

# Measuring the performance of G2G services in Iran

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**Abstract.** To highlight the growth of e-government and the importance of its services it is essential to evaluate the performance of the service delivery to customers. Research indicates that traditional performance indexes are not suitable for this evaluation; moreover, it is noticeable that the e-government services are intangible and invisible. Among different e-government services, measurement of quality government to government (G2G) services has been less attractive for researchers while crucial for government policy-makers. This calls for a better understanding of the specific needs of users of these services in order to provide appropriate type and level of services that meets those needs. In this paper, the performance of the G2G services is measured in the Iranian context. For this purpose, SERVQUAL, which is a well-known method for assessing service quality, is employed. This study proposes and tests a five-factor of SERVQUAL instrument to explain user satisfaction and gap analysis, between expectations and perceptions of its customers, consisting thirty ministries and main governmental organizations. Based on a Chi-square test, factor analysis, gap analysis and correlations, it is concluded the gap between expectations and perceptions of G2G customers is significant and customer satisfaction of G2G services is at low level.

## 1 Introduction

Government organizations usually rely on other government agencies information to deliver services. This makes the electronic interactions crucial for effective inter-organizational business processes management in the government, known as Government-to-Government (G2G). G2G is normally accessed via a government's intranet or private networks and may utilize some of the components of G2C and G2B services but generally require more direct access to databases and applications.

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There are many studies on e-government concept and its services, some have emphasized on service evaluation and their influence on the country.

G-to-G system of Iran revolves around three axes: needs, problems, and possibilities/ facilities. *Needs* was defined as the top factor in shaping the electronic administration of Iran's government. The notion of Government Electronic Administration (GEA) was the result of the president's offices need for collecting information from government agencies as well as the agencies' need for classified and access to the information at various levels. The need for GEA was due to many *problems* including inefficient management and also the need for expertise in the process of decision making as well as enhancing the productivity of scarce resources. Lack of various technological infrastructure as well as managerial, cultural and financial limitations were effective in changing the concept of electronic government into GEA [2] in Iran.

The type of assumed e-government services in some agencies and organizations are not qualified enough and they lead to many new problems. Therefore, e-government in Iran is conceptually a way to a new level of performance aiming at reducing the operations cycle time, offering prompt, quality, inexpensive services to demanding citizens as well as catering for the needs of officials who are not satisfied with the existing systems. Iranians GEA and Lenk and Trannmullers' model are somehow similar in establishing the type of e-government [1]. Although, both concentrate on the process and coordination of e-government development, they ignore the interaction of e-government with three major issues: e-business, knowledge and citizen requirements.

Always there exists an important question: why should service quality be measured? Measurement allows for comparison before and after changes, for the location of quality related problems and for the establishment of clear standards for service delivery. Edvardsen [3] state that, in their experience, the starting point in developing quality in services is analysis and measurement. The SERVQUAL approach, which is studied in this paper, is the most common method for measuring service quality. SERVQUAL as the most often used approach for measuring service quality has been to compare customers' expectations before a service encounter and their perceptions of the actual service delivered [4]. The SERVQUAL instrument has been the predominant method used to measure consumers' perceptions of service quality. It has five generic dimensions or factors and are stated as follows [5]:

- (1) *Tangibles*. Physical facilities, equipment and appearance of personnel.
- (2) *Reliability*. Ability to perform the promised service dependably and accurately.
- (3) *Responsiveness*. Willingness to help customers and provide prompt service.
- (4) *Assurance* (including competence, courtesy, credibility and security). Knowledge and courtesy of employees and their ability to inspire trust and confidence.
- (5) *Empathy* (including access, communication, understanding the customer). Caring and individualized attention that the firm provides to its customers.

SERVQUAL is a survey instrument based on extensive research. In particular, it measures what the customer expects from the organization in relation to these dimensions against what the customer perceives the organization performs along these dimensions, this is of major importance in selecting SERVQUAL among

existing instruments for this study because it can make clear the horizon of customer satisfaction and also significant difference between ideal and real conditions. This instrument is well proven and widely recognized. In addition, it identifies and understand where service gaps exist within the organization and between the organization and its customers prioritize those gaps in terms of relative impact on quality of service identify the reasons for the existence of those gaps develop a program of activities to close those gaps implement an appropriate set of processes to continuously review and refine customer service quality.

The primary objective of this study is to use SERVQUAL instrument in order to ascertain any actual or perceived gaps between customer expectations and perceptions of the service offered. It is also attempted to point out how management of service improvement can become more logical and integrated with respect to the prioritized service quality dimensions and their affections on increasing/decreasing service quality gaps. In the following, the model of service quality gaps and the SERVQUAL methodology is demonstrated and an example is presented to pinpoint the application of the SERVQUAL approach. Then, after a discussion, major conclusions are derived.

## 2 Research methodology

The concept of measuring the difference between expectations and perceptions in the form of the SERVQUAL gap score proved very useful for assessing levels of service quality. Parasuraman *et al.* [6,7,8,9], argue that, with minor modification, SERVQUAL can be adapted to any service organisation. They further argue that information on service quality gaps can help managers diagnose where performance improvement can best be targeted. The largest negative gaps, combined with assessment of where expectations are highest, facilitate prioritisation of performance improvement... Equally, if gap scores in some aspects of service do turn out to be positive, implying expectations are actually not just being met but exceeded, then this allows managers to review whether they may be "over-supplying" this particular feature of the service and whether there is potential for re-deployment of resources into features which are underperforming. Therefore, the first research question is:

**There is a gap between expectations and perceptions of e-government services, or in better words, expectations are greater than performance**

Service quality can thus be defined as the difference between customer expectations of service and perceived service. If expectations are greater than performance, then perceived quality is less than satisfactory and hence customer dissatisfaction occurs.

The measurement of service quality can provide specific data that can be used in quality management; hence, service organizations would be able to monitor and maintain quality service. Assessing service quality and better understanding how various dimensions affect overall service quality would enable organizations to efficiently design the service delivery process. By identifying strengths and weaknesses pertaining to the dimensions of service quality organizations can better

allocate resources to provide better service and ultimately better service to external customers. And finally the last research question is:

**Dimensions of questionnaire are independent of each other**

This evaluation has been focused on G2G sector and also, this will let us know if the organizations are satisfied with the given service quality of e-government plan? Among existing ministries and organizations some of them which are directly government- related organizations were the best choice.

**Table1.** List of ministries and organizations

Ministries	governmental organization
Science, Research & Technology	Environment Protection Organization
Crusade of Agriculture	Atomic Energy Organization
Islamic guidance and culture	Central Bank
Labor and Social Affairs	Physical Education Organization
Commerce	Management & Planning
Cooperative	Parliament
Energy	TV Radio
Foreign Affairs	Tax organization
Health and medical education	
Housing and Urban Development	
Industries and Mines	
Justice	
Economic and Property1	
Economic and Property2	
Oil	
Post, Telephones & Telegraphs1	
Post, Telephones & Telegraphs2	
Roads and Transport	
Country	
Welfare & Social Affaires	
Education	
Education 2	

### 3 Research finding

The mean, median, maximum, minimum, standard deviation was measured for all the questions. The minimum expectation for Question 1 is 5, while for most other questions as shown in the above table this figure is 1. However, the value for maximum expectation and perception was a constant 7 for all the questions shown in the table.

**Table2.** Descriptive statistics on questions

Question	Expectations					Perceptions				
	Mean	Median	Std.D	Min	Max	Mean	Median	Std.D	Min	Max
1	6.63	7.00	.615	5	7	3.83	3.00	1.84	1	7
2	5.20	5.00	1.73	1	7	4.17	4.50	1.72	1	7
3	4.47	4.00	1.13	2	7	2.97	2.00	1.93	1	7
4	5.97	7.00	1.60	1	7	4.17	5.00	1.85	1	7
<b>Tangibles</b>	<b>Mean:16.53; Median:17.50; Std.D:8.37; Max: 5; Min: 40</b>									
5	6.47	7.00	1.07	2	7	3.53	3.00	2.08	1	7
6	6.47	7.00	1.10	2	7	4.13	4.00	1.94	1	7
7	5.90	6.00	1.21	3	7	3.63	3.50	1.95	1	7
9	2.97	2.00	2.14	1	7	4.23	5.00	2.11	1	7
<b>Reliability</b>	<b>Mean:26.60; Median:27.50; Std.D:10.16; Max: 10; Min: 50</b>									
8	6.33	7.00	1.09	2	7	3.50	3.00	1.96	1	7
10	6.27	7.00	1.23	3	7	3.47	3.00	2.03	1	7
11	6.00	7.00	1.33	2	7	3.50	3.00	2.01	1	7
12	6.10	7.00	1.21	3	7	3.73	4.00	1.53	1	7
13	5.40	6.00	2.04	1	7	3.90	3.50	2.02	1	7
<b>Responsiveness</b>	<b>Mean:21.17; Median:20.00; Std.D:8.77; Max: 10; Min: 50</b>									
14	6.27	7.00	1.20	3	7	4.47	5.00	1.77	1	7
15	6.20	6.50	1.09	2	7	4.23	4.50	1.83	1	7
16	5.83	6.50	1.59	1	7	4.33	4.00	1.80	1	7
17	6.47	7.00	1.00	3	7	4.77	5.00	1.59	1	7
<b>Assurance</b>	<b>Mean:22.50; Median:20.00; Std.D:7.16; Max: 10; Min: 40</b>									
18	5.10	6.00	1.76	1	7	3.50	3.00	1.83	1	7
19	5.87	6.00	1.59	1	7	3.83	3.00	1.84	1	7
20	4.33	5.00	1.88	1	7	3.47	3.50	1.73	1	7
21	6.03	6.50	1.27	3	7	3.83	3.50	1.98	1	7
22	6.23	6.00	.927	3	7	4.53	5.00	1.77	1	7
<b>Empathy</b>	<b>Mean:12.37; Median:10.00; Std.D:5.86; Max: 4; Min: 20</b>									

In order to evaluate the user satisfaction, similar tests for each question is designed, each test has two hypotheses:

**$H_0$ : Gap between expectation and perception is significant.**

**$H_1$ : Gap between expectation and perception is not significant.**

Measured statistic for this test has chi-square distribution. In line with measured value for each statistic, all questions should be analyzed one by one. According to measured P-value of each question, if P-value is less than .05,  $H_0$  will be rejected in meaningful level of .95 and so  $H_1$  will be accepted. Also if P-value is larger than .05,  $H_0$  will be accepted in meaningful level of .95 and  $H_1$  has been rejected. If  $H_0$  is accepted, it means that there is no relationship between expectations and performance of respected organizations. In other words, user expectations and perceptions are independent as well as users of G2G services are dissatisfied. In the case that  $H_1$  is accepted, user expectations and perceptions are dependent and lead to user satisfaction.

Shortly, it is worth noting that each question with P-value less than .05 includes user satisfaction and each question with P-value larger than .05 entails to user dissatisfaction.

**Table3.** Respondents' satisfaction or dissatisfaction of G2G services in Iran.

Satisfaction and Dissatisfaction of ICT services users					
questio n	Chi- square	P- Value	Test result ( $H_0$ )	Descriptions	
1	11.75	.46	accepted	User dissatisfaction	
2	22.91	.81	accepted	User dissatisfaction	
3	23.46	.26	accepted	User dissatisfaction	
4	45.26	.03	rejected	User satisfaction	
5	17.98	.45	accepted	User dissatisfaction	
6	16.96	.85	accepted	User dissatisfaction	
7	15.98	.88	accepted	User dissatisfaction	
8	10.99	.89	accepted	User dissatisfaction	
9	37.57	.39	accepted	User dissatisfaction	
10	21.68	.59	accepted	User dissatisfaction	
11	24.64	.74	accepted	User dissatisfaction	
12	16.85	.89	accepted	User dissatisfaction	
13	42.06	.22	accepted	User dissatisfaction	
14	26.35	.33	accepted	User dissatisfaction	
15	17.09	.51	accepted	User dissatisfaction	
16	29.81	.47	accepted	User dissatisfaction	
17	27.67	.06	accepted	User dissatisfaction	
18	45.01	.14	accepted	User dissatisfaction	
19	17.11	.97	accepted	User dissatisfaction	
20	34.27	.27	accepted	User dissatisfaction	
21	13.93	.73	accepted	User dissatisfaction	
22	19.92	.70	accepted	User dissatisfaction	

Factor analysis categorized these questions into five components as shown in Table 1. Bold figures in each column represent the significant values in constituting the respective components. Questions 8, 10, 11, 12 and 13, which are in the component, presents Responsiveness feature of the SERVQUAL survey. Among these questions, question 8, providing services in promised time, has the lowest importance level in the G2G users' view. Also question 12, willing to help customer, is not important for the G2G users due to their significant inter-organizational transactions and less face-to-face communication. In the G2G context, most relevant concepts in the Responsiveness feature are giving prompt service to customer, telling customers exactly when the services will be performed, and never be too busy to respond to customers' request as demonstrated in questions 11, 10 and 13

respectively. The content of these questions in the G2G context is very similar to information dissemination.

Questions 14, 15, 16 and 17 in the second component are related to Assurance feature in SERVQUAL. Question 15, customers feeling safe in their transaction, can be ignored because of its insignificant impact and the rests are close to Confidence and Knowledge concept in the G2G context. Courteous and respectful behavior to operators inspires confidence and creates an ideal place for their transactions with those sectors.

Third component represents questions 1, 2, 3 and 4 and is related to the first feature of SERVQUAL, Tangibility. Analyzing the results indicates that question 3 compared to others in this group is insignificant. Based on the G2G concept, such as avoiding advertisement, contents of questions 4 and 2 underline Facing of ICT sector.

Questions 5, 6, 7 and 9 in the forth component are related to Reliability feature in SERVQUAL. According to the results, 9th question, error-free records, and question 6, showing interest in solving problems, can be omitted because of the negative value and insignificant role, respectively. The concept of the remaining questions is Time Management with respect to the G2G services.

Fifth feature of the SERVQUAL, Empathy, are entailed in questions 18, 19, 20, 21 and 22. According to the values in Table 1 all of the questions in this group except for 18, individual attention to customers, have insignificant role in the viewpoint of the G2G users and so, they can be ignored. This feature can be specified into Individual attention. These five new features introduce a new reversion of SERVQUAL that is customized for G2G services.

## 4 Conclusion

This study measuring customer satisfaction and difference between expectations and perceptions of customers for finding existing gap according to SERVQUAL model. Although no attempt was made at replication, the author borrowed from earlier studies, relying to a great extent on the service quality literature.

The results of this study suggested that e-government services organizations focus on five major elements (Tangible, Reliability, Responsiveness, Assurance and Empathy) if providing customer satisfaction is to be underscored in their strategic vision. Reliability strategy is important because ICT service users expect the performance of these organizations has been acceptable and customers have been satisfied at first time.

In today dynamic environment of information availability, Reliability does not mean only the performance in offering services but, rather includes a variety of other above factors that, the customers consider in order for their satisfaction to be met. Consequently, e-government agencies must continuously monitor the electronic information environment to provide customer-focused services. This is not suggested that the role of the government should be passive, reacting only to the demands placed on it. Government actually can play proactive role by forging partnership relationships with their electronic parts which offers these services and decreasing bureaucratic process in organizations and developing a variety of information and

services access options for themselves and their customers that meet cost and efficiency criteria.

Since it is superior and capable to other models, SERVQUAL model has been selected for evaluation of quality in G2G services in Iran among 30 ministries and major governmental organizations. Generally, assessment results indicated that governmental operators were not absolutely satisfied with most of the 22 questions. Lowest level of performance was related to question 5. Also, highest level of quality services was related to question 9.

Factor analysis recognized different dimensions and confirmed claim of investigators based on that SERVQUAL dimensions are not appropriate for all kinds of services. For means of environment of execution questionnaire in particular governmental organizations and G2G services, factor analysis identified new five dimensions called Information, Confidence and safety, Facing of ICT sector, Time commitment and Empathy.

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