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E-Government Service Quality Based on E-GovQual Approach Case Study in West Sumatera Province

Albar[#], HA Mooduto[#], A Ahmad Dahlan[#], Yuhefizar[#], Erwadi[#], Darmawan Napitupulu[*]

[#] *Politeknik Negeri Padang, Sumatera Barat, Indonesia*
E-mail: albar@polinpdg.ac.id

**Research Center for Quality System and Testing Technology – Indonesian Institute of Sciences, Indonesia*
E-mail: darwan.na70@gmail.com

***Abstract*— This study aims to evaluate e-Government service quality especially in West Sumatera, Indonesia. The reason why the study conducted is that the difficulty obtaining available and accurate data from the Indonesian citizen regarding the implementation of e-government. The method used in this study is survey based on the e-GovQual questionnaire distributed to total 247 respondents to find out their perception of all the services provided by the e-Government website. The results showed that in general, the citizens agreed that quality of e-Government service provided by the government of West Sumatera province is good enough and meet their expectation regarding efficient, trust, reliability, citizen support, content & appearance of information, and functionality of interactive environment. However, e-Government service quality requires improvement due to the results obtained were still at a moderate level.**

***Keywords*— e-government; service quality; e-GovQual; West Sumatera; province**

I. INTRODUCTION

The increasing public demand for quality information and services provided by the government encourages every government agency to seek to meet those needs through the process of transformation towards e-Government [1]. Through the process of e-Government transformation, government agencies can optimize and utilize the advancement of Information and Communication Technology (ICT) to provide the widest access to information and services that the public demands. It is also an implication of the rapid development of ICTs and their widespread utilization potential in the era of globalization. The inability to adapt to the global trend will bring the Indonesian nation into the digital divide gap that is the isolation of global progress because it is unable to utilize information [2]. ICTs provide an opportunity for the structuring of various aspects of the life of the nation and the more open state in which the public interest can be placed in a central position. Changes in national and state life have fundamentally demanded a clean, transparent government and able to respond to the demands of change effectively. Therefore the government should be able to utilize the potential of ICTs to improve the ability to process, manage, distribute and distribute quality information and services to the public. In turn, all government agencies, communities and businesses can at all times utilize information and government services optimally.

Implementation of e-Government is not easy, rather than changing from the manual to computerization [3] or not by installing a computer even just limited to build government websites have been considered to implement e-Government [4]. Lack of correct understanding of the e-Government paradigm that often leads to failure in the process of its implementation. As mentioned that the government must make the process of transformation towards e-Government, especially the transformation of government bureaucracy culture both apparatus and management systems and work processes in the government-based electronic. This paradigm shift should also encourage the willingness of government agencies to change in order to realize e-Government as the agenda of national bureaucratic reform [5]. However, the portrait of e-Government conditions in Indonesia is not yet encouraging. International survey results show that Indonesia is far behind regarding e-Government adoption, especially when compared with developed countries. Based on the e-Government survey in Southeast Asia, Indonesia is ranked 110th well below Vietnam which is ranked 65 especially compared to Malaysia (59) and Singapore (10) [6]. In line with that, another e-Government ranking shows that Indonesia is ranked 29th out of 38 countries surveyed.

Indonesia is also far below Malaysia (25), Thailand (22) and Singapore (1) [7]. The condition of the utilization of e-Government at the national level is not much different. Indeed already many regions, departments or government agencies that have implemented e-Government. This is evident from the data taken a year after the policy of Inpres 3 of 2003 from 530 existing government agencies, 53.61% of whom already have their own website [8]. However, there is no doubt that disparities also occur between provinces/districts/cities/institutions in Indonesia for various reasons, such as different management, infrastructure, and human resources factors. The results of the e-Government rating survey in Indonesia in 2014 showed unsatisfactory results, of which 22 provinces were considered less than 50% (13) [9]. Based on the above data sources, Indonesia can be said to be one of the countries whose e-Government development is slow.

Finding out what government needs or do about the implementation of e-Government, many studies have attempted to formulate key success factors (CSF) especially in the implementation of e-Government system [10, 11, 12, 13, 14]. These success factors are the key areas that should be accommodated by government agencies to support the successful implementation of e-Government and one of the key success factors (CSF) that is successfully defined is quality service [14]. Therefore, the quality of services provided by the government (e-Government service quality) through e-Government becomes important to be considered and enhanced continuously where fast and transparent services are expected to reduce processing time and costs [15]. Quality public services become part of good governance. This study aims to determine the extent to which the quality of services provided by government agencies based on citizen perspectives. The locus in this study is West Sumatera Province. The result of the research is to show the picture of e-Government service quality, especially in City Government X as the baseline of the government service quality improvement in the future.

As mentioned earlier the service quality of an organization plays an important role because it can affect customers to use the products or services offered. Furthermore, the quality of service can create customer satisfaction which in turn will lead to customer loyalty [16]. To improve the quality of service requires evaluation or measurement to assess the effectiveness of the organization in providing services to customers. From the results of this evaluation obtained information and improvement recommendations that can improve the quality of service organizations, especially electronic-based services (e-services).

Several studies have undertaken e-service quality measurement and analysis activities such as Affan (2015) researched to analyze the quality of JDIH's website of documentation and legal information (JDIH) in Central Sulawesi [17] with the approach of the success model quality [18]. The results showed that the quality of the system (system quality) is not proven to positively affect the user satisfaction (user satisfaction), while other variables proved to have a positive effect. In addition, research conducted Candra Irawan (2012) that measures the quality of the website of Local Government of Ogan Ilir Regency based on user perspective [19]. The study used Webqual (Web Quality) method to find out what factors contribute to website quality. The results showed that the dimensions that exist in Webqual namely information quality, service interaction quality and usability have a significant and positive effect on website quality. Achmad Fuad (2013) has also conducted research to assess the quality of e-Government services using e-GovQual dimensions in East Java Provincial Government [20]. The e-GovQual instrument is modified and adapted to the conditions of the organization, in this case, the Provincial Government to represent e-Government in East Java Province. The results showed that all indicator variables measured turned out to be unsatisfactory or meet public expectations.

This study evaluated or analyzed the quality of public services in City Government X using E-GovQual approach. The E-GovQual instrument was developed to measure the quality of services provided by the government through websites from a public perspective. In other words, this research would like to figure out the extent of public satisfaction on service quality provided by City Government X by descriptive analysis.

II. Material and Method

The method used in this study is a survey aimed at public municipal government X to know public perceptions of the quality of e-Government services provided. The tool used is a questionnaire designed based on an e-GovQual approach to measure perceived quality of e-Government services based on six dimensions such as efficiency, trust, reliability, citizen support, content & appearance of information and functionality of the interaction environment. Thus, it can be obtained whether the service provided by the government has met citizen need or expectation. The questionnaire was design on the e-GovQual framework consisting of 6 (six) dimensions and 32 (thirty-two) indicators. The efficiency dimension consists of 7 (seven) indicators. Trust has 4 (four) indicators. Reliability consists of 6 (six) indicators. Citizen support has 4 (four) items. Content & appearance of information involves 7 (seven) items. The functionality of the interaction environment consists of 4 (four) items. Encouraging the assessment, a Likert scale of 4 (four) scales is used to measure respondents' perception of e-Government service quality where 1 indicates Strongly Disagree, 2 shows Disagree, 3 represents Neutral, 4 reveals Agree, and 5 designates Strongly Agree.

EGovQual is a framework developed to measure public perceptions of the quality of services from websites or e-Government portals. E-Government portal is a medium where people could obtain information or services needed [21]. The e-Govqual model surveys large number of literature related to website quality and e-service quality. The study found several service quality attributes may be applicable for both e-Commerce and e-Government while on the other hand there are attributes that are only appropriate for e-Commerce and some attributes suitable for e-Government. Whereas users of e-Commerce services certainly have different expectations with users of e-Government services [22]. The implication is that the service quality attributes proposed will be different. Therefore, the e-GovQual model is proposed to answer and analyze

attribute service quality appropriate for e-Government can be seen in figure 1 below:

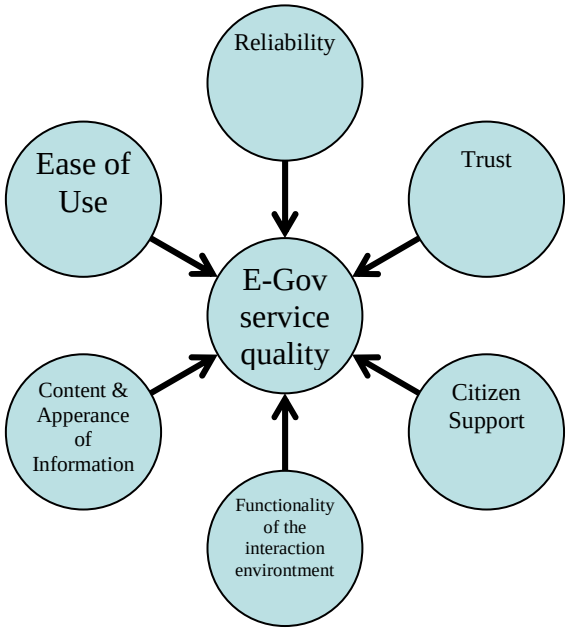

Fig. 1. Conceptual Research Model [21]

Operational variable in this study consists of efficiency (6 item), trust (4), reliability (6 item), citizen support (4 item), content & appearance of information (7 item) and functionality of the interaction environment (4 item) as presented in Table 1 below:

TABLE I
OPERATIONAL VARIABLES

No	Variable	Item
1.	Efficiency (X1)	This e-government site's structure is clear and easy to follow ($X1._1$)
		This e-government site's search engine is effective ($X1._2$)
		This e-government site's sitemap is well organized ($X1._3$)
		This e-government site is well customized to individual users' needs ($X1._4$)
		The information displayed in this e-government site is appropriate detailed. ($X1._5$)
		The information displayed in this e-government site is fresh ($X1._6$)
2.	Trust (X2)	Acquisition of username and password in this e-government site is secure ($X2._1$)
		Only necessary personal data are provided for authentication on this e-government site ($X2._2$)
		Data provided by users in this e-government site are archived securely ($X2._3$)
		Data provided in this e-government site are used only for the reason submitted ($X2._4$)
3.	Reliability (X3)	Forms in this e-government site are downloaded in short time ($X3._1$)
		This e-government site is available and accessible whenever you need it ($X3._2$)
		This e-government site performs the service successfully upon first request ($X3._3$)
		This e-government site provides services in time ($X4._4$)
		E-government site's pages are downloaded quickly enough ($X3._5$)
		This e-government site works properly with your default browser ($X3._6$)
4.	Citizen Support	Employees showed a sincere interest in solving users' problem ($X4._1$)
		Employees give prompt replies to users' inquiries ($X4._2$)
		Employees have the knowledge to answer users' questions ($X4._3$)
		Employees can convey trust and confidence ($X4._4$)
5.	Content & Appearance of Information	Completeness of Data on e-Government website (X5.1)
		Accuracy of data/information on e-Government website (X5.2)
		Relevance of data/information on e-Government website (X5.3)
		Update information on e-Government website (X5.4)
		Ease of understanding/ interpreting data/ information on e-Government (X5.5)
		Relation of data/information on e-Government website (X5.6)
		Graphic, Colour, Animation, and Size of Web page ($X5._7$)
6.	Functionality of the Interaction Environment	The presence of online assistance in the form of a complaint service form (X5.1)
		Use of features to facilitate future interaction (X5.2)
		Automatic calculation on form (X5.3)
		Adequate response format (X5.4)

III. RESULT AND DISCUSSION

A. Validity & Reliability Testing

The results of data collection through distributed questionnaire was total 247 data obtained from 300 respondents. Before the data is processed and analyzed the results of the questionnaire, testing the validity and reliability was conducted to find out whether the questionnaire had measured the data accurately and consistently. Results of testing the validity of the questionnaire in this study can be seen from the instrument validity index value r_{count} (corrected item-total correlation), whereas if r_{count} greater than r_{table} that item is said to be valid [23] are shown in Table 1.

Based on Table 2, it can be seen that all item has a value of r_{count} greater than r_{table}, where r_{table} for 247 respondents with significant probability 5% (0,05) is 0.125. Thus, the overall indicator or items in the questionnaire was valid because it has met the requirements (> 0.125).

TABLE II
RESULT OF VALIDITY TESTING

No	Item	Corrected Item-Total Correlation (r_{count})	Result
Efficiency (X1)			
1.	$X1._1$	0.631	VALID
2.	$X1._2$	0.689	VALID
3.	$X1._3$	0.653	VALID
4.	$X1._4$	0.678	VALID
5.	$X1._5$	0.638	VALID
6.	$X1._6$	0.643	VALID
7.	$X1._7$	0.661	VALID
Trust (X2)			
1.	$X2._1$	0.641	VALID
2.	$X2._2$	0.720	VALID
3.	$X2._3$	0.665	VALID
4.	$X2._4$	0.464	VALID
Reliability (X3)			
1.	$X3._1$	0.676	VALID
2.	$X3._2$	0.677	VALID
3.	$X3._3$	0.669	VALID
4	$X3._4$	0.698	VALID
5	$X3._5$	0.721	VALID
6	$X3._6$	0.675	VALID
Citizen Support (X4)			
1	$X4._1$	0.766	VALID
2	$X4._2$	0.762	VALID
3	$X4._3$	0.804	VALID
4	$X4._4$	0.813	VALID
Content & Appearance of Information (X5)			
1	$X5._1$	0.739	VALID
2	$X5._2$	0.772	VALID
3	$X5._3$	0.731	VALID
4	$X5._4$	0.690	VALID
5	$X5._5$	0.663	VALID
6	$X5._6$	0.760	VALID
7	$X5._7$	0.569	VALID
Functionality of the Interaction Environment (X6)			
1	$X6._1$	0.708	VALID
2	$X6._2$	0.758	VALID
3	$X6._3$	0.729	VALID
4	$X6._4$	0.714	VALID

Reliability testing in this study was conducted by computing coefficient of Cronbach alpha. According to Ghozali (2002), the Cronbach alpha technique is a accurate, fast, and economical technique that would indicate internal consistency index. The instrument is said to meet the Cronbach alpha reliability if the value is greater than 0.60. The results of reliability testing could be presented in Table 3. Based on Table 3, it can be shown that all operational variables reliably meet the requirement of Cronbach alpha (>0.6). The Cronbach Alpha values obtained respectively was 0.875 for efficiency, 0.802 for trust, 0.879 for reliability, 0.905 for citizen support, 0.898 for content & appearance of information and 0.872 for the functionality of the interaction environment. These results indicated that the instrument could be categorized as reliable. After testing the validity and reliability, it is both dependent and independent variables is said to have been eligible to do further analysis.

TABLE III
RESULT OF RELIABILITY TESTING

No	Variables	Cronbach Alpha
1.	Efficiency (X1)	0.875
2.	Trust (X2)	0.802
3.	Reliability (X3)	0.879
4.	Citizen Support (X4)	0.905
5.	Content & Appearance of Information (X5)	0.898
6.	Functionality of The Interaction Environment (X6)	0.872

B. Descriptive Statistics Analysis

Based on the results of questionnaires, a descriptive statistics analysis conducted. Based on Table 4, the respondent's answers can be seen that for each item/indicator, frequency response of "agree" has a higher percentage than other response. For example, item "the e-Government site's structure is clear and easy to follow ($X1._1$)" contained 64.4% of respondents agreed and the remaining 35.6% answered was strongly agree (14.6%), neutral (17.4%), disagree (3.2%) and strongly disagree (4.0%). This result indicates that e-Government website was easy to use by citizen". Likewise for item "data provided by users in this e-government site are archived securely ($X2._3$)", it can be seen that as many as 44.5% of respondents agree, 12.1% of respondents strongly agreed, 36.8% answered Neutral, 4.9% disagree and only 1.6% who answered strongly disagree. This result also indicated that citizens believed the e-Government website was secure for data transaction. Another item such as "this e-government site is available and accessible whenever you need it ($X3._2$)" showed that most of respondents agreed to this item (53.0%). It means the citizens admitted that e-Government website was reliable to be accessed. Two items that is "Data provided in this e-government site are used only for the reason submitted ($X2._4$)" and "Employees give prompt replies to users' inquiries ($X4._2$)" that has higher percentage of Neutral among other answers. This indicated that data provided by users should be clearly explained for what purpose and employees should also give faster response to the citizen's input.

Thus the results of frequency analysis of responses can be said the majority of the respondents agree that in general the e-Government service has a good quality in term of efficiency, trust, reliability, citizen support, content & appearance of information and functionality of interaction environment. In other words, it could be said that the service provided by e-Government was quite efficient and easy to use for citizens to interact with. Most of citizens also has no doubt to the security of data transaction occurs during online process. The quality of e-Government service provided bring the trust of citizens of accurately and on time delivered services. Besides, highly support from government officer was given to user's need related to services. The quality and appearance of information indicated that the website of e-Government was designed properly and fulfill the information needs of citizen. The e-Government also could provide the citizens get more connected, easier to communicate and interact with government.

TABLE IV
STATISTICAL – FREQUENCY ANALYSIS

No	Item	Strongly Disagree (%)	Disagree (%)	Netral (%)	Agree (%)	Strongly Agree (%)
1.	$X1._1$	4.0	3.2	17.4	64.4	14.6
2.	$X1._2$	1.6	5.7	24.7	55.9	12.1
3.	$X1._3$	2.4	3.2	24.3	55.5	14.6
4.	$X1._4$	2.4	6.1	26.3	50.6	14.6
5.	$X1._5$	1.6	5.3	28.7	52.6	11.7
6.	$X1._6$	1.6	5.7	23.5	49.8	19.4
7.	$X1._7$	1.6	3.2	28.3	51.4	15.4
8.	$X2._1$	2.0	3.2	36.4	47.8	10.5
9.	$X2._2$	3.6	7.7	38.1	40.5	10.1
10.	$X2._3$	1.6	4.9	36.8	44.5	12.1
11.	$X2._4$	3.6	13.0	38.1	36.8	8.5
12.	$X3._1$	0.8	5.3	35.2	49.0	9.7
13.	$X3._2$	1.2	4.9	21.9	53.0	19.0
14.	$X3._3$	1.2	3.6	30.0	49.0	16.2
15.	$X3._4$	1.6	4.0	32.4	48.6	13.4
16.	$X3._5$	0.8	5.7	31.6	47.8	14.2
17.	$X3._6$	1.2	5.7	27.1	46.6	19.4
18.	$X4._1$	0.4	6.1	35.2	47.0	11.3
19.	$X4._2$	2.0	4.5	44.9	36.0	12.6
20.	$X4._3$	4.0	4.5	34.0	47.4	13.8
21.	$X4._4$	0.8	4.5	35.6	44.1	15.0
22.	$X5._1$	1.2	4.5	23.9	57.9	12.6
23.	$X5._2$	0	4.9	29.1	49.4	16.6
24.	$X5._3$	1.2	5.3	31.6	48.6	13.4
25.	$X5._4$	4.0	3.2	23.9	54.3	18.2
26.	$X5._5$	0	3.6	24.3	54.3	17.8
27.	$X5._6$	1.6	4.5	30.4	49.8	13.8
28.	$X5._7$	0.8	5.7	27.1	46.6	19.8
29.	$X6._1$	2.8	4.0	26.3	53.8	13.0
30.	$X6._2$	1.2	6.1	30.8	47.8	14.2
31.	$X6._3$	0.4	6.9	39.7	40.1	13.0
32.	$X6._4$	0	6.9	29.6	47.0	16.6

In addition, based on the frequency or distribution of respondents, is also seen the descriptive statistics numeric form of Mean value of each variable or dimensions to see the level of agreement as shown in Table 5.

TABLE V
NUMERIC STATISTICAL DESCRIPTIVE

Variable	N	Minim	Max	Mean
Efficieny	247	1.86	5.00	3.7559
Trust	247	1.25	5.00	3.5040
Reliability	247	1.67	5.00	3.7247
Citizen Support	247	1.25	5.00	3.6326
Content & Appearance of Information	247	2.00	5.00	3.7756
Functionality of the Interaction of Environment	247	1.75	5.00	3.6731

Based on Table 5 above, it could be seen from descriptive statistics numerically that for variable of efficiency, the range of respondents between 1.86 until 5.00 in which the average value (Mean) produced was 3.7559 so that it can be said the respondents moderately agreed that the e-Government website was efficient to use. Variable of trust showed respondents have a range between 1.25 to 5.00 in which the average value (Mean) produced was 3.5040. Thus it can be said respondents also moderately agreed that e-Government website was secure related to its services. For the variable of reliability, the range of respondents between 1.67 to 5.00 in which the average value (Mean) obtained is 3.7247 also indicated respondents moderately agree the service delivered was reliable. For the rest of variables had also moderately agreement from users. It means the e-Government service quality must be improved in order to meet user expectations.

IV. CONCLUSIONS

Based on research that has been done can be concluded that the quality e-Government service based on user perspective was good enough and met the citizen needs or expectation according to e-GovQual framework. However, the government agencies should improve the quality of services provided since the user had shown moderately agreement.

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