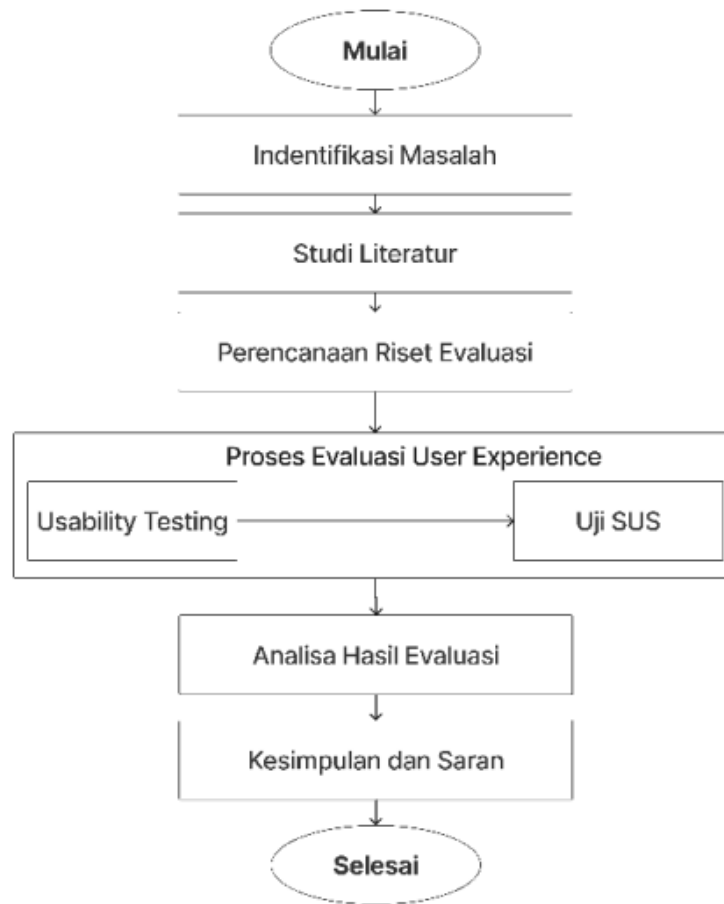


Figure 1. Research flow diagram.

According to Bekti (2015 in Khairil & Syafutra, 2021), the World Wide Web, also known as the Website, is a collection of static or dynamic pages linked together via a network to display all forms of information containing text, images, video, sound, animation, or a combination of these. Another definition states that websites are pages for presenting information in various formats, such as text, images, video, animation, sound, or a combination of all, and that can be accessed from various client software so that the information displayed is attractive, dynamic, and organized (Friansyah et al., 2021).

The term "evaluation" is an English verb derived from the word "value," which implies "price or value." Evaluation is also known in Arabic as "alqiamah" or "altaqdir," which refers to the assessment process (Magdalena et al., 2020). Evaluation is defined as a decision-making process based on a set of acknowledged and accountable criteria ([Mardiah & Syarifuddin, 2019](#)).

User experience (UX) was coined in 1993 by cognitive psychologist Donald Norman while working at Apple Computer ([Nielsen, 2017](#)). The term "user experience" refers to all elements of a user's contact with a firm, its services, and its goods. The purpose of user experience is to give simplicity and elegance in usage while satisfying users without impediments or issues ([Norman & Nielsen, n.d.](#)). User experience is an important factor in determining user pleasure

and product usefulness. If people have a positive opinion of the product, the owner of the product, service, or system will have a positive image in the eyes of its users.

Usability is defined as the capacity of a product or service to enable users to achieve their desired goals in an effective, efficient, and satisfactory manner ([ISO, 1998](#)). To be usable, a product or service must be helpful, efficient, effective, rewarding, learnable, and easily available ([Rubin et al., 2008](#)). ISO 9421- 11 specifies three components required to assess good usability: effectiveness (measured by the number of errors made by users), efficiency (measured by the time required by users to achieve the desired goals), and satisfaction (measured by the level of freedom obtained by users to achieve comfort from a product) ([Farouqi et al., 2018](#)). Effectiveness, efficiency, and satisfaction demonstrate that usability is a mix of several elements ([Elma, 2019](#)).

[Ningrum et al., \(2019\)](#) define usability testing as a way of assessing a system or product by direct testing on user representatives. Usability testing focuses on measurements that are carried out in stages, including determining test objectives, selecting appropriate measurement methods and techniques, designing reference tasks, selecting participants, preparing test conditions, designing test flows, and evaluating, analyzing, and presenting test result data ([Huda, 2019](#)).

The planning is making a "research plan," which includes things like research objectives, hypotheses, and methods, and determining respondents consisting of the 5 closest users of the website, namely students of the Digital Business study program with details of the 2019 and 2020 batches of two people each, and one person from the 2021 batch. According to [Nielsen \(2012\)](#), 5 respondents are sufficient to uncover almost as many usability issues as more than 5 respondents.

Following that, the creation of draft tasks or tasks to be carried out by respondents during the usability test session, with details of three scenario tasks and one exploration task, the preparation of which is guided by the findings of the initial observation, which is centered on the ease of searching, finding, and downloading information on the website, Finally, the System Usability Scale (SUS) questionnaire was created, as well as a location to analyze the data using Google Sheets and Notion tools.

This user experience evaluation process focuses on usability based on three aspects of usability according to ISO 9421- 11: effectiveness, efficiency, and satisfaction.

1. The effectivity aspect is measured to find the user's success rate in running the scenario tasks that have been prepared. The calculation can be done with the following equation ([Mifsud, 2015](#));
2. The efficiency aspect is measured by recording and analyzing the time taken by the user to complete each task in the scenario in seconds. The time calculation starts when the user starts working on the task and stops when the user successfully completes the task or exits (gives up) from the task (Kim, 2021). The output of the efficiency aspect will be in the form of overall relative efficiency (ORE) data, which, according to [Sergeev \(2010\)](#) can be calculated by the equation;
3. The acquisition of the system usability scale (SUS) score measures satisfaction. The SUS technique is used using SUS respondents who answer 10 questions on a scale of 1 (strongly disagree) to 5 (strongly agree). Here's the list of 10 SUS questionnaire ([Brook, 1996](#));

3. RESULTS AND DISCUSSION

3.1. Usability Testing Result

Usability testing (UT) was effectively carried out by involving five previously selected volunteers based on criteria and carrying out three scenario tasks and one exploration activity.

Table 1. UT Task Scenario.

No.	Task
1.	Find out the information about Talent Mapping Program.
2.	Search and download MSIB internship documents.
3.	Search and download all final thesis documents.
4.	Web Exploration about three minutes.

From Table 2 below, the fourth exploration task is not included in the final calculation because its function is only to provide additional data to find out the user's habits in exploring each part of the website.

Table 2. UT Task Data Result.

Participants.	T1	T2	T3
P1	1	1	1
P2	0	0	1
P3	0	0	1
P4	0	1	1
P5	0	1	1

Only task 3 was completed successfully by all participants (100%), as shown in table 3. The remaining tasks were completed by three participants (60%), with just one participant (20%).

Table 3. UT Task Completion Time

Participants.	T1	T2	T3
P1	61	83	112
P2	508	733	352
P3	326	255	106
P4	159	149	207
P5	235	88	174
Avg	258	262	190

According to Table 3, task 3 has the fastest average completion time among responders, which is 190 seconds. Task 2 takes an average of 262 seconds, while Task 3 takes an average of 258 seconds.

3.2. System Usability (SUS) Result

The SUS test was successfully conducted on the same five respondents by providing a questionnaire with ten SUS statements that each participant was required to fill out after completing the UT.

Table 4. SUS Score Result.

Pernyataan	P1	P2	P3	P4	P5
1	2	2	4	3	3
2	5	5	3	4	5
3	1	2	4	3	2
4	5	4	5	4	4
5	1	3	4	4	3
6	5	4	3	2	5
7	2	1	2	3	3
8	5	3	3	3	4
9	2	2	3	4	3
10	5	3	3	3	4

According to the interpretation of SUS in table 4, the satisfaction score for the ease of use of the UPI Digital Business website is 33 out of 100. The UPI Digital Business website received the predicate "detractor" in terms of net promoter score (NPS), with the degree of acceptability receiving the predicate "not acceptable," the adjective value "poor," and the grade receiving the predicate "F".

3.3. Analyze of 3 Usability ISO 9421-11 Aspect

1. Calculation of the effectivity aspect.

According to the UT task statistics in Table 3, only nine of the 15 times the job was completed correctly. The entire website efficacy may then be determined as follows:

Table 5. Calculation of the effectivity aspect.

Task	Calculation	Result	Category
T1	$= 1/5 \times 100$	20%	Bad
P2	$= 3/5 \times 100$	60%	Bad

P3	= 5/5 x 100	100%	Good
Total Success Rate		60%	Bad

As a result, the present UPI Digital Business website's value for the efficiency aspect of usability is just 60% of 100%. It's mean the category for effectivity aspect is "bad" because the result is under average of normal success rate in 78%.

2. Calculation of the efficiency aspect.

Based on the UT task completion time data in Table 4, the efficiency aspect in the form of overall relative efficiency (ORE) can be calculated by:

$$ORE = ((1x61 + 1x81 + 1x112) + (0x508 + 0x733 + 1x352) + (0x326 + 0x255 + 1x106) + (0x156 + 1x149 + 1x207) + (0x235 + 1x88 + 1x174)) / (61 + 81 + 112 + 508 + 733 + 352 + 326 + 255 + 106 + 156 + 149 + 207 + 235 + 88 + 174) \times 100 = 38\%$$

As can be observed, the value of the efficiency aspect for the usability of UPI Digital Business website is 38%.

3. Calculation of the satisfaction aspect.

The value of the satisfaction component is assessed by the SUS test score, which is shown in Table 5, with a score of 33 out of 100. So, the score is below the average, the net promoter score (NPS) obtaining the predicate "detractor," the level of acceptance obtaining the predicate "not acceptable," the adjective value "poor," and the assessment grade obtaining the predicate "F".

4. CONCLUSION

User experience assessment activities in terms of usability of the UPI Digital Business website were successfully completed using usability testing methodologies and a system usability scale (SUS) based on three characteristics of ISO 9421-11 usability, namely effectiveness, efficiency, and satisfaction. As a consequence, the effectivity aspect received a bad category with score of 60%, the efficiency aspect received a score of 38%, and the satisfaction aspect received a below average with score of 33 out of 100.

The results of the user experience evaluation conducted on the UPI Digital Business website obtained a poor score, and there is still much that needs to be improved in terms of effectiveness, efficiency, and ease of use of the UPI Digital Business website in various aspects, because this has an impact on the satisfaction value, which has been proven to be low and below the average score of satisfaction with websites in general. The advice for future study is try to analyze the UPI Digital Business website using many alternative approaches in order to discover and add more insights regarding evaluating the user experience in terms of usability.

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