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Usability Analysis of the DKI Jakarta Online Tax Application Using the System Usability Scale (SUS) Method

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Abstract

The DKI Jakarta Online Tax Application is an application launched by the Jakarta City government to make it easier for the public in terms of renewing STNK, BPKB, and annual tax for both two-wheeled and four-wheeled vehicles, and much more. This application functions to speed up the long offline process by simply accessing the application and including the vehicle number to get a queue ticket or check prices. This research was conducted by collecting primary data through questionnaires to a total of 400 respondents who are DKI Jakarta residents who use the DKI Jakarta Online Tax application to determine the level of user satisfaction with the DKI Jakarta Online Tax application for the City of Jakarta using Usability Testing and System Usability Scale (SUS), the number of respondents this is sufficient based on the calculation of the number of samples from the existing population. The results of this study indicate that the DKI Jakarta Online Tax application gets a score of 50.31 with a "Very Bad" rating so it really needs improvement and improvement of the quality of the application so that it can be accepted and used properly by the community. Researchers also provide several recommendations to improve the usefulness of the DKI Jakarta Online Tax application.

Keywords: *Pajak Online DKI Jakarta; Usability Testing; System Usability Scale; SPSS*

Abstrak

Aplikasi Pajak Online DKI Jakarta merupakan aplikasi yang diluncurkan oleh pemerintah Kota Jakarta untuk mempermudah masyarakat dalam hal perpanjangan STNK, BPKB, dan pajak tahunan kendaraan baik roda dua maupun roda empat, dan masih banyak lagi. Aplikasi ini berfungsi untuk mempercepat proses offline yang begitu lama dengan hanya mengakses aplikasi tersebut dan mencantumkan nomer kendaraan untuk mendapatkan tiket antrian atau pengecekan harga. Penelitian ini dilakukan dengan pengumpulan data primer melalui kuisioner kepada total 400 responden yang merupakan masyarakat DKI Jakarta pengguna aplikasi Pajak Online DKI Jakarrta untuk mengetahui tingkat kepuasan pengguna terhadap aplikasi Pajak Online DKI Jakarta Kota Jakarta menggunakan Usability Testing dan System Usability Scale (SUS), jumlah responden ini sudah cukup berdasarkan perhitungan jumlah sampel dari populasi yang ada. Adapun hasil dari penelitian ini menunjukkan bahwa aplikasi Pajak Online DKI Jakarta mendapat skor 50,31 dengan peringkat “Buruk Sekali” sehingga sangat diperlukan perbaikan dan peningkatan kualitas aplikasi agar dapat diterima dan dipergunakan dengan baik oleh masyarakat. Peneliti juga memberikan beberapa rekomendasi untuk meningkatkan kegunaan aplikasi Pajak Online DKI Jakarta.

Kata Kunci: *Pajak Online DKI Jakarta; Usability Testing; System Usability Scale; SPSS*

1. Introduction

The development of information technology is so widespread and fast that it facilitates human work. One of them is the Mobile APP, this application offers unlimited features to users to make users' lives more enjoyable, comfortable, and lively by providing services such as online shopping, ordering food, games, and health care. One of them is access to the tax payment system [1].

Tax is the largest source of state revenue, as the largest source of revenue, therefore it must be managed properly so that revenue can be maximized. One of the efforts made by the City Government of Jakarta is to improve the quality of the tax payment system. The effort being made is to launch a mobile-based tax payment system supporting an application called the DKI Jakarta Online Tax [2].

DKI Jakarta Online Tax is an official android-based application that can be used as a means of managing regional tax objects whose management is carried out by the Provincial Government of DKI Jakarta. This application can display information on tax objects that have previously been registered, so that users of this application will get benefits in managing their tax objects, including due date notifications, tax period information, tax assessment information, and so on, to generate payment codes that are can be used as a means of paying local taxes through Tellers, ATMs, e-Banking, Mobile Banking, or other e-Channel facilities at Banks that have collaborated with the Provincial Government of DKI Jakarta, this is useful so that taxpayers no longer need to flock waiting in line at the bank to pay off his taxes. The DKI Jakarta Online Tax Application has been launched for 7 years sine 2016 and there are unfavorable reviews about the DKI Jakarta Online Tax Application regarding user satisfaction with this application. And there is an unsatisfactory rating on the Google Playstore.

Based on the problems that have been described, to determine the quality of service on the DKI Jakarta Online Tax Application, it is necessary to analyze the level of user satisfaction using the System Usability Scale (SUS) method. This application has not been studied regarding user satisfaction, so various studies are needed to help users make it easier and more comfortable when using the application, as well as developers in making this application even better in the future. For this reason, research using the System Usability Scale method can provide input on the problems found in this application. The consideration of using the System Usability Scale method in this study is that this method is very suitable for applications that have never been studied. SUS is a standard questionnaire used to measure user satisfaction in using a system. SUS is also known to be “quick and dirty” in measuring user satisfaction, which means that using the SUS questionnaire is very fast and the resulting data is reliable. This goal focuses on improving the quality of service in the DKI Jakarta Online Tax application.

2. Theoretical Basis

The reasons provided in this study were supported by a number of publications in the form of earlier investigations that were comparable to this one. In the study named "Usability Testing on E-Commerce Websites Using the System Usability Scale (SUS) Method (Case study: UMKMBULELENG.COM)", usability testing was done on e-commerce websites. In order to gauge how satisfied users are with the application's usability and ability to be accessed quickly and effectively, this study uses the System Usability Scale. The study's findings show that the e-commerce website falls into the "good" category with a score of 72. Although the website may use some changes and new content to facilitate transactions, it is generally usable[3].

“System Usability Scale (SUS) technique implementation for usability in PENTAS applications”. The ease, speed, mistake rate, and user satisfaction of the PENTAS application were all measured in this study. This application program falls into the Not Acceptable category of the Acceptability Range, the Grade F category of the Grade Scale, and the Poor category of the Adjective Rating. The average score results in a percentile rank score of 46.00 and is positioned in Grade F, hence it can be inferred from these results that the PENTAS program needs to be improved if you still wish to utilize it[4].

The "Polsri Website Usability Evaluation Using the System Usability Scale" The goal of this study is to generate suggestions for website development and enhancement. The evaluation's results showed that the POLSRI website received a score of 72.56, putting it in the grade C category with a Good rating and indicating that it was deemed Acceptable. Conclusion: The website is adequate, but further feature development is required to earn a higher grade[5].

"Usability Evaluation of Dance Learning Applications Using the System Usability Scale (SUS)" In order to determine the degree of usability from the areas of ease, speed, and satisfaction with the dance learning application, this study primarily focuses on analyzing the application of mask dance learning using the System Usability Scale. It can be said that the application can be used easily and can be utilized as a medium for learning the art of dance thanks to study that yielded an assessment of learning applications with an average value of 79.37%[6].

"Usability Evaluation of the UNRIYO Website Using the System Usability Scale (Case study: UNRIYO Website)" It is necessary to assess a website's usability in order to gauge how valuable it is to users. The evaluation's findings indicate that the UNRIYO website received a score of 51.25, indicating that it still need work to make it more user-acceptable[7].

According to the study's abstract, "Usability Evaluation of the KAI Access Mobile Application Using the System Usability Scale (SUS) Method and Discovery Prototyping (Case Study of PT KAI)", the goal of the study is to assess the KAI Access application's usability and offer suggestions for improvements. The application research yielded results of 60.79 percent, and the

users weren't happy. The findings were 83.03% after modifications were made, and the improvements were quite good. The researchers then suggested additional investigations using alternative methodologies to discover additional outcomes[8].

Google Classroom's usability level is assessed using the System Usability Scale approach so that future enhancement materials may be gathered. According to the study's findings, it received a grade of A (82.8), meaning that the usability requirement is met, but further features are required[9].

This study's overall goal is to inform design by gathering information from the product to be identified and raising the usability bar of already existing products. Its title is "Analysis and Evaluation of Usability Aspects on Telkom University HRMIS Web Using Usability Testing". Multiple linear regression tests revealed that every factor of usability has a favorable or direct impact on user satisfaction[10].

According to a study titled "System Usability Scale VS Heurestic Evaluation: A Review," the System Usability Scale (SUS) is a usability test using either the heuristic evaluation technique or the system usability scale, both of which have benefits and drawbacks. It is therefore advised to consider the benefits and drawbacks of each testing technique when implementing the testing technique in order to get the most accurate and complete results[11].

The study "Usability Evaluation in Ganesha University of Education E-Learning Using the Usability Testing Method" aims to determine how Undiksha's E-Learning evaluation on the usability aspect uses the usability testing method, specifically Performance Measurement and RTA techniques, and how suggestions for system improvements are based on the usability evaluation's findings. The study's findings showed that the lecturers who responded felt dissatisfied with Undiksha's e-learning because the scores were less than 68, at 60.94 and 61.0 respectively. As a result, the Undiksha E-Learning page does not adhere to the standards for a usable product[12].

It is hoped that the study "Usability Evaluation of Web GIS Forest Health Monitoring Using the System Usability Scale (SUS) Method" will provide an overview of the suitability of the Simantan Web GIS for monitoring forest health and making it simpler when improvements are made in the future. Simantan's Web GIS has acceptability ranges in the marginal high group, according to data from the System Usability Scale (SUS) evaluation, indicating that respondents believe Simantan's Web GIS is adequate. According to the grade scale findings with category D and the adjective rating with the good category, respondents had positive opinions on Web GIS Simantan[13].

Researchers looked at service effectiveness, service barriers, and ways that application service barriers could be fixed in the study titled "Effectiveness of West Java Mobile Samsat Application Services in Efforts to Increase Motorized Vehicle Taxpayer Compliance During the Covid-19 Pandemic in Bekasi City". The investigation's findings demonstrate that the West Java Samsat Mobile Application (Sambara) service continues to be inefficient. The challenge for the Bekasi City Samsat is getting people to adapt their thinking to keep up with the ever-evolving technology so they can transition to using the occasionally unreliable online programs for auto tax payments. The Samsat makes an effort to interact with the people and encourage them to shift their perspective in order to overcome the challenges that arise[14].

This research is different from the others because research has never been conducted on the DKI Jakarta Online Tax Application. In addition, this study uses the System Usability Scale to identify user satisfaction with this application. This study intends to identify a number of deficiencies and weaknesses in the application so that it can be used as ideas and recommendations for developers. It is hoped that the results of this study can be used as a reference by application developers to improve quality for user comfort and safety.

3. Methodology

The flow of research activities will begin with problem identification and reference search as a literature review and end with the preparation of a final report. The stages of the research can be seen in the following figure.

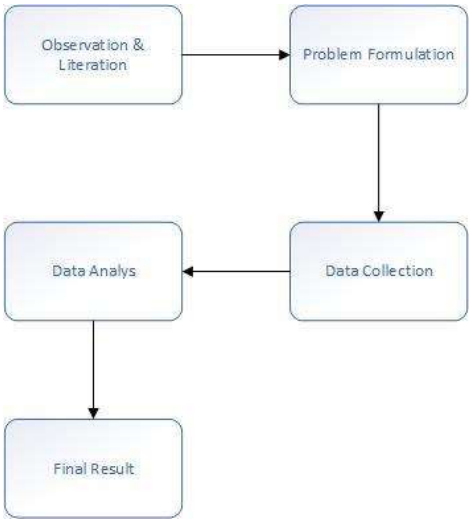

Figure 1. Activity Flowchart

3.1. Population and Sample

The population is a group of objects or subjects that have certain qualities and characteristics in the area determined by the researcher to study and draw conclusions [15]. In this study, the population is Telkom University students who have used the My TelU application.

The sample is a characteristic and a certain amount of a population [15]. The Cochran formula is used to calculate the essential sample size for the level of precision required, the level of confidence, and an estimate of the proportion of attributes present in the population. The Cochran formula is best suited for large populations.

$$n_0 = \frac{WITH^2 \; x \; p \; x \; q}{It \; is^2} \qquad (1)$$

Wheren_0 is the sample size,$WITH^2$ is the area under the acceptance region in the normal distribution (1 – α), e is the preferred level of precision, p is the approximate proportion of the attribute present in the population and q is 1- p.

Based on the calculation results for determining the number of samples above, the minimum number of samples used in this study was 400 respondents.

3.2. Research methods

In this study, the type of data used is primary data. Primary data is research information obtained directly from sources or research subjects. It can be in the form of direct interviews with people or groups, as well as direct field observations by researchers [16]. The primary data referred to in this study is research data using quantitative methods by collecting data through questionnaires distributed to respondents. Quantitative research has the goal of measuring data and generalizing results from samples to populations [17].

Data analysis was carried out by testing the validity and reliability of research instruments using the Software Statistical Program of Social Science (SPSS), then analyzing them using the System Usability Scale (SUS) to determine the final results of the study. The measurement scale used in this study is the Likert scale.

The System Usability Scale (SUS) is a Likert scale that contains 10 question items that provide a global picture of subjective usability assessments, where respondents are asked to rate their level of agreement or disagreement with statements on a 5-point scale that must be chosen carefully [18]. The following is an example of 10 questions on the System Usability Scale.

Table 1. System Usability Scale Quetionaires

Question Items
I will use the DKI Jakarta Online Tax application more often
I feel that the DKI Jakarta Online Tax application does not have to be made this complicated.

Question Items
I think the DKI Jakarta Online Tax application is easy to use.
I need help from a technical person to use the DKI Jakarta Online Tax application
I found the features in the DKI Jakarta Online Tax application well integrated.
I found many inconsistent things in the DKI Jakarta Online Tax application
I feel that it will be easy for many people to learn how to use the DKI Jakarta Online Tax application
I found the DKI Jakarta Online Tax application very complicated to use
I am very confident in using the DKI Jakarta Online Tax application
I need to study before using the DKI Jakarta Online Tax application.

To get the SUS score, the researcher calculated the questionnaire that had been carried out with the following rules:

1. Each question has an odd number, and the final score is the result of subtracting the user's score (x) minus 1.
2. Each question has an even number, the final score is obtained from the result of subtracting 5 minus the user's score (x).
3. The weighting of the SUS score for each user is obtained after adding up the total score multiplied by 2.5.

Furthermore, to add up the overall score, the formula used is as follows:

$$\underline{x} = \frac{\sum x}{n} \quad (2)$$

$\underline{x}$ = Average value
$\sum x$ = Total value of SUS
n = Number of respondents

System Usability Scale (SUS) scores are weighted as follows: A, B, C, D, and F, with the possibility of Excellent, Good, OK, Poor, and Awful. Here are the specifications:

1. If the value is above 83.3 then it is in category A or "Excellent"
2. If the value is between 68 to 83.3, then it is in category B or "Good".
3. If the value is 68, then it is in category C or "Ok"
4. If the value is between 51 to 67, then it is in category D or "Poor"
5. If the value is less than 51, then it is in category F or "Awful"

4. Result and Discussion

4.1. Characteristics of Respondents

Google Forms were used in this study, which was then distributed using various social media platforms, including Instagram, Twitter, and chat applications such as Whatsapp and Line to respondents who are all residents of DKI Jakarta who have used the DKI Jakarta Online Tax application.

Starting on February 6, 2023, and ending on April 2, 2023, the questionnaire was in circulation for nearly three months. The total number of respondents obtained from the results of distributing the questionnaires was 400 respondents

4.2. Validity Test Results

In this study, the validity test was carried out on the questionnaire which was declared valid if r-count > r-table for N = 400 with a significant level of 5%, then an r-table of 0.098 was obtained. The following are the results of the validity test of the questions in this study which were calculated using the Software Statistical Program of Social Science (SPSS).

Table 2. System Usability Scale Validity Test Results

Questions	r-count	r-table	Results
Q1	0,362	0,098	Valid
Q2	0,460	0,098	Valid
Q3	0,462	0,098	Valid
Q4	0,433	0,098	Valid
Q5	0,476	0,098	Valid
Q6	0,496	0,098	Valid
Q7	0,429	0,098	Valid
Q8	0,632	0,098	Valid
Q9	0,485	0,098	Valid
Q10	0,368	0,098	Valid

The results of the validity test on the questionnaire stated that each question item received an r-count value that was greater than the r-table value, namely 0.098 so that each question item in the questionnaire was declared valid.

4.3. Reliability Test Results

The reliability test is the consistency of the scores on the instruments or questions contained in the research questionnaire using various research methods under different conditions. In other words, the questionnaire is declared reliable if it can provide consistent scores on measurements [19].

The reliability test was carried out using the Cronbach Alpha method on the questionnaire which was declared reliable if r-count > r-table for N = 400 with a significant level of 5%, then an r-table of 0.098 was obtained. In other words, a questionnaire is declared reliable if it can provide consistent scores on measurements [20]. The following are the results of the questionnaire reliability test in this study which were calculated using the Software Statistical Program of Social Science (SPSS).

Table 3. Reliability Test Results

Questionnaire	Cronbach Alpha Score	r-table	Results
System Usability Scale	0,585	0,098	Reliable

From the results of the reliability test it can be stated that the research questionnaire is reliable and the research questionnaire can be used for actual research.

4.4. Questionnaire Calculation Results

Table 4 describes the results of the 400 respondents who scored on a Likert scale for each question.

Table 4. System Usability Scale Score Results

Questions	Average
Q1	2,52
Q2	1,30
Q3	2,41
Q4	1,59
Q5	2,54
Q6	1,75
Q7	2,51
Q8	1,78
Q9	2,50
Q10	1,17
Total Average	20,12
SUS Score = Average Total*2.5	50,31

Based on the table above, it can be seen that each question item has an average answer obtained from adding up the score with the SUS formula then the total average answer multiplied by the number 2.5 so that the final result is 50.31. From this score, the DKI Jakarta Online Tax application received a grade of F or Awful, which means that the DKI Jakarta Online Tax application does not meet usability elements and is very bad to use.

4.5. Discussion

Based on the data obtained from the average score of each question, the following is a discussion of the results of distributing the questionnaires.

Table 5. Discussion of the System Usability Scale

Q	Average	Discussion
Q1	2,52	Even though the users are happy, some users feel that the DKI Jakarta Online Tax application is not too important to use at this time.
Q2	1,30	Users still feel that the DKI Jakarta Online Tax application must be made more complicated
Q3	2,41	Users feel that the DKI Jakarta Online Tax application is easy to use but still needs to be improved to maximize value.
Q4	1,59	Users still have difficulty using the DKI Jakarta Online Tax application due to the lack of literacy that requires the assistance of technical people so developers must make this application easier to use.
Q5	2,54	Even though the features in the DKI Jakarta Online Tax application are integrated quite effectively, it still needs to be improved or given more functions.
Q6	1,75	Users feel that there are not many inconsistent things in the DKI Jakarta Online Tax application, but developers must pay attention so that there are no inconsistent things in the DKI Jakarta Online Tax application.
Q7	2,51	Many users will find it easy to learn how to use the DKI Jakarta Online Tax application but still need to improve to maximize value
Q8	1,78	Users still feel that the DKI Jakarta Online Tax application is complicated to use, so developers must improve it so that the DKI Jakarta Online Tax application is easier to use.
Q9	2,50	Users are confident enough in using the DKI Jakarta Online Tax application, but there are also those who are still not confident when using this application, so quality improvement is still needed to maximize value.
Q10	1,17	Users still feel the need to learn before using the DKI Jakarta Online Tax application, so developers must make the DKI Jakarta Online Tax application even easier to use and conduct a further introduction to this application.

Never before has research been conducted on this application making the results obtained very unsatisfactory, because many score findings show results below the desired average. You could even say the quality of this application is very bad. So, there is still a lot of need for improvement so that users are more comfortable in using this application.

5. Conclusion

Based on the findings of a usability analysis involving a total of 400 people or residents of DKI Jakarta who filled out the System Usability Scale (SUS) questionnaire, the DKI Jakarta Online Tax application received a score of 50.31 with an "Awful" rating and a Letter Grade "F". These results indicate that the DKI Jakarta Online Tax application does not meet the usability element, so it is necessary to repair and refine the application as well as add useful features and make it easier for users and introduction of the application so that more and more people know and use the DKI Jakarta Online Tax application.

Based on the results of the analysis carried out by the author provides the following suggestions:

a. Advice For Application Developers

Based on the results of the research there are suggestions that can be given for improvement recommendations the quality of the DKI Jakarta Online Tax application includes:

1) Literacy regarding the function of this application to prospective users, namely the people of DKI Jakarta.
2) The display arrangement is further improved so that users are more interested in using the DKI Jakarta Online Tax application.
3) Synchronize the DKI Jakarta Online Tax application with physical or offline data so that users feel confident and do not confuse users.
4) Added features for how to use the application.
5) Added a search feature to make it easier for users to find information quickly and easily.

b. Suggestions For Further Research

Further research is needed to determine application evaluation using other methods. With other questions used, you can dig deeper into the answers given by respondents so that more accurate usability measurement results are obtained

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