



# Analyzing the Usability of University Siliwangi Website using Jakob Nielsen Method: Approach with User Satisfaction Surveys

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**Abstract**— The implementation of websites in universities has become crucial in providing a platform that enables quick and easy access to academic, administrative, and institutional information. University websites fall under the category of official websites, serving as platforms created and managed by organizations, companies, or official entities to provide information, services, and interaction with users. Universitas Siliwangi, one of the state universities in West Java, operates an official website at <https://unsil.ac.id/>. This website serves as a promotional tool and information hub accessible to students, faculty, staff, and external parties interested in Universitas Siliwangi-related information. However, the website's utilization lacks evaluation by users and usability testing. Initial observations reveal that only a few students and high school students use this website as a source of Universitas Siliwangi-related information. Therefore, this research aims to examine the usability and usefulness of the website for users and to promote the university. The findings of this study will serve as the basis for university website development and benefit Universitas Siliwangi. The method used to measure the website's usability is the Jakob Nielsen method with user satisfaction survey techniques. The results of this research indicate that the usability of the Universitas Siliwangi website falls into the high category. With users' information needs met on the website, it is expected that they will feel satisfied and inclined to revisit the site. Descriptive analysis shows that students give high ratings to the usability of the Universitas Siliwangi website, although there are still some shortcomings that need to be addressed in certain aspects.

**Keywords**— Jakob Nielsen; Universitas Siliwangi, University Website, User Satisfaction Surveys

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## I. INTRODUCTION

Today, information technology is an effective medium for disseminating and seeking information [1], [2], [3], [4], [5], [6], [7]. Websites have become the main bridge in delivering news, announcements, updates, and various other content quickly and widely. This ease of access to information is not only important, but also crucial in modern communication strategies. Not surprisingly, the use of websites for information dissemination has been shown to be efficient and effective in various studies, highlighting their importance in the digital age [8].

Not only in the general context, but also in higher education, the role of websites is very important [7], [9]. Websites ease the way for students, faculty, and staff to access academic, administrative, and campus activity information [10]. The presence of a website is not just a necessity, but has become a necessity to maintain the relevance and competitiveness of higher education institutions in this digital era [11].

The college website, which is included in the official website category, becomes the digital face of the educational institution [12]. The quality and performance of the website reflect the reputation of the college itself. Therefore, periodic testing research is essential to ensure that the website continues to meet quality standards and evolving user needs.

Siliwangi University in West Java is one example of a university that is the focus of this research. It has an official website with a page at <https://unsil.ac.id>. In its use, evaluation and usability testing have never been carried out. Therefore, this research aims to measure the usability and usefulness of the website for users, as well as provide development recommendations. The results of this study are expected to make a meaningful contribution to the development and improvement of the Siliwangi University website.

The main challenge for designers and product managers is not understanding how the market or various technologies work, but understanding human behavior [13]. The difference between what users say and what they do is very significant, and the only way to ensure the truth is through testing [14]. Testing is a series of systematic activities planned to test the correctness of a system. These testing activities involve a number of steps to evaluate test case designs and test methods [15]. According to ISO 9241-11, usability testing is essential in system development to ensure ease of use and effective interaction [16].

Usability testing is an important part of improving product profitability [17]. One commonly used method is the Jakob Nielsen method. This method collects user responses and analyzes areas that require improvement [18]. Respondent data

collection is done through questionnaires distributed randomly to students, lecturers, students, and the general public.

In conclusion, this research discusses usability measurement on the Siliwangi University website, providing important insights for website managers and related parties to improve user experience and ensure effective communication and information dissemination.

## II. THE MATERIALS AND METHOD

There are several previous studies related to this topic. First, yunitasari (2019) with the title “Usability Library Website (Website Study UPT Library Raden Fatah State Islamic University Palembang)” the problem of this research is the low use of the library website even though internet-based services are available which are intended to facilitate users in finding library information. The solution is to conduct usability testing to evaluate the website and identify existing problems. The results were used as the basis for the development of the library website, helping in improving existing features and developing new ones [7]. Second, Asnawi conducted “Usability Analysis of the Unipma Information Systems Study Program Website Using the System Usability Scale Method” With this website, it can provide easy access to information that was previously done manually, now it can be done automatically using a system / information technology. However, testing needs to be done to measure how easy it is to use a website, especially if the user is a layman, especially from a non-IT field [19].

Both studies are relevant because of their focus on assessing the usability value of information systems. The difference from the first study lies in the indicators and objects of research, the indicators or statements that researcher use are sourced from several previous studies including from Yunitasari's research. The difference from the second research is in the method, the method used by Asnawi is SUS while this research uses the Jakob Nielsen method.

Jakob Nielsen defines usability as an experience of a user's experience in interacting with an application or website until the user can operate it easily and quickly [20]. Five aspects of usability according to Jakob Nielsen, in line with usability according to ISO 9241: 11, namely [21]:

- a. Learnability is defined as how quickly users become proficient with the system, how easy it is to perform a function, and what users want.
- b. Efficiency is defined as the resources expended to enable users to get what they want.
- c. Memorability is the user's ability to remember something within a certain period of time, which is achieved through the placement of menus that are always fixed.
- d. Errors is the number of errors, which includes mismatches between what the user thinks and what the system actually presents.
- e. Satisfaction is when users are free from discomfort and have a positive view of using the product or a subjective measure of how they feel about using the system.

Customer satisfaction refers to the feeling of contentment or dissatisfaction resulting from assessing how well a product or service performs compared to what was anticipated[22]. User satisfaction surveys aim to measure users' overall satisfaction and perceptions of a product or service[23]. The

focus is on evaluating the level of user satisfaction with various aspects of the product or service.

The process undertaken during the research involved a series of activities as depicted in the Fig. 1.

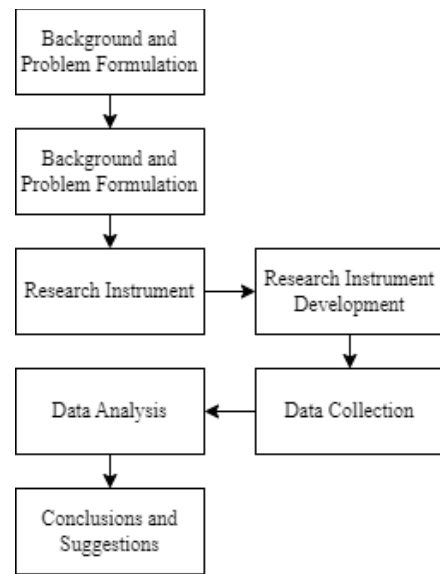


Fig. 1 Research Flow

This research process begins with understanding the background of the problem which is then formulated clearly. The next step is to examine the literature relevant to the topic under study. After that, formulate research instruments that will be used by comparing a number of research instruments from relevant previous studies. After the research instrument is determined, data collection is carried out from the selected sample in accordance with the established technique and the results of the calculation of the required sample size. After the data is collected, the next step is to analyze the data. And the last step is drawing conclusions and suggestions.

The type of research applied in this study is a survey. In terms of data type, this research adopts a quantitative approach. Quantitative data was collected from the field and then analyzed and explained descriptively. The approach used to analyze the data of this research is quantitative descriptive method, in which the data is presented in the form of tables and frequencies, and the average is calculated from the respondents' responses to the statements submitted[24]. Each statement result will be processed to produce answers which will be presented in tabular form.

Siliwangi University website is the official website managed and developed by UPT TIK Siliwangi University. The main purpose of this website is to provide relevant information to students, prospective students, and the general public.

This research was conducted online using a google form distributed to respondents via whatsapp and telegram. The data source in research is the subject from which data can be obtained.

The population in the study includes students, lecturers, students, and the general public who are considered as one category, the public. For websites, population refers to the number of users who can access it, and various metrics are used to measure the audience that influences or interacts with the

website, such as unique visitors, active users, registered users, monthly/annual number of visitors, and website traffic. Based on a similar web traffic survey, the UNSIL website has a total average of about 185.3 thousand visits for 3 months, which is equivalent to about 6.1 thousand visits per day.

To determine the sample, a simple random sampling technique was used, which is a technique of drawing random samples from the population without regard to the strata in the population[24]. This technique was chosen to provide a more accurate answer to the population without regard to the strata of population members selected as sample members.

To measure the sample size to be studied, the researcher uses the Slovin formula, where this formula is able to measure the sample size to be studied [25]. The sample size to be studied is as follows:

$$n = \frac{N}{N \cdot e^2 + 1}$$

Information: n = Number of Samples  
 N = Total Population  
 e = The desired Critical Value (error limit) is 0.1

From the formula above, the following numbers are obtained:

$$n = \frac{6100}{6100 \cdot (0,1)^2 + 1}$$

$$n = \frac{6100}{6100 \cdot 0,01 + 1}$$

$$n = \frac{6100}{61 + 1}$$

$$n = \frac{6100}{62}$$

$$n = 98,38$$

$$n \approx 98$$

Then the number of samples used after being rounded is 98 people.

Data sources were obtained from the results of distributing questionnaires to 98 respondents. Secondary data sources are data taken indirectly from sources sourced from literature from written materials in the form of books, journals, and also information available on websites and documents related to research.

Kerlinger states that variables are constructs or properties that will be studied. Examples are given, for example, the level of aspiration, income, education and others. Kidder states that variables are qualities that researchers study and draw conclusions from [24]. From the above understanding, it can be concluded that the research variable is an attribute or trait, value of people, objects or activities that have certain variations set by researchers to study and draw conclusions. This research variable refers to 5 aspects of Jakob Nielsen's usability. For the statement items, the results of the comparison of a number of previous studies were obtained and used as a reference for research statements in accordance with the themes raised [7], [26], [27]

Research instruments are tools or facilities used by researchers in collecting data so that the work is easier and the results are better, in the sense that they are more careful, complete, and systematic so that they are easier to process.

This research instrument is a questionnaire, each questionnaire consists of questions that contain indicators that can explain each variable. Quoted from [28], a questionnaire is a research instrument consisting of a series of written statements or questions given to respondents for data collection purposes.

The measurement of this instrument uses a Likert scale, which is a rating scale used to measure the opinions, attitudes, or behavior of respondents to certain questions [24]. The purpose of measuring the Likert scale is to convert qualitative responses into quantitative data so that it is known how much the respondent agrees or disagrees with the statement received[29]. The Likert scale consists of a series of written statements or questions given to respondents, in which respondents are asked to indicate how much they agree or disagree with the statement using a predetermined scale. Each statement or question is provided with alternative answers and weights as follows [30]:

TABLE 1  
 THE FORMAT OF A TYPICAL FIVE-LEVEL LIKERT QUESTION

No	Answers	Alternative Answer Score
1.	Strongly Disagree	1
2.	Disagree	2
3.	Neither agree nor disagree	3
4.	Agree	4
5.	Strongly Agree	5

The collected questionnaire data will go through several processing stages as follows:

1. Scoring: Giving a score to each answer to suit the research objectives. Scores are given according to the level of response from very low to very good.
2. Tabulating: Recapitulating the scores of each variable to be ready for further analysis. Raw data was entered into tables for statistical calculations.
3. Descriptive Analysis: Used to understand the characteristics of each variable as well as provide a representation of the research problem. It involves the use of mean and grand mean to calculate the average and range of scores [24].

The range of the rating scale is as follows:

TABLE 2  
 RANGE OF THE RATING SCALE

No	Range	Category
1.	4.20 - 5.00	Very High
2.	3.40 - 4.20	High
3.	2.60 - 3.40	Medium
4.	1.80 - 2.60	Low
5.	1.00 - 1.80	Very Low

After that, the scale range is determined, which is then used to create a rating scale that corresponds to the range.

### III. RESULT AND DISCUSSION

The questionnaires were distributed to various members of the public who have used or are currently using the Siliwangi

University website, including students, lecturers, staff, high school students, and others. The sample consisted of 98 people based on predetermined calculations using the slovin formula. After the data was collected, namely in the form of responses from 98 respondents on a Google form containing 23 statements. Data analysis was carried out by calculating the average value of each statement item, then calculating the average of each variable. The results of the questionnaire, including scores and categories, can be found in Table 3 below.

TABLE 3

RESULTS OF OVERALL ANALYSIS OF UNSIL WEBSITE USABILITY VARIABLES

Variable	Statement Items	Value	Category
<i>Learnability</i>	The text writing used on the UNSIL website is clear and easy to understand	4,30	Very High
	I easily and quickly receive detailed and specific information based on the menu on the website	4,04	High
	Ease of accessing information through the website without having to come to the university information service place	4,12	High
	I am able to easily understand the content and information content presented on the UNSIL website	4,11	High
	I am able to easily understand and understand the flow of navigation on the UNSIL website	4,04	High
	Without written instructions or manual book, I am able to learn the use of UNSIL website	4,03	High
Total		24,64/6 = 4,10	
<i>Efficiency</i>	I am able to find information easily and quickly	4,06	High
	When I type in a search engine, it displays quickly.	3,94	High
	I immediately understand which section or feature I can get the information I am looking for.	3,85	High

	UNSIL website can be accessed anywhere and anytime	4,42	Very High
Total		16,27/4 = 4,06	
<i>Memorability</i>	I often visit UNSIL website	3,65	High
	Can distinguish between visited and unvisited pages	3,77	High
	UNSIL website is easy to find	4,21	Very High
	UNSIL website conveys information in a format that suits my needs	4,08	High
Total		15,71/4 = 3,92	
<i>Error</i>	I did not find any menu that does not give any response when clicked	3,33	Medium
	I did not find a menu that does not match its function	3,37	Medium
	I did not find the menu that I clicked on error or under reconstruction	3,26	Medium
Total		9,96/3 = 3,32	
<i>Ssatisfaction</i>	I can find the features and menus that I am looking for on the UNSIL website	4,01	High
	I would like to visit this website again	3,86	High
	I feel satisfied with the information provided and given by the website	4,08	High
	The website provides up-to-date and relevant news	3,96	High
	I am happy with the interface design on the UNSIL website as a whole	3,77	High
	UNSIL's website matches my expectations when I see the title on the system page	3,95	High
Total		23,63/6 = 3,93	

Five bar chart below displays the average calculation results of each indicator presented in the per-variable diagram. The horizontal axis shows the indicator, while the vertical axis

illustrates the value of the indicator. Each bar on the diagram represents the average of the respondents' responses.

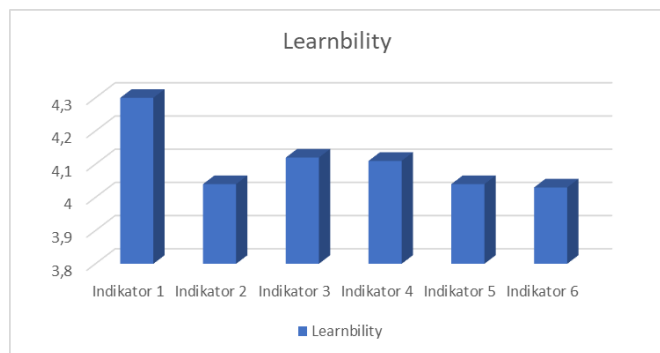


Fig. 2 Diagram of The Results of The Learnability Variable

Based on Fig. 2, it can be seen that the average value of each indicator submitted to respondents is as follows: 1) The text writing used on the UNSIL website is clear and easy to understand, obtained with an average value of 4.30 with a very high category. 2) I easily and quickly receive detailed and specific information based on the menu on the website, obtained an average value of 4.04 with a high category. 3) It is easy to access information through the website without having to come to the college information service place, obtained with an average value of 4.12 with a high category. 4) I am able to easily understand the content and information content presented on the UNSIL website, obtained with an average of 4.11 with a high category. 5) I am able to easily understand and understand the flow of navigation on the UNSIL website, obtained an average of 4.04 with a high category. 6) Without written instructions or manual books, I was able to learn how to use the UNSIL website, obtained with an average of 4.03 with a high category.

After knowing the average of each indicator question from the Learnability variable, then the overall total value will be calculated with the following grand mean formula:

$$\text{Grand mean } (x) = \frac{\text{total average count}}{\text{number of questions}} = \frac{24,64}{6} = 4,10$$

Based on the results of the overall calculation of the learnability variable, an average total value of 4.10 is obtained. It can be concluded that the usability of the Siliwangi University website on the learnability variable can be categorized as high because it is between the intervals 3.40 - 4.20.

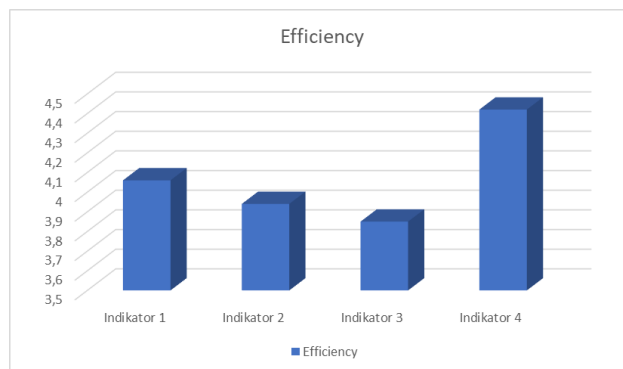


Fig. 3 Diagram of The Results of The Efficiency Variable

Based on Fig. 3 it can be seen that the average value of each indicator submitted to respondents is as follows: 1) I am able to find information easily and quickly, obtained with an average value of 4.06 with a high category. 2) When I type in a search engine, it is immediately displayed quickly, obtained with an average value of 3.94 with a high category. 3) I immediately understand which section or feature I can get the information I am looking for, obtained with an average value of 3.85 with a high category. 4) The UNSIL website can be accessed anywhere and anytime, obtained with an average of 4.42 with a high category.

After knowing the average of each indicator question from the Efficiency variable, then the total value will be calculated using the following grand mean formula:

$$\text{Grand mean } (x) = \frac{\text{total average count}}{\text{number of questions}} = \frac{16,27}{4} = 4,06$$

Based on the results of the overall calculation of the Efficiency variable, a total average value of 4.06 is obtained. It can be concluded that the usability of the Siliwangi University website on the Efficiency variable can be categorized as high because it is between the intervals of 3.40 - 4.20.

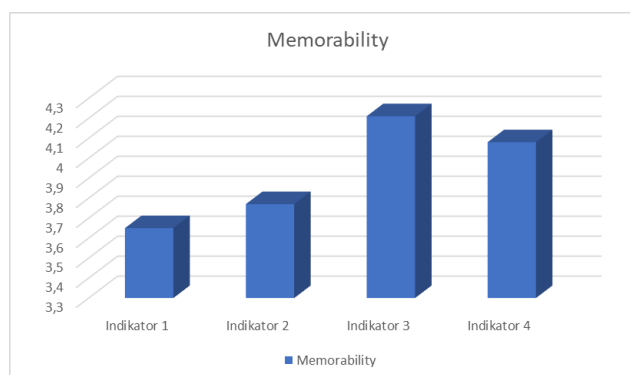


Fig. 4 Diagram of The Results of The Memorability Variable

Based on Fig. 4 it can be seen that the average value of each indicator submitted to respondents is as follows: 1) I often visit the UNSIL website, obtained with an average value of 3.65 with a high category. 2) Can distinguish between visited and unvisited pages, obtained with an average value of 3.77 with a high category. 3) I can remember the content of the website, obtained with an average value of 4.25 with a very high category. 4) I can remember the location of the website, obtained with an average value of 4.10 with a high category.

high category. 3) UNSIL website is easy to find, obtained with an average value of 4.21 with a very high category. 4) UNSIL website conveys information in a format that suits your needs, obtained with an average of 4.08 with a high category.

After knowing the average of each indicator question from the memorability variable, then the total value will be calculated using the following grand mean formula:

$$\begin{aligned} \text{Grand mean } (x) &= \frac{\text{total average count}}{\text{number of questions}} = \frac{15,71}{4} \\ &= 3.92 \end{aligned}$$

Based on the results of the overall calculation of the memorability variable, a total average value of 3.92 is obtained. It can be concluded that the usability of the Siliwangi University website on the memorability variable (Easy to Remember) can be categorized as high because it is between the intervals 3.40 - 4.20.



Fig. 5 Diagram of The Results of The Erros Variable

Based on Fig. 5 it can be seen that the average value of each indicator submitted to respondents is as follows: 1 I did not find a menu that when clicked did not give any response, obtained with an average value of 3.33 in the medium category. 2) I did not find a menu that was not in accordance with its function, obtained with an average value of 3.37 with a moderate category. 3) I did not find the menu that I clicked on error or under reconstruction, obtained with an average value of 3.26 with a moderate category.

After knowing the average of each indicator question from the Errors variable, then the overall total value will be calculated with the following grand mean formula:

$$\begin{aligned} \text{Grand mean } (x) &= \frac{\text{total average count}}{\text{number of questions}} = \frac{9.96}{3} \\ &= 3.32 \end{aligned}$$

Based on the results of the overall calculation of the Errors variable, a total average value of 3.32 is obtained. It can be concluded that the usability of the Siliwangi University website on the Error variable can be categorized as moderate because it is between the intervals 2.60 - 3.40.

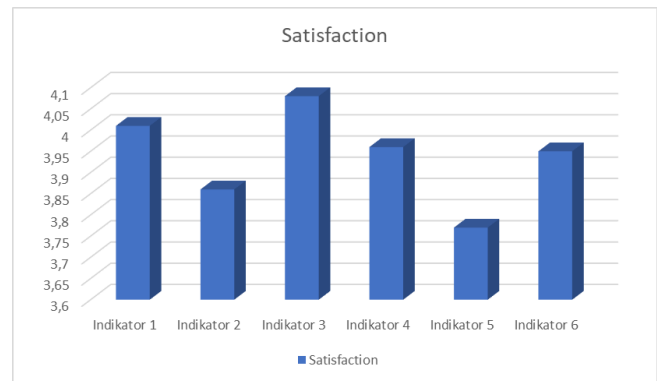


Fig. 6 Diagram of The Results of The Satisfaction Variable

Based on Fig. 6 it can be seen that the average value of each indicator submitted to respondents is as follows: 1) I can find the features and menus I am looking for on the UNSIL website, obtained with an average value of 4.01 with a high category. 2) I want to visit this website again, obtained with an average value of 3.86 with a high category. 3) I feel satisfied with the information provided and provided by the website, obtained with an average value of 4.08 with a high category. 4) The website page provides relevant current news, obtained with an average value of 3.96 with a high category. 5) I am happy with the interface design on the UNSIL website as a whole, obtained an average score of 3.77 with a high category. 6) The UNSIL website matches my expectations when I see the title on the system page, obtained with an average value of 3.95 with a high category.

After knowing the average of each indicator question from the Satisfaction variable, then the total value will be calculated using the following grand mean formula:

$$\begin{aligned} \text{Grand mean } (x) &= \frac{\text{total average count}}{\text{number of questions}} = \frac{23.63}{6} \\ &= 3.93 \end{aligned}$$

Based on the results of the overall calculation of the Satisfaction variable, a total average value of 3.93 is obtained. It can be concluded that the usability of the Siliwangi University website on the Satisfaction variable can be categorized as high because it is between the intervals 3.40 - 4.20.

In the Figure depicting the bars for the 5 usability variables, each bar represents the value or score of each variable. The diagram above shows the relative comparison between usability variables, allowing researchers to quickly spot trends or significant differences. By understanding these bar charts, researchers or maintainers can identify areas that need to be fixed or improved to enhance the overall user experience.

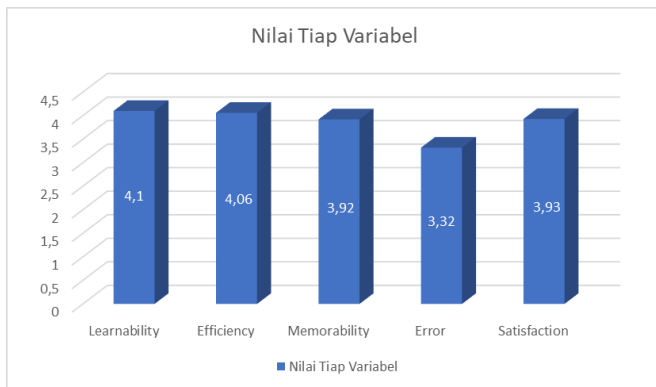


Fig. 7 Diagram of The Results of All Variables

Based on Fig. 7 shows the average value of each variable which is as follows: 1) Learnability is obtained with an average value of 4.10 with a high category. 2) Efficiency, obtained with an average value of 4.06 with a high category. 3) Memorability, obtained with an average value of 3.92 with a high category. 4) Errors, obtained with an average of 3.32 with a medium category. 5) Satisfaction, obtained with an average of 3.93 with a high category.

#### IV. CONCLUSION

Based on data analysis from a study entitled “Usability Measurement of the Siliwangi University Website Using the Jakob Nielsen Method with the User Satisfaction Surveys Technique,” the following conclusions can be drawn:

1. Usability of the Siliwangi University website gets a grand mean value of 3.93. The score is in the range of 3.40-4.20 on the rating scale, indicating that the level of usability of the UNSIL website is high. From this result, it can be concluded that the UNSIL website has a high level of usability, which means it is useful for its users.
2. Improvements are needed in the errors variable, especially in the questionnaire item “Saya tidak menemukan menu yang saya klik error atau under reconstruction” which received a score of 3.26. This value is in the range of 2.60 - 3.40, indicating a moderate level of adequacy. Therefore, it can be concluded that the website has good usability, but still needs improvement, especially on menus that are not functioning or are still under reconstruction.

Based on the findings of this study, it is hoped that future researchers and website managers at UPT TIK Universitas Siliwangi will consider a number of recommendations generated as input. Some suggestions proposed from the results of this study are as follows:

1. The research that has been conducted only focuses on the usability factor or the usefulness of using the website. Therefore, it is recommended to conduct further research that includes other factors to improve the overall quality of the UNSIL website so that it can achieve higher quality standards.
2. This research was only conducted using the user satisfaction surveys technique, in the future it can be done with other techniques or approaches such as user testing, heuristic evaluation, speed and accuracy analysis, which might provide a more comprehensive and in-depth

understanding of user experience and problems that might occur in interaction with products or services.

3. Siliwangi University website managers are expected to continue to improve and maintain their ability to solve problems faced by users. This aims to ensure that the needs and desires of users can be properly met by the services provided.

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