

Research Article

Analysis of Website Quality Using The Webqual 4.0 Method at SMA Negeri 12 Tangerang

Risalah Sabila Wirna¹, Rachmat Hidayat², Ellya Verawati³

^{1,2,3}Information Technology, Bina Sarana Informatics University, Jakarta

Received: September 18, 2023; Accepted: December 05, 2023

Abstract

Currently, information technology has become a determining factor for success in all aspects. This web media is a suggestion that can be used in schools where websites are used to convey information to students and the general public. SMA Negeri 12 Tangerang Regency is one of the educational institutions that wants to ensure that their website provides a satisfying experience to its visitors. By conducting a webqual 4.0 analysis, SMA Negeri 12 Tangerang Regency can gain deeper insight into the strengths and weaknesses of the website. This research aims to measure the quality of the website of SMA Negeri 12 Tangerang Regency based on the webqual 4.0 dimension variables, namely quality of use, quality of information, and quality of interaction. The method used in this research uses a quantitative method with stages of identifying webqual 4.0 variables, sample selection, data collection, data analysis, data interpretation, and validation. With the results of this research, you can carry out reliability testing, hypothesis testing, t test and f test. So the results can be concluded that during the t test the variables X1, variable Y.

Keywords: Webqual 4.0, Website quality, Information technology.

Saat ini, teknologi informasi telah menjadi faktor penentu keberhasilan dalam segala aspek. Media web ini menjadi usulan yang dapat digunakan pada sekolah dimana website digunakan untuk menyampaikan informasi kepada siswa, siswi dan masyarakat umum. SMA Negeri 12 Kabupaten Tangerang salah satu institusi pendidikan yang ingin memastikan bahwa website mereka memberikan pengalaman yang memuaskan kepada pengunjungnya. Dengan melakukan analisis webqual 4.0, SMA Negeri 12 Kabupaten Tangerang dapat mendapatkan wawasan yang lebih dalam tentang kekuatan dan kelemahan website. Penelitian ini bertujuan untuk mengukur kualitas website SMA Negeri 12 Kabupaten Tangerang berdasarkan variabel dimensi webqual 4.0 yaitu kualitas penggunaan, kualitas informasi, dan kualitas interaksi. Metode yang digunakan dalam penelitian ini menggunakan metode kuantitatif dengan tahapan-tahapan identifikasi variabel webqual 4.0, pemilihan sampel, pengumpulan data, analisis data, interpretasi data, dan validasi. Dengan hasil penelitian ini dapat melakukan pengujian reliabilitas, pengujian hipotesis uji t dan uji f. Maka hasil yang dapat disimpulkan bahwa pada saat uji t variabel X1, X2, X3 secara masing-masing variabel terdapat pengaruh terhadap variabel Y, sedangkan pada saat uji f variabel X1, X2, X3 secara bersama-sama menunjukkan hasil bahwa terdapat pengaruh yang signifikan terhadap variabel Y.

Kata Kunci: Webqual 4.0, Kualitas website, Teknologi informasi.

How to cite: Wirna, RS, Hidayat, R., Verawati, E., (2023). Analysis of Website Quality Using The Webqual 4.0 Method at SMA Negeri 12 Tangerang, Information and Software Engineering (ISE)

*Corresponding author: Sabila Wirna's treatise (risabilawirna97502@gmail.com)



This is an open access article under the CC-BY-SA international license

1. Introduction

Along with the development of the era of globalization or what could also be called the era of modernization, information and communication technology has made information easily available through various communication channels. "Based on the results of the Indonesian Polling survey conducted in collaboration with the Indonesian Internet Service Providers Association (APJII), the number of internet users in Indonesia reached 171.17 million people in 2018"(Sandag et al., 2020). Information Technology has become the main choice in creating a system information (Putra, et al, 2019)

Currently, information technology has become a determining factor for success in all aspects. This web media is a suggestion that can be used in schools where websites are used to convey information to pupils and the general public. Apart from that, the appearance of the school website is more professional, because the general public trusts the school more with information and information security. A school's website needs attention to maintain consistent quality according to website evaluation to improve it. Therefore, the quality of website-based services must be improved to convince users to continue using existing website services.

SMA Negeri 12 Tangerang Regency as an educational institution wants to ensure that their website provides a satisfying experience to its visitors including students, parents and the general public. By conducting a webqual 4.0 analysis, SMA Negeri 12 Tangerang Regency can gain deeper insight into the strengths and weaknesses of their website, as well as recommendations for further improvement and development. With webqual 4.0 analysis, SMA Negeri 12 Tangerang Regency can increase the effectiveness and efficiency of their website, increase interaction with users, improve the quality of the content presented, and increase overall user satisfaction. This will have a positive impact on the school's image and provide better benefits for students, parents and the community who access the SMA Negeri 12 Tangerang Regency website.

The problem in this research is assesment quality website based on analysis using the webqual 4.0 method and the purpose is to measure the quality of the website of SMA Negeri 12 Tangerang Regency based on the webqual 4.0 dimension variables, namely user quality, information quality, and interaction quality. And provide recommendations regarding aspects that need to be improved to improve the quality of the Tangerang Regency 12 Public High School website. The benefits for the research object are to improve the quality of the SMA Negeri 12 Tangerang Regency website, increase user satisfaction of the SMA Negeri 12 Tangerang Regency website, increase the effectiveness and efficiency of website users, and become a reference for other State High Schools in improving the quality of the website.

2. Literature Review

2.1. WebQual 4.0

The definition of webual 4.0 is the development method of SERVQUAL, which has been carried out since 1998 and was developed using the Quality Function Development (QFD) method with the aim of evaluating the quality of the first version of the website, namely version 1.0. Webqual went through several iterations in combining its categories and question elements. Webqual 4.0 which uses three measurement categories. The three categories are, ease of use (usability quality), quality of information (information quality), and quality of interaction (interaction quality).

Usability categories are based on studies of website usability, including ease of navigation, suitability of design, and descriptions provided to users. Information categories are considered based on an overview of information systems. This category refers to the quality of the website content, namely the suitability of the information to the user's objectives, for example in terms of accuracy, format and consistency of the information provided. The service interaction category refers to the service interactions that users experience when interacting in depth with a website (Ridwan Aji Pamungkas, Excel Alfarishi & , Anang Muklhisin, 2019).

2.2. Website

Website is a service on the internet network that contains information space. With a website, users can get the information they want by following the link (hyperlink) provided in the document displayed by the website browser application. By using website technology, it will be easier for users to interact with data stored on a website server, without having to write any commands. Website users as information media in this era of advanced technology are very common and very effective. Therefore, it has become a necessity and necessity for an organization to have a website(Rahmatullah et al., 2019).

1) HTML (Hyper Text Markup Language)

HyperText Markup Language(HTML) is a standard language used to create a web page or world wide web with hypertext and other information displayed on the web page. Hypertext documents can contain text, images,

and other types of information, such as data files, audio files, and executable programs (Handayani et al., 2019).

2) CSS (Cascading Style Sheets)

CSS (*Cascading Style Sheets*) is a web design language that controls the display format of web pages written with markup. Usually CSS is used to design HTML and XHTML pages, but now CSS can be applied to all XML documents including SVG and XUL and even ANDROID. CSS is used to separate the main content from the appearance of the document, including layout, colors, and fonts. This separation can improve the accessibility of content on the web, provide more flexibility and control in defining display properties, allow pages to be separated for formatting, and reduce the complexity of things like coding and content structure. Irreversible techniques in web design. CSS also allows pages to be rendered in different styles using different rendering methods such as screen, print, sound and others. Meanwhile, web content owners can provide links that associate the content with CSS files (Irawan & Novianto, 2020).

3) JavaScript

In 1995 the first time *javascript* founded by Netscape. Originally this language was called "LiveScript" and served as a low-level language for the Netscape Navigator browser. Javascript is a language in the form of a collection of scripts whose tasks will be carried out in HTML documents. The internet made this language the first scripting language on the web. This language is a programming language that provides additional functionality to HTML by allowing commands to be executed on the user side, i.e. on the browser side and not on the web server side. Javascript relies on the browser calling a web page containing a javascript script and of course an HTML document within it (Sahi, 2020).

2.3. Internet

The internet is a network system that can connect one device to another. The Internet is a global system of all computer networks connected to each other using the Internet Protocol Suite standard. Apart from computers, currently the internet can also connect various kinds of devices and can serve billions of users throughout the world (Apriyanti et al., 2022).

2.4. Website Quality

Website quality refers to the extent to which a website meets user standards and needs and fulfills its stated objectives. The quality of a website can be seen from various aspects, including design, functionality, performance, security and content. Website quality is very important to provide services directly to consumers affecting the course of business (Darmanto et al., 2021).

2.5. Website Appearance

By maximizing the website programming design, the appearance of the website will be better because the display is actually a homepage to attract consumer interest (Mur et al., 2019).

2.6. Website Security

Website security is a branch of technology known as information security that is applied to websites. The goal of website security includes protecting information or data. An increasingly advanced technology accompanied by an increase in the value of information will also trigger the emergence of new types of crime. In particular, crimes that threaten the internet network or that use the internet network to commit crimes are called cyber crimes. Cybercrime is a crime committed by someone using internet facilities that crosses national borders, is carried out illegally, uses computer equipment and the internet, causes losses, and is difficult to prove legally. Cybercrime is a threat to the security of a website (Elu, 2017).

3. Methods

The research method for analyzing website quality at SMA Negeri 12 Tangerang Regency using the webqual 4.0 method can be carried out using a quantitative approach with the following stages. The research variable identification stage was carried out by measuring the quality analysis on the website of SMA Negeri 12 Tangerang Regency using the webqual 4.0 method, such as usability quality, information quality and interaction quality. Sample selection was carried out by selecting website users at SMA Negeri 12 Tangerang Regency who met the criteria as research respondents. Data collection was carried out using a questionnaire containing questions related to the research variables. The questionnaire can be sent via email or given directly to the respondent. Data analysis was carried out using descriptive and inferential analysis techniques. Descriptive analysis is used to describe data in the form of tables and graphs, while inferential analysis is used to test research hypotheses. And interpretation of the results is carried out by answering research questions and concluding the results of the research analysis.

Research Subjects

1) Population

According to (SM et al., 2020), "Population is a generalization domain consisting of objects or subjects having characteristics and properties determined by researchers to study and then make conclusions."

2) Sample

According to (Santosa, 2019), "A sample is a part of a number and certain characteristics that a population has. Sampling Created with non-probability sampling Elimination technology".

3) Likert Scale

According to (Pranatawijaya et al., 2019). The Likert scale is a scale used to measure the perceptions, attitudes or opinions of a person or group related to social events or phenomena. There are two types of questions. On the Likert scale, the positive question form measures the positive scale and the negative question form measures the negative scale. Positive questions were scored 5, 4, 3, 2 and 1; while negative questions are given marks 1, 2, 3, 4 and 5.

Respondent Characteristics

1) Gender

Based on gender, the number of male respondents was 45 people or 60%, while the number of female respondents was 30 people or 40%.

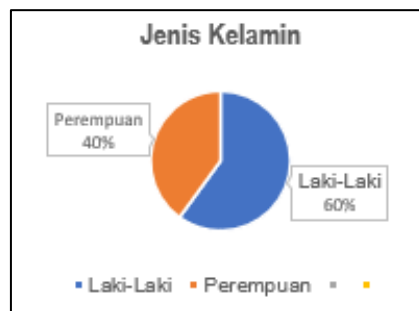


Figure 2. Gender of Respondents

2) Age

Based on age group, respondents were spread across several age groups. The following are details of the age distribution of respondents that were obtained.

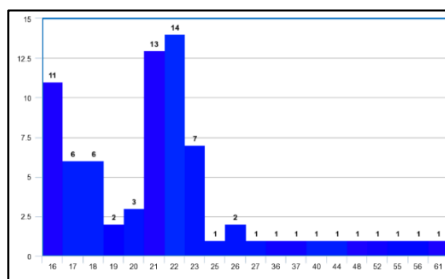


Figure 3. Age of Respondents

The data collection techniques used were observation, interviews and literature study. Observations on the website of SMA Negeri 12 Tangerang Regency were carried out using software, observations such as screen recorder software. In observations, researchers can observe the features and appearance of the website, as well as user interactions with the website. Interviews with website users can provide direct views and experiences about the quality of the SMA Negeri 12 Tangerang Regency website. The literature study was carried out by reading literature and journals related to webqual 4.0 including definitions, concepts and frameworks used to measure website quality. Researchers can also study data collection and analysis methods used in related studies.

The scope of website quality analysis at SMA Negeri 12 Tangerang Regency using the webqual 4.0 method includes:

1) Quality of Use (usability quality)

Evaluate the extent to which users can access and use the website effectively and efficiently. This includes

evaluating website navigation, website loading speed, and website functionality.

2) Information Quality (information quality)

Evaluate the accuracy, clarity and availability of information available on the website. This evaluation includes completeness of information, clarity of information, and accuracy of information.

3) Interaction Quality (interaction quality)

Evaluate the website's ability to provide effective and responsive interaction with users. This includes the website's responsiveness, suitability to user needs, and the website's ability to interact with users directly or indirectly.

The hypothesis regarding website quality analysis at SMA Negeri 12 Tangerang Regency using the webqual 4.0 method is:

H0 = There is no influence between usability, information quality, and interaction quality on user satisfaction at SMA Negeri 12 Tangerang Regency.

H1 = There is an influence between usability, information quality and interaction quality on user satisfaction at SMA Negeri 12 Tangerang Regency.

Data processing

Data processing refers to a series of processes carried out to process, clean, organize, analyze and interpret data in order to produce useful information. Data processing is a critical step in the research or analysis process, because the quality and accuracy of the data processed will affect the validity of the analysis results obtained.

SPSS or Statistical Product and Service Solution is an integral part of the analysis process and provides access to data. SPSS can read various types of data or enter data directly into SPSS data. Validity tests can be carried out using the SPSS application. Validity tests are tests that measure effectiveness or measuring tools for obtaining data (Janna & Herianto, 2021).

Judging from its operation, SPSS is used in processing and analyzing quantitative data, because they are connected and also included as part of statistics. Initially, SPSS was created for processing sociological statistical data, namely SPSS is an abbreviation for Statistical Package for the Social Sciences. In accordance with current developments, the SPSS function has been expanded to serve various types of users, such as factory production, scientific research and others. (Swarjana, 2022).

3. Results and Discussion

Based on the completed questionnaire, then summarize the answers from respondents using Microsoft Excel. Then the data processing was carried out using the SPSS (Statistical Product and Service Solution) program. After the results of the questionnaire are obtained and collected, the next stage is analyzing the data from the questionnaire results which will produce the results of reliability testing, F test, and T test. After getting all the required results, then conclusions will be made based on the results that have been obtained.

3.1. Population and Sample

There is a population of 300 people and a sample of 75 people was determined which was obtained from calculations using the Slovin formula. 75 people in the form of the general public, teachers and students of SMA Negeri 12 Tangerang Regency who will be used as research subjects.

The following is a calculation to determine the sample using the Slovin formula.

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

Information :

n : Sample size or number of respondents

N : Population size

e : Percentage of allowance for sampling error accuracy that can still be tolerated (e = 0.1)

Calculations to determine the sample: $n = \frac{300}{1+300(0.1)^2} = 75$

3.2. Reliability Testing

Reliability testing uses the criterion of a Cronbach's alpha value > 0.6 so that the questionnaire data can be declared reliable. Based on the results of reliability testing of question items, the dimensions of quality of use, quality of information, quality of interaction, and user satisfaction with the SMA Negeri 12 Tangerang Regency website can be seen in the following table.

Table 1. Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N of Items
,814	24

Based on the results of reliability testing for all variables in the table above, it can be concluded that the value of all usability quality, information quality and attraction quality variables is 0.814, indicating that > Cronbach's alpha value is 0.6, so the respondents' answers to all these variables can be declared reliable.

3.3. Hypothesis test

T Test

The T test can be used to test and find out how partially the independent variable influences the dependent variable. The aim of this research is to find out whether each independent variable significantly influences the dependent variable. The first basis for decision making is by comparing the significance value with the probability value of 0.05. If the significance is <0.05, it means that variable X has an effect on variable Y. Meanwhile, if the significance is >0.05, it means that variable The second basis for decision making is by comparing the calculated T value with the T table. If the calculated T value > T table means that variable X has an effect on variable Y. Meanwhile, if the calculated T value < T table means that variable.

Table 2. T Test Results for Usability Quality Variables (X1) on User Satisfaction (Y)

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	7,257	2,279		3,184	,002
Usability	,603	,095	,597	6,353	,000

a. Dependent Variable: User Satisfaction

Based on the results of the table above, and the calculated T value is 6.353 > T table 1.996. This means that the usability quality variable has an influence on user satisfaction.

Table 3. T Test Results for Information Quality Variables (X2) on User Satisfaction (Y)

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3,719	1,994		1,865	,066
Information	,769	,085		,727 9,049	,000

a. Dependent Variable: User Satisfaction

Based on the results of the table above, and the calculated T value is 9.049 > T table 1.996. This means that the information quality variable has an influence on user satisfaction.

Table 4. T Test Results for Intraction Quality Variables (X3) on User Satisfaction (Y)

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	Q	Sig.
1 (Constant)	2,474	3,792		,653	,516
Intraction	1,007	,199	,510	5,060	,000

a. Dependent Variable: User Satisfaction

Based on the results of the table above, and the calculated T value is $5.060 > T$ table 1.996. This means that the interaction quality variable has an influence on user satisfaction.

2. F Test

The F test aims to find out whether the independent variables together have an effect on the dependent variable. The first basis for decision making is by comparing the significance value with the probability value of 0.05. If the significance is < 0.05 , it means that variables X1,

The second basis for decision making is by comparing the calculated F value with the F table. If the calculated F value $> F$ table means that variables X1,

The following is the formula for finding F table: $(k ; nk)$.

Information :

n : number of samples

k : number of variables

This formula is used to find the F table with a sample size of 75, so the formula calculation to find the F table is as follows:

$$= (k ; nk)$$

$$= (2 ; 75-3)$$

$$= (df - 2 \text{ to } 72)$$

$$= 3.12$$

It can be explained below $(2 ; 75-3) n=75$ is the number of samples, $k=3$ is the number of variables used X1, 05 with line 72, the result is 3.12.

Table 5. F Test Results for Variables X1, X2, X3 Against Variable T

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	569,896	3	188,632	31,516	,000b
Residual	420,451	71	5,922		
Total	980,347	74			

a. Dependent Variable: User Satisfaction

b. Predictors: (Constant), Intraction, Usability, Information

Based on the table above, the results of the F test for variables X1, (Y) is $0.000 < 0.05$ and the calculated F value is $31.516 > F$ table 3.12. This means that the usability quality (X1), information quality (X2), attraction quality (X3) variables have a significant influence on the user satisfaction variable (Y).

4. Conclusion

From the results of research analyzing website quality at SMA Negeri 12 Tangerang Regency using the webqual 4.0 method, several conclusions can be drawn, including the following: 1) With this research, the results obtained for the T test results for the usability quality variable, T count $6.353 > T$ table 1.996 and a significant value of $0.000 < 0.05$. This shows that H0 is rejected and H1 is accepted. So it can be concluded that there is a significant influence of usability quality on user satisfaction. 2) The results obtained during the T test for the information quality variable

were T count $9.049 > T$ table 1.996 and a significant value of $0.000 < 0.05$. This shows that H_0 is rejected and H_1 is accepted. It can be concluded that there is a significant influence of information quality on user satisfaction. 3) The results obtained during the T test for the interaction quality variable, T count $5.060 > T$ table 1.996 and a significant value of $0.000 < 0.05$. So this shows that H_0 is rejected and H_1 is accepted. So it can be concluded that there is a significant influence of interaction quality on user satisfaction. 4) The results obtained when testing the F variables usability, information quality, attraction quality together show that there is a significant influence on user satisfaction.

References

- Apriyanti, W., Erni, Syahlanisyiam, M., Anggraini, Y., Gunawan, S., Tyas Arinanto, R., Adnan Fauzan, R., Tuto Suban, N., Asmat, & Agung, AL (2022). Socialization of Healthy Internet Use for Children at the Domyadhu Foundation. *Abdi Journal Publications*, 1(1), 14. <https://jurnal.portalpublikasi.id/index.php/AJP/index>
- Darmanto, A., Pradiani, T., & Ruspitasari, WD (2021). The Influence of Website Quality and Sales Promotion on Purchase Intention at Bukalapak.Com. *JUBIS: Journal of Economics and Business Management*, 02(01), 20–33.
- Elu, A. M. (2017). Design and Build a Structured Query Language (Sql) Injection Vulnerability Detection Application for Website Security. *Respati*, 8(22), 111–124. <https://doi.org/10.35842/jtir.v8i22.53>
- Handayani, T., Bin Taher, YS, Usman, AH, & Ambarita, A. (2019). Web-Based Low Voltage Electrical Installation Cost Check Application at Pt. North Maluku Civil Servant. *IJIS - Indonesian Journal On Information Systems*, 4(1), 32. <https://doi.org/10.36549/ijis.v4i1.51>
- Irawan, D., & Novianto, Z. (2020). E-Learning Design at Sman 1 Lubuklinggau City Using the Codeigniter (Ci) Framework. *Digital Journal of Information Technology*, 3(2), 53. <https://doi.org/10.32502/digital.v3i2.2690>
- Janna, NM, & Herianto. (2021). Correct Statistics Article. *Darul Da'wah Wal-Irsyad (DDI) Journal*, 18210047, 1–12.
- Mur, MM, Lia, L., Hafiz, A., Informatics, JM, Dian, A., Cendikia, C., & Lampung, B. (2019). Extreme Programming Method for Building Web-Based Boarding House Applications in Bandar Lampung City. *XVIII(2013)*, 377–383.
- Putra, I. P., Junaidi, A., Handayani, P., & Yunita, Y. (2019). Sistem Informasi Perpustakaan Pada Madrasah Aliyah Negeri 16 Jakarta Kota Jakarta Barat. *Jurnal Informatika*, 6(2), 293-299.
- Pranatawijaya, VH, Widiatry, W., Priscilla, R., & Putra, PBAA (2019). Application of Likert Scale and Dichotomous Scale in Online Questionnaires. *Journal of Science and Informatics*, 5(2), 128–137. <https://doi.org/10.34128/jsi.v5i2.185>
- Rahmatullah, S., Purnia, DS, & Triasmoro, R. (2019). Analysis of the Quality of the North Jakarta Intercultural School School Website using the Webqual 4.0 Method. *Journal of Scientific Studies*, 19(2), 158–164. www.njis.org.
- Ridwan Aji Pamungkas, Excel Alfarishi, EA, & , Anang Mukhlisin, RFAA (2019). Website Quality Analysis of SMK Negeri 2 Sragen With. 13(1), 12–17.
- Sahi, A. (2020). Online Web-Based LP3I Entrance Screening Selection Academic Potential Test Application Using the CodeIgniter Framework. *Thematics*, 7(1), 120–129. <https://doi.org/10.38204/tematic.v7i1.386>
- Sandag, G. A., Makapedua, M., & Tomponu, A. (2020). Website Quality Analysis at PT.DAW Using the Webqual 4.0 Method and Importance Performance Analysis (IPA). *Journal of Information Systems and Technology (Justin)*, 8(4), 339. <https://doi.org/10.26418/justin.v8i4.42592>
- Santosa, AT (2019). The Influence of Service Quality, Product Quality, Store Atmosphere, and E-Wom on the Purchasing Decision Process (Survey of Zenbu-House of Mozaru Paris Van Java Consumers, Bandung). *Maranatha Management Journal*, 18(2), 148–158. <https://doi.org/10.28932/jmm.v18i2.1613>

SM, A., Lubis, A., & Sabrina, H. (2020). The Influence of Loyalty and Integrity on Leadership Policies at PT. Quantum Training Center Medan. *Scientific Journal of Management and Business*, 1(1), 21–30.

Swarjana, IK (2022). Knowledge Concepts Attitudes, Behavior, Perception, Stress, Anxiety, Pain, Social Support, Compliance, Motivation, Satisfaction, Covid-19 Pandemic, Access to Health Services. *Andi*, 4, 3–12.