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ANALYZING CUSTOMERS' SATISFACTION ON FACILITY MANAGEMENT SYSTEM (FMS) USING WEBQUAL 4.0: A CASE STUDY

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Abstract

Propertek Facility Management System is a website-based ERP, which is used as a dashboard and is systematically integrated with an application called Many Option. Currently the Property Management Facility Management System has been used in 3 apartments, namely The Pakubuwono Residence, Gading Icon Apartment, and Kubikahomy. This apartment has a total of 2,578 tenants to date. Based on this data, the quality of applications used by tenants must be measured based on user satisfaction. This study aims to determine whether the variables in the Webqual 4.0 measurement method, namely usability, information quality, and service interaction quality, can affect the level of user satisfaction of the Propertek Facility Management System website. The research method used is a quantitative research method, quantitative data is a research method based on positivistic (concrete data), research data in the form of numbers to be measured using statistics as a test calculation tool, related to the problem under study to produce a conclusion. In this study, the quality of the Property Management Facility Management System was measured using the WebQual 4.0 method. WebQual 4.0 is a method of measuring website quality based on end user perceptions. Webqual 4.0 was compiled based on research on three areas or dimensions, namely Usability, Information Quality, and Service Interaction. The results of measuring website quality using the WebQual 4.0 method are expected to be information for the development team to find out system weaknesses, as well as become a reference and benchmark for improving system quality.

Keywords: *Webqual, Website Quality, Apartment.*

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INTRODUCTION

PT. Nusantara Sukses Teknologi is a start-up company engaged in application development that aims to create creative innovation in the provision of Integrated Smart Application. PT Nusantara Sukses Teknologi is a private company established in 2017 by several young people who have the motivation and goal to develop application systems that can provide convenience to many people.

The development of property business that was initially ordinary in Indonesia, is now squirming along with the presence of apartment property businesses. The increasing number of apartments that grow in Indonesia makes the development of this property business become quite fresh in Indonesia. The property business, especially apartment residential houses that were initially looked at one eye, is now the prima donna where the highest sales figure of property in Indonesia is held by the record by the apartment residential house itself. The reason for the large number of people who choose to live in an apartment, especially the people of big cities, one of which is the level of congestion of the city that is so dense. If they live in a housing area away from the city center, it will trouble them, so living in an apartment is a very effective option to take.

Propertek is the system that will be a reference in the writing of this research. Propertek is an Enterprise Resource Planning (ERP) that has dozens of modules that are integrated into each other and form a complex system unit. Propertek has also gone live in many apartments with a large number of users. It is on this basis that Propertek deserves to be lifted and analyzed in more depth, especially in relation to the satisfaction of users who already use this system.

In addition, Propertek has several applications (Systems) integrated with it. Propertek works with many options (MOAja), NOS, and Clubhouse applications. Propertek also has a lighter version called Propertek Lite. These applications (systems) have their own functions and responsibilities, but are still interrelated. PIC and its role user also vary, tailored to the needs in the field.

Based on the above data, it can be concluded that this property ecosystem is a very large ecosystem, involving many platform integrations and diverse users. If the quality of the website and application has not been battle-proven, then it can cause problems in the future. For this reason, the measurement of customer satisfaction levels is needed. Measuring the level of customer satisfaction has several benefits such as the creation of harmonious relationships between the company and customers, the existence of business opportunities to grow through repurchase, cross-selling, and up-selling, the creation of customer loyalty, and increasing profits for the company (Hengki, 2014).

The method of measuring the level of customer satisfaction to be used in this study is the Webqual 4.0 method (Frisdiantara, Qamar, Ardian, & Rahman, 2020). The Webqual 4.0 method is a development of the earlier version of the Servqual method. Servqual method is a method used to measure the quality of service from the attributes of each dimension so that there will be a value gap which is the difference between the customer's perception of the quality of service that has been received with the expectation of the quality of the service they want to receive. This method was developed in the 1980s by Zeithaml (Andry, Christianto, & Wilujeng, 2019).

While in Webqual 4.0, the method has been further developed. Webqual 4.0 method is the result of an analysis that identifies three dimensions of website quality, namely usability (Usability) related to website design, quality of information (Information quality) related to the quality of website content, and quality of interaction services (Service interaction quality) related to what is experienced by website users and realized in the form of trust and empathy (Syahputri, Rizkya, Siregar, & Syardhi, 2021). It is because of these advantages that the Webqual 4.0 method was chosen as the method used in the study (Hasanov & Khalid, 2015).

The importance of analyzing the phenomenon of utilization and use from the user side to the Propertek facility management system is the reason this research was conducted. User satisfaction is one of the factors or measures of success for any information system developer. Good quality of service is not only based on the point of view or perception of the service provider but also based on the user's point of view or perception. Users who enjoy the service are apartment users who can determine the quality of service. User perception of service quality is a thorough assessment of the excellence of service.

Propertek Facility Management System is a website-based ERP used as a dashboard and systematically integrated with an application called Many Option (Shia, Chen, & Ramdansyah, 2016). Currently, Propertek Facility Management System has been used in 3 apartments

namely The Pakubuwono Residence, Gading Icon Apartment, and Kubikahomy. The apartments have a total of 2578 tenants to date. These residents will automatically become users of the application and become a reference in determining population and sample. In the near future, Propertek Facility Management System will soon expand its business to several other apartments that are currently piloting.

Based on the description above, can be formulated several problems in this study, namely: 1) How much customer satisfaction level of Propertek Facility Management System application calculated using webqual method 4.0? 2) Why choose Webqual 4.0 as a method of measuring customer satisfaction levels? 3) Why was Propertek facility management system taken as the object under study? 4) What aspects can affect the level of customer satisfaction using propertek facility management system application? 5) What improvement efforts will be made by the development team so that the Propertek Facility Management System application provides the maximum level of satisfaction to the community?

Framework of Thought

Based on the research that has been done, the following frame of mind is obtained:

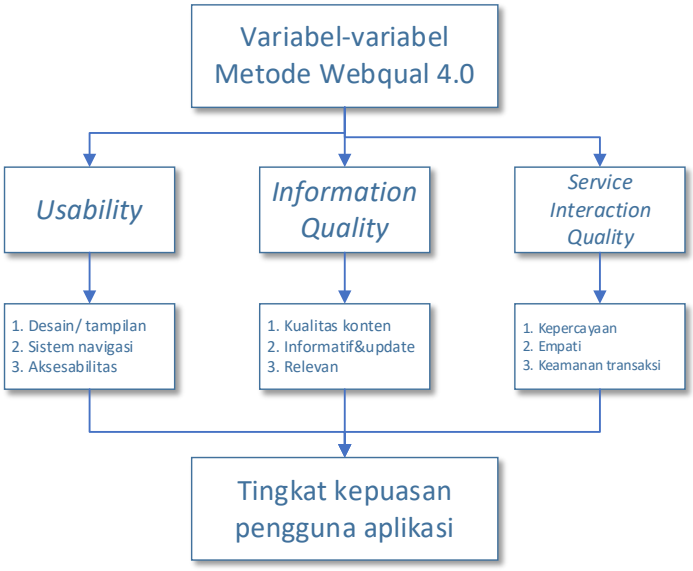


Figure 1 Frame of Mind (Source: personal documents)

METHOD

In this study, the research method used is a quantitative research method. According to quantitative data is a (Sugiyono, 2018) research method based on positivistic (concrete data), research data in the form of numbers that will be measured using statistics as a calculation test tool, related to the problems studied to produce a conclusion. Meanwhile, according to (Arikunto, 2013) quantitative research is a research approach that uses many numbers, ranging from collecting data, interpretation of the data obtained, and exposure to the results.

This study aims to find out whether the variables in the Webqual 4.0 measurement method, namely usability, information quality, and service interaction quality can affect the level of user satisfaction of the Propertek Facility Management System website (Sutanto, Kusrini, & Nasiri, 2021).

RESULTS AND DISCUSSION

Data Validity Test

Validity is a measure that indicates the validity or validity of an instrument. The validity test refers to the extent to which an instrument can perform its functions. A validity test is a process of measuring whether the instrument used is considered relevant enough to the case to be raised. These instruments are then mapped into the form of questions that will be answered by the respondent.

The validity test in this study was processed with Microsoft Excel. The steps taken in this validity test are:

1. Input data
2. Count the number of scores
3. Determine the r count
4. Search for r table
5. Determine the status of validity

In the first step, the data input, all that must be done is to translate all respondent answers taken by the likert scale method into numbers that represent the answers of these respondents. The data is spelled out for all questions (indicators) of the overall respondent. Then in the second step, calculate the number of scores for each respondent.

Then the third step is to determine the value of calculated r, using the Pearson Product Moment formula as follows:

$$r_{xy} = \frac{n \sum X_i \, Y_i - (\sum X_i)(\sum Y_i)}{\sqrt{\{n \sum X_i^2 - (\sum X_i)^2\}\{n \sum Y_i^2 - (\sum Y_i)^2\}}}$$

The next thing to do is look for the value of the table r. With the population (n) = 92 and a significant level of 0.1, the table used is **0.1726.**

The final step in the validity test is to determine the status of validity. If r calculates the > r of the table then the indicator is declared valid. Conversely, if r calculates the < r of the table then the indicator is declared invalid.

In this validity test, all r_{count} values > r_{table}, so that all indicators used are declared VALID. For more details, the validity status can be seen in the table below:

Table 1. Results of validity tests

Indicator	r xy	r table	Status
U1	0,752	0,1726	VALID
U2	0,771	0,1726	VALID
U3	0,798	0,1726	VALID
U4	0,770	0,1726	VALID
U5	0,595	0,1726	VALID
U6	0,685	0,1726	VALID
U7	0,814	0,1726	VALID

U8	0,770	0,1726	VALID
I1	0,699	0,1726	VALID
I2	0,634	0,1726	VALID
I3	0,735	0,1726	VALID
I4	0,712	0,1726	VALID
I5	0,698	0,1726	VALID
I6	0,743	0,1726	VALID
I7	0,798	0,1726	VALID
S1	0,803	0,1726	VALID
S2	0,701	0,1726	VALID
S3	0,694	0,1726	VALID
S4	0,686	0,1726	VALID
S5	0,698	0,1726	VALID
S6	0,634	0,1726	VALID
S7	0,800	0,1726	VALID
O1	0,804	0,1726	VALID

Data Reliability Test

In reliability testing, the steps that must be done are as follows:

1. Input data
2. Count the number of scores
3. Specify item variance values
4. Determine the total variance value
5. Determine the value of Cronbach Alpha
6. Determine reliability status

Reliability testing is also done using Microsoft Excel tools. The indicators tested on this reliability test are only indicators that have a VALID status. Since all indicators on the validity test are valid, they are brought back to this reliability test.

For the first and second steps, the same as when doing validity testing. Next, for the third step, namely the calculation of the value of the item variant, the following formula is used:

$$Si = \frac{(\sum x_i^2) - \frac{(\sum x_i)^2}{N}}{N}$$

Where:
Si = Variance of the score of each item
∑Xi2 = Sum of Xi grain squares
(∑Xi)2 = Number of Xi items squared
N = Number of respondents

For the fourth step , the calculation of the total variance value, the same formula is used to calculate the value of the item variant. Then in the fifth step will be calculated the value of Cronbach Alpha with the following formula:

$$r_{11} = \frac{k}{k-1} \text{ x } \left\{1 - \frac{\sum S_i}{S_i}\right\}$$

Where:
r_{11} = Reliability value
$\sum_{Si}$ = Number of score variances per item
S_t = Varians total
k = Number of items

Lastly, the grain variant value is compared to the Cronbach Alpha value. If the item variant value > the Cronbach Alpha value, then the indicator has a RELIABLE status. Conversely, if the item variant value < the Cronbach Alpha value, then the indicator has a NON RELIABLE status. The item variance values and reliability status for each indicator can be seen in the following table:

Table 2. Reliability test results

Indicator	Var Item	Cronbach Alpha	Status
U1	1,181	0,946	RELIABLE
U2	1,113	0,946	RELIABLE
U3	1,041	0,946	RELIABLE
U4	1,052	0,946	RELIABLE
U5	1,057	0,946	RELIABLE
U6	1,063	0,946	RELIABLE
U7	1,075	0,946	RELIABLE
U8	1,087	0,946	RELIABLE
I1	1,099	0,946	RELIABLE
I2	1,112	0,946	RELIABLE
I3	1,125	0,946	RELIABLE
I4	1,132	0,946	RELIABLE
I5	1,145	0,946	RELIABLE
I6	1,153	0,946	RELIABLE
I7	1,167	0,946	RELIABLE
S1	1,181	0,946	RELIABLE
S2	1,155	0,946	RELIABLE
S3	1,127	0,946	RELIABLE
S4	1,142	0,946	RELIABLE
S5	1,157	0,946	RELIABLE
S6	1,153	0,946	RELIABLE
S7	1,169	0,946	RELIABLE
O1	1,164	0,946	RELIABLE

Testing Customer Satisfaction Levels with Likert Scale

Quick Online Booking (QOB) website quality calculation uses likert's summated ratign (LSR) scale measurement, which is a method of measuring attitude (Attitude) that is widely used in social research because of its simplicity (Kevin, Deny, Charles, & Daniel, 2020). The Scale Range Value (RS) is calculated by the following formula:

$$RS = \frac{n\ (m - 1)}{b} = \frac{1\ (5 - 1)}{5} = \frac{4}{5} = 0.8$$

With:

RS = Scale Range

m = Highest number in measurement

n = Lowest number in the measurement

b = Number of classes or categories formed

With the result of the Scale Range of 0.8, then here is the numerical scale:

Very Dissatisfied = 1 to 1.8

Dissatisfied = 1.8 to 2.6

Satisfied Enough = 2.6 to 3.4

Satisfied = 3.4 to 4.2

Very Satisfied = 4.2 to d5

The results of QOB website service quality calculations using likert's Summated Rating (LSR) scale measurements are shown in detail in the following table:

Table 3. Customer Satisfaction Testing with Perhitungan

No	Variable	Question Indicator	STS	TS	CS	S	SS	Sum	Average	Interpretation
1	Usability	This application/ system can be operated easily.	3	26	45	156	110	340	4	Satisfied
2		My interactions with this application/system are clear and easy to understand.	5	20	57	144	110	336	3,652	Satisfied
3		Navigation on this application/ system is very easy.	2	28	38	140	110	318	3,457	Satisfied
4		This application/system is easy to use.	2	28	48	140	125	343	3,728	Satisfied
5		This application / system has an interesting look.	3	18	75	140	100	336	3,652	Satisfied
6		The design of this application / system is in accordance with the rules of a good information system.	4	34	93	124	45	300	3,261	Quite Satisfied
7		This application / system has good competence.	3	18	90	156	55	322	3,500	Satisfied
8		This application/ system can have a positive influence and experience for me.	2	10	81	148	105	346	3,761	Satisfied
9	Information Quality	This application/system provides accurate information.	2	14	66	180	90	352	3,826	Satisfied
10		This application / system provides	2	4	60	184	110	360	3,913	Satisfied

		reliable information.								
11		The information presented by this application / system is always up to date.	3	36	102	112	45	298	3,239	Quite Satisfied
12		This application/system provides information that is relevant to what I need.	3	28	84	136	65	316	3,435	Satisfied
13		This application / system provides information in a language that is easy to understand.	2	8	51	148	160	369	4,011	Satisfied
14		This application/system provides complete and detailed information.	2	16	78	188	45	329	3,576	Satisfied
15		The information presented by this application/system is already in the form of the appropriate format.	5	16	93	172	45	331	3,598	Satisfied
16	Service Interaction Quality	This app/system has a good reputation.	7	18	99	136	45	305	3,315	Quite Satisfied
17		I feel safe transacting through this application / system.	2	12	84	140	105	343	3,728	Satisfied
18		My personal data is stored securely in this application/system.	3	6	75	152	115	351	3,815	Satisfied
19		This application/system provides space for	3	24	108	140	30	305	3,315	Quite Satisfied

		personalization for users.								
20		This application/system provides space for the community.	8	40	87	112	35	282	3,065	Quite Satisfied
21		This application / system provides ease of communication.	6	26	84	148	40	304	3,304	Quite Satisfied
22		I feel confident that all the information and services in this application / system run well and optimally.	3	22	90	168	30	313	3,402	Satisfied
23	Overview	Overall, this application / system has a good look and function.	2	16	96	156	55	325	3,533	Satisfied

Based on the data in the table above, it can be concluded that customers are satisfied with the 17 indicators, while for the other 6 indicators, customers feel QUITE SATISFIED. With this resulting data, it is expected to be used as a reference for developers to determine priority improvements for their systems.

CONCLUSION

The conclusions of this study aim to answer the purpose of the research. Based on this, it can be spelled out the conclusions of this study are as follows:

1) Based on the research objectives that have been spelled out earlier in chapter 1, namely "Analyzing the quality of propertek Facility Management System applications based on the satisfaction assessment of customers using the system", then in this conclusion will be calculated the level of user satisfaction derived from the indicators contained in the Webqual 4.0 method. User satisfaction analyzed based on these indicators is summed up as follows:
   A) Variable usability
      a) U1 indicator: has an average value of 4 of the scale of 5. This proves that the user feels SATISFIED on the "Ease to operate" indicator.
      b) U2 indicator: has an average value of 3,652 from a scale of 5. This proves that users feel SATISFIED on the "Interaction with the website" indicator.
      c) U3 indicator: has an average value of 3,457 from a scale of 5. This proves that the user feels SATISFIED on the "Ease of navigation" indicator.

d) U4 indicator: has an average value of 3,728 from a scale of 5. This proves that users feel SATISFIED on the indicator "Ease of finding a website".
e) U5 indicator: has an average value of 3,652 from a scale of 5. This proves that the user feels SATISFIED on the "Attractive View" indicator.
f) U6 indicator: has an average value of 3,261 from a scale of 5. This proves that the user feels QUITE SATISFIED on the indicator "Preparation of information layout".
g) U7 indicator: has an average value of 3.5 from a scale of 5. This proves that users feel SATISFIED on the "Website competence" indicator.
h) U8 indicator: has an average value of 3,761 from a scale of 5. This proves that the user feels SATISFIED on the indicator "Positive influence and experience provided".

B) Variabel Information Quality
a) Indicator I1: has an average value of 3,826 from a scale of 5. This proves that the user feels SATISFIED on the "Clear information" indicator.
b) Indicator I2: has an average value of 3,913 from a scale of 5. This proves that the user feels SATISFIED on the "Trustworthy Information" indicator.
c) Indicator I3: has an average value of 3,239 from a scale of 5. This proves that the user feels QUITE SATISFIED on the "Up to date Information" indicator.
d) Indicator I4: has an average value of 3,435 from a scale of 5. This proves that the user feels SATISFIED on the "Relevant Information" indicator.
e) Indicator I5: has an average value of 4.011 from a scale of 5. This proves that the user feels SATISFIED on the "Easy to Understand Information" indicator.
f) Indicator I6: has an average value of 3,576 from a scale of 5. This proves that the user feels SATISFIED on the "Detailed information" indicator.
g) Indicator I7: has an average value of 3,598 from a scale of 5. This proves that the user feels SATISFIED on the indicator "Information with the appropriate format".

C) Variabel Service Interaction Quality
a) Indicator S1: has an average value of 3.315 from a scale of 5. This proves that the user feels QUITE SATISFIED on the "Good Reputation" indicator.
b) Indicator S2: has an average value of 3,728 from a scale of 5. This proves that the user feels SATISFIED on the "Transaction security" indicator.
c) Indicator S3: has an average value of 3.815 from a scale of 5. This proves that the user feels SATISFIED on the "Personal data security" indicator.
d) Indicator S4: has an average value of 3,315 from a scale of 5. This proves that the user feels QUITE SATISFIED on the "Attract interest and attention" indicator.
e) Indicator S5: has an average value of 3.065 from a scale of 5. This proves that the user feels QUITE SATISFIED on the "Community atmosphere" indicator.
f) Indicator S6: has an average value of 3,304 from a scale of 5. This proves that users feel QUITE SATISFIED on the "Ease to give input" indicator.

g) Indicator S7: has an average value of 3,402 from a scale of 5. This proves that the user feels SATISFIED on the indicator "Level of confidence in the information provided".

As well as the additional indicator O1: it has an average value of 3,533 from a scale of 5. This proves that users feel SATISFIED on the "Overall website overview" indicator.

2) Webqual 4.0 is the right method for measuring the quality of a website. This is because the Webqual method has appropriate instruments.
3) Based on point number 1, it can be concluded that Propertek Facility Management System is a quality system.
4) Ui indicator that is "ease to operate" is an indicator that has the highest average value of 4 out of 5 scale, meaning it is the indicator that best meets user criteria. While the S5 indicator is "community atmosphere" has the smallest average value of 3,065 from a scale of 5 so this indicator is the indicator that does not meet the user criteria.
5) The developer will review the results of this research so that the quality of the system can be maintained, even improved.

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