



# Applied WebQual 4.0 to Evaluate SMART System in RSAB Harapan Kita for Health Good Services

Research Article

Noviandi <sup>1\*</sup>, Rahmawati Jalih<sup>2</sup>

1. Department of Informatics Engineering, Universitas Esa Unggul Jakarta, Jakarta 11510, Indonesia
2. Department of Medical Record, Universitas Esa Unggul Jakarta, Jakarta 11510, Indonesia

\*[Noviandi@esaunggul.ac.id](mailto:Noviandi@esaunggul.ac.id) (corresponden author)  
[Rahmawati\\_jalih@gmail.com](mailto:Rahmawati_jalih@gmail.com)

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## ABSTRACT

Website hospital applications are one of the technological developments that affect service quality. Therefore it is necessary to evaluate the quality of the information system provided in the hospital. The SMART application at RSAB Harapan Kita does not yet contain clear instructions or references. It does not perfectly present relevant information, and the officer states that they do not feel safe about personal information on the SMART application. The method used is webqual 4.0 with usability, information quality, and service interaction quality. Data collection was carried out, used a questionnaire given to 232 health workers at RSAB Harapan Kita, who interacted with the SMART application. The analysis technique used is descriptive analysis technique with a quantitative approach and cross-sectional research design. The results of this study showed 74.1% stated that the quality of the application was good, and 25.9% said that the quality of the application was not good, as much as 43.5% stated that the quality was sufficient when viewed from the usability dimension, 40.9% in the information quality dimension, and 40.1% for the service interaction quality dimension.

**Keywords :** Evaluation of the quality of application systems, Hospital application systems , Webqual 4.0.

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## 1. INTRODUCTION

The World Wide Web (WWW), known as a website is one of the mass media in developed technology used to communicate and share experiences online (Zhang et al., 2010). In developed technology, websites are used for communication and support in making policies (Gretzel and Yoo, 2008). Websites or web-based applications can use to improve services, especially services performed at hospitals (Pasaribu and Sihombing, 2017; Pascapraharastyan et al., 2014; Susanto and Sukadi, 2011). Evaluation of the website needs to be done because a good website from the aspects of human, organization, and technology can improve the quality of service and policies beneficial to the organization.

Health Information System is a communication information technology system that processes and integrates the entire hospital service process flow in the form of a network of coordination, reporting, and administrative procedures to obtain accurate and accurate information, and is part of the Health Information System. Web-based applications are important for the world of health because they greatly affect the processes of health services in a hospital and services related to officers and patients, such as patient registration, doctor handling, supporting services, drug services, and record status. medical.

The web-based application system in the hospital is good if it can help health services run better, facilitate hospital staff's work and that patient services occur quickly, and increase satisfaction and produce a good hospital name. As stated in the Regulation of the Minister of Health of the Republic of Indonesia number 82 of 2013 concerning Hospital Management Information Systems, establishing a hospital management information system is carried out to improve hospital administration efficiency and effectiveness in Indonesia (Kementerian Kesehatan RI, 2013). As Mehraeen, Ahmadi, Mehdipour, and Noori in their research, hospital information systems support medical and clinical staff in their daily activities utilizing electronic data exchange processes, but vice versa (Mehraeen et al., 2014)

Evaluation of information systems is one way to see the quality of the system and information using the webqual 4.0 method. According to S. Barnes & Vidgen, the webqual is based on the concept of Quality Function Deployment (QFD), a process based on the "voice of customer" in developing and implementing a product or service. From the QFD concept, Webqual is compiled based on the end-user perception of a website (Barnes and Vidgen, 2000). According to Santoso and Anwar's research regarding evaluating the Kaskus web-based application system using the webqual 4.0 method, the website's is not by user expectations. There is a difference that shows a gap between the two assessment perspectives between the level of performance or actual quality perceived by users and the level of importance or

ideal quality expected (Santoso et al., 2015). RSAB Harapan Kita is a type A hospital located in DKI Jakarta and is a hospital that has implemented a web-based hospital application system called the SMART application. Initial observations suggest that the SMART application implemented in RSAB is expected to have several deficiencies based on the existing components in webqual 4.0, namely the Usability and Information Quality dimensions.

## 2. RESEARCH METHOD

### 2.1. WebQual 4.0

The WebQual method is used to measure a website quality based on the Usability variable, information quality, and interaction quality (Tarigan, 2008). The following are the three dimensions of webqual 4.0 used in the study (Pusfitaningrum and Malau, 2018). Tabel 1, shows webqual 4.0 dimation.

Table 1. WebQual 4.0 dimation.

Quality	Description
Usability	1. I Find site easy to learn to operate
	2. My interaction with the site is clear and understandable
	3. I find site easy to navigate
	4. I find the site easy to use
	5. The site has an attractive appearance
	6. The design is appropriate to the type of site
	7. The site conveys a sense of competency
	8. The site creates a positive experience for me
Information Quality	1. Provides accurate information
	2. Provides belieavable information
	3. Provides timely information
	4. Provides relevant information
	5. Provides easy to understand information
	6. Provides information at the right level of detail
	7. Present the information in an appropriate
Service Interaction Quality	1. Has a good reputation
	2. It feels safe to complate transaction
	3. My personal information feels secure
	4. Creates a sense of personalization
	5. Conveys sense of community
	6. Makes it easy to communicate with the organization

Quality	Description
	7. I feel confident that goods/services will be delivered as promised
Overall impression	

## 2.2. Frame of Mind

This research was conducted with a quantitative descriptive cross-sectional study to determine the dimensions that most influence the RSAB Harapan Kita information system. The collected data from October 2019 to May 2020. The variable studied in this study was the quality of web-based applications using the web equal 4.0 method based on three dimensions, as shown in Fig 1.

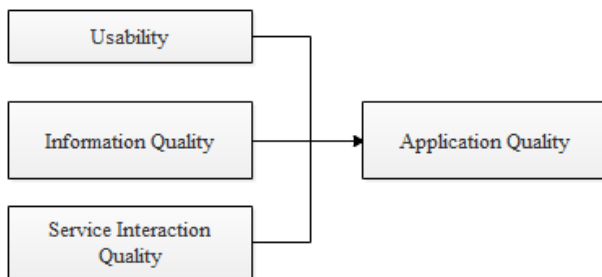


Fig 1. The frame of mind used WebQual 4.0 dimension.

Data were collected using a questionnaire after going through the validity and reliability stages for 232 health workers at RSAB Harapan Kita who taken using an accidental sampling technique. The questionnaire questions consisted of 22 questions from three dimensions of webqual 4.0 with a Likert scale, namely strongly agree, disagree and strongly disagreed.

Table 2. Statement items on questionnaire.

Quality	Description
Usability	The SMART application is easy to learn how to operate
	The interaction between the SMART application and the user is straightforward and easy to understand
	Easy to navigate within the SMART application
	The SMART application is easy to use
	The appearance of the SMART application is attractive
	The SMART application design suits the type of hospital application
	The SMART application contains clear instructions or references
	The SMART application creates positive experiences
	The SMART application provides accurate information.

Quality	Description
Service Interaction Quality	The SMART application provides reliable information.
	The SMART application provides information promptly.
	The SMART application presents relevant information.
	The SMART application provides information that is easy to understand.
	The SMART application provides the right level of information.
	The SMART application presents information in an appropriate format.
	The SMART application has a good reputation
	Feel safe to access the SMART application
	Feel secure about personal information on the SMART app
	The SMART app makes room for personalization
	The SMART application provides space between units
	The SMART application makes it easy to communicate with other units
The SMART application guarantees a high level of confidence in the information presented	

In this study, the data were analyzed using descriptive methods and quantitative approaches categorized into three categories: lousy quality, good enough and good quality using a statistical system, namely standard deviation, the mean for normally distributed data. If the data are not normally distributed then use the median approach (Cahyono, 2018).

Table 3. Quantitative approaches categorized.

Score	Category
Data < Median/Mean - ½ Standard Deviation	Lousy Quality
Median/Mean - ½ Standard Deviation ≤ Data ≤ Median + ½ Standard Deviation	Good Enough
Data > Median/Mean + ½ Standard Deviation	Good

$$Md = Lb + \frac{\frac{N}{2} - Fa}{fd} * I \quad (1)$$

Md : median  
Lb : insignificant lower bound of the median class  
Fa : cumulative frequency before the median level or lower class frequency  
fd : frequency in the median class  
I : width of the interval

$$\bar{x} = \frac{\sum f_i * X_i}{N} \quad (2)$$

where  $\bar{x}$  is mean,  $f_i$  is frequency,  $X_i$  center of class interval,  $N$  is total frequency.

$$\sigma = \sqrt{\frac{\sum f_i * X_i^2}{N} - (\bar{x})^2} \quad (3)$$

$\sigma$  : standard deviation  
 $\bar{x}$  : mean  
 $f_i$  : frequency  
 $X_i$  : center of class interval  
 $N$  : total frequency

### 3. RESULT AND DISCUSSION

#### 3.1. Validity test

The validity test is carried out to determine the accuracy and accuracy of measuring instruments or knowing that the measured variables will be studied (Yusup, 2018). The validity test result is the value of  $r$ -Table  $>$   $r$ -count of 0.347 for each question item. The test results (Table 4) state that the questions are valid and can be used.

Table 4. Validity test.

Dimensions	Question	r-Count	r-Table	Info
Usability	1	0,347	0,348	Valid
	2		0,468	
	3		0,605	
	4		0,383	
	5		0,418	
	6		0,661	
	7		0,636	
	8		0,430	
Information Quality	9	0,347	0,571	Valid
	10		0,579	
	11		0,478	
	12		0,493	
	13		0,724	
	14		0,562	
	15		0,730	
Service Interaction Quality	16	0,347	0,672	Valid
	17		0,637	
	18		0,615	
	19		0,655	
	20		0,384	
	21		0,414	
	22		0,594	

#### 3.2. Reliability test

The reliability test is carried out to see and measure

the level of reliability of a measuring instrument (Kim et al., 2020). The results of variable testing measured against three dimensions, namely usability, information quality and service interaction quality, are acceptable to measure the quality of the SMART application at Harapan Kita Hospital with Cronbach's alpha coefficient for the total scale of 0.982.

Table 5. Reliable test.

Cronbach's Alpha	N of Item
0,982	22

#### 3.3. Web-based application quality

Application quality is good if the dimensions of usability, information quality, and service interaction are suitable. Application is said to be not good if there is one dimension, the second dimension and even the three dimensions are of lousy quality.

Table 6. The results of the SMART application quality evaluation seen from the usability dimension.

Usability	Number of Respondents	Percentage
Quality is not good	76	32,8
Sufficient Quality	100	43,1
Good Quality	56	24,1

The evaluation results carried out on the SMART application at Harapan Kita Hospital from the usability dimension by asking questions to 232 health workers and not doctors stated that the quality of the SMART application was quite good with a user satisfaction level of 43.1%. Health workers at RSAB Harapan Kita assess that this application is not good, with a dissatisfied score of 32.8%. The application is not easy to use and takes a long time to understand every application's function. The difficulty encountered by health workers at RSAB Harapan Kita is that many health workers, such as nurses, do not know how to fill inpatient progress notes integrated into the SMART application. Assessments made from the point of view of instructions or references in the application are not well described. Fifty-six health workers said the SMART application was of good quality and suited the type of hospital application. The satisfaction percentage score was 24.1% because health workers said the SMART application was practical, profitable, liked, and accessed adequately.

The SMART Harapan Kita Hospital application is quite reliable, with a value of 40.9% from 95 respondents. The quality of the information produced is up to date. The data follows the discussion topic, is easy to understand, and the resulting data is more detailed in an appropriate design format. However, as many as 109 officers still considered that the Harapan Kita Hospital SMART had not provided the relevant information ideally. The data reported for bridging data on service fees to e-claims is not by the typical application for the inpatient unit. The quality of the information provided was not good, with a percentage value of 29.7%. The SMART application cannot display medical support

results such as radiology reports.

Table 7. Results of the SMART application quality evaluation viewed from dimension of information quality.

Information Quality	Number of Responden	Persentase
Quality is not good	69	29,7
Sufficient Quality	95	40,9
Good Quality	68	29,3

Table 8. Results of the SMART application quality evaluation viewed from the service interaction quality dimensions.

Service Interaction Quality	Number of Responden	Persentase
Quality is not good	64	27,6
Sufficient Quality	93	40,1
Good Quality	75	32,3

The Harapan Kita hospital SMART application's evaluation based on the dimensions of interaction quality is quite good, with value of 40.1% from 93 respondents. The SMART application provides security, increase user confidence when making transactions, and provides convenience in communicating between users. However, 106 officers still feel insecure about personal information on the SMART application.

#### 4. CONCLUSION

The usability dimension's application's quality is said to be adequate, with a percentage of 43.5% from the information quality dimension. It is said that it is sufficient with a ratio of 40.9%, and the service interaction quality dimension is said to be adequate with a percentage of 40.1%. The Harapan Kita Hospital SMART application's quality is assessed from all dimensions. It is said to be not good because of the 232 respondents, 172 respondents, or 74.1%, said that the Harapan Kita Hospital SMART application has terrible quality or explicit references, presenting relevant information and increasing security to feel safe making transactions or services.

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Noviandi received the Master of Computer Science (M.Kom) degree in Computer Science from Bogor Agricultural University (IPB) in 2016. His research interests include data mining and software engineering.



Rahmawati Jalih received the diploma degree in Medical Records from Esa Unggul University in 2020. His research interests include health information.