

A Survey on the Rate of Public Satisfaction about Subway Facilities in the City of Tehran Using Servqual Model

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Received: 04 November 2017- Accepted: 05 May 2018

Abstract

Tehran suburb city rail Exploitation Company (Tehran subway) presents public transportation services to more than 3 million people in a day. Therefore, the way these services are presented and customer satisfactions' rate with the services presented to enjoy high importance. In the matters applied to the survey, first the expectations that users of this public transportation system have and the perception they had after using these services were examined by servqual services quality assessment model. The aim at this study is surveying the gap between the expectations and perceptions of customers from services presented by Tehran Subway Company. To provide necessary solutions to eliminating this gap or at least minimizing it with the aim of increasing subway service quality level by this model. The findings showed that the performance of Tehran Subway Company was under the expected rate of citizens from the credibility dimension, reliability dimension, empathy dimension, answering dimension and items marked of servqual model. Therefore, there is a need to take extensive practical measures for removing defects and mitigating this gap.

Keywords: Servqual model, Public transportation, Consumers satisfaction, Service quality

1. Introduction

The quality of public transportation system is its underlying components. Therefore, quality and effectiveness of transportation system should be investigated by different factors including the quality and effectiveness of presented services and serving the responsible companies (Fu and Juan, 2017; Grotenhuis et al., 2007). Sampayo et al (2008) studied traits of ideal and effective transportation systems of quality. In their studies, the access to transportation system is determined based on length of journey to individuals' destination and the station and distance from the next stop, and from there to the final destination.

The shorter the distance between the stations, access to this route would be easier and therefore transportation system servicing will increase. In addition, the maximum capacity of consumers is determined by number of passengers in rush hours to the capacity of vehicle and traffic facilitation, suggesting that the routs should be designed in this way (Liu et al., 2017). That is covered all the spaces and be given the choice right to the passengers. As be seen there are several elements that are influential in increasing the effectiveness and quality of a public transportation system. However, the point of interest in this study is to inspect satisfaction rate of the groups using subway journey and elements affecting this satisfaction. Moreover, as the conditions in market and thus consumers' expectations in economy and society of developing countries differ the studies related to this

subject greatly has been ignored (Algharabat et al., 2017; Mahamad et al., 2010). Although quality is a top priority of qualitative organizations; staff and decision makers might have been completely negligent due priority and importance of service quality. This has resulted in increased complaints and deficiencies and following that decreased public satisfaction with services that are under their authority (Kimita et al., 2016; Kelkar et al., 2010) Services are a set of measures person or organization takes for another person or organization (Panda, 2002). Service is an activity or benefit one side offers to another which is essentially intangible and has no possession on things; and the result might be physical or not. (Armstrong and Kotler, 1996).

A service provider's success depends on whether it has a high-quality relationship with its customers (Lympelopoulos et al., 2006), which, in turn, helps determine customer loyalty (Levesque and McDougall, 1996). Several studies have shown that service quality has an influence on organizational outcomes such as performance superiority, which increases sales profits (Kish, 2000; Duncan and Elliot, 2002; Fisher, 2001) and market share (Ehigie, 2006), which improves customer relations, enhances the company's corporate image, and promotes customer loyalty (Caruana, 2002). Moreover, the mentioned studies have also found customer satisfaction and service quality to be related to customer loyalty through repurchase intentions.

Panda (2002) believes that quality corresponds to a product or services with predetermined necessities. The

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quality of a product or service is its degree of accordance with determined standards for that product or service. In other words, quality means fulfilling consumer demands. These days, customers' demand determines the quality, and customer perceptions and expectations are considered the most principal element in determining quality.

Based on the existing definitions, service quality is the result of customers' comparison between their expectations of a service and their perceptions of how well the service has been offered (Parasuraman et al., 1988; García-Fernández et al., 2017). García-Fernández (2017) defined service quality as the discrepancy between customers' normative expectation for a service and their perceptions of service performance. Customers or service receivers evaluate service quality by comparing their perceptions and expectations about the received service (Lim and Tang, 2000).

Parasorman et al (1998) believe that perceptions indicate customer evaluation about the quality of presented service, while expectations are customer demands, they demonstrate their emotion to whatever service presenters should offer.

Gaining customers feedback is one of the most essential steps in supply and promotion of quality. The feedback obtained from customers' helps in recognition and prioritization of the logic, which should be constantly improved (Chin and Pun, 2002). However, there is seldom conformity between management recognition of their real perceptions and expectations, resulting in damaged service quality (Donnelly et al., 1995). Tehran and suburb city rail Exploitation Company (subway) is one of the service companies which serves a staggering number of customers per day. What is necessary for its life is its managers' awareness about perceptions and expectations of the service receivers. If it could not establish a conformity between these perceptions and expectations, surely the quality of the service presented by them will have a gap with the ideal range.

Parasorman et al (1998) believes that quality of products can be assessed by obvious comparison cannot be used for services. He, therefore, believes without an obvious assessment method of determining and recognizing service quality, this point should be noticed that costumers have expectations, and if they are not fulfilled, customer dissatisfaction occurs. They also have introduced the subject as a difference between consumers' expectations and demands and their perceptions of quality in service. Generally, it could be stated that one of the efficient tools for examining companies and organization service quality is service quality model (servqual), which is by a gap pattern, as introduced by parasorman and coworkers. Moreover, they presented five main service dimensions, including physical capacities, confidence, compatibility, responsibility, and reliance. Andaleeb (2001) has put service quality dimensions in his case study about health service quality of Bangladesh on the basis of responsibility, quarantine, correlation, discipline, and donation and has investigated the results from this view. Lim and tang carried out a study to test patients' perceptions and expectations about quality of

hospitalization services in Singapore (2000). Their study suggested that the responsibility dimension had the lowest degree of quality by patients' perceptions, while their expectation about this dimension was second in terms of importance (Lim and Tang, 2000).

Carydis et al., investigated Greek patients' perceptions and expectations about dental cares in 2001. The results obtained from their study showed that expectations about compatibility and quarantine dimensions were the topmost important priorities to the patients. In the present study, it has been assumed that there is a significant difference between passengers' perceptions and expectations about the performance of Tehran Subway Company (Figure 1) in dimensions of sensible cases, validity, responsibility, confidence and compatibility. Also, for this purpose, these cases have been performed through descriptive study and in the type of surveying with presenting questionnaire and combining the results together using servqual model.

The SERVQUAL model indicates service quality as the difference between a customer's expectations of service offering and the customer's perceptions of the service received. This makes it an attitude measure. What this model endeavors to measure exactly is the consumer perception of the service quality which depends on the level of the gap between expected service and perceived service which in turn, depends on the gaps under the control of the service provider such as delivery of service, marketing. This evaluation of service quality is based on both on how consumer evaluates the service delivery process and the result of the service. A well service quality is mentioned as one which meets or exceeds consumer's expectation of the service (Parasuraman et al., 1985).

2. Statistical Population and Statistical Sample

The statistical population consists of all real or assumed members to whom we were interested in generalizing the study findings (Jones and Park, 2008). In other words, the statistical population includes some of the considered ideal elements which at least have a significant attribute (Azar and Momeni, 2002).The statistical population of this study includes all passengers who use Tehran suburb city railway exploitation company facilities and have credit cards.

In this study, by the following sampling formula (1), 384 people have been chosen among Tehran and suburb city railway exploitation company (subway) consumers, as the statistical model.

$$n \leq \frac{Z^2 * \frac{\alpha}{2} * p * (1-p)}{d^2} = \frac{1.96^2 * 0.5 * 0.5}{0.05^2} = 384 \quad (1)$$

In the above formula (Barlett et al., 2001), sampling was done with a confidence level of 95% and with considering 5% error and $\alpha = 0.05$, $\frac{\alpha}{2} = 0.025$, $Z (0.025) = \pm 1.96$ has been considered. The value of p using product method is considered 50%. Likewise, the measuring tool error was considered 5%.

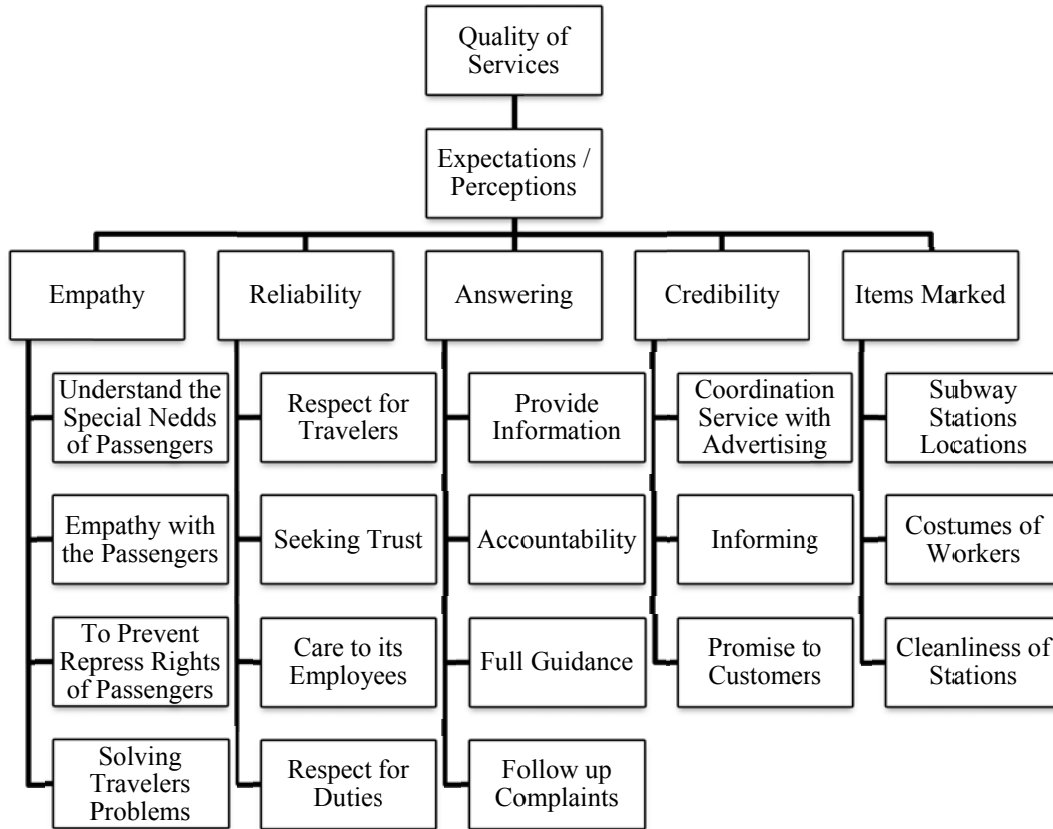


Fig. 1. Dimensions of investigations

3. Sampling Method

The sampling method has been classified randomly. The sampling method would be simple according to gender of classificatory passengers and in the final choice for filling the accidental questionnaire. Then, by designing questionnaire and distributing that among the statistical sample, necessary information was collected concerning passengers' perceptions and expectations about the performance of Tehran and suburb city railway Exploitation Company. To calculate reliability, Cronbach alpha methods were used, where the alpha value for 30 questionnaire using SPSS software was 0.8912, which is more than 0.7 (Kerlinger and Lee Howard, 2000). Therefore, the instrument's reliability was assumed reliable and finally paired sample t-test was used to analyze rate of correspondence or gap between passengers' perceptions and expectations about the performance of subway company performance. The results are further presented in next sections.

3.1. Passengers' Expectations and Perceptions

This section deals with the perceptions and expectations of subway system users. By the results of the questionnaire, the level of expectations and perceptions of the passengers according to 18 dimensions mentioned in Figure 1 is presented in the following table.

3.2. The Gap between Expectations and Perceptions

For studying the gaps between the expectations and perceptions of passengers, first the average of those expectations and perceptions were calculated, and then

using paired T-test, the mean of those parameters was studied. Paired t-test method is used to compare two population means where you have two samples that observations in one sample can be paired with observations in the other sample (Montgomery, 2017).

According to Table 2, In the Items Marked dimension, the mean difference between perceptions and expectations values was obtained as 0.87. In addition, the largest gap has occurred in the cleanness of stations item, which has been 1.23. Further, based on Table 3, in Credibility dimension, the mean difference between perceptions and expectations values was obtained as 1.61. Meanwhile, in this dimension, the greatest difference is observed in Coordination Service with Advertising item, which is 1.92. However, as can be seen in Table 4, in Answering dimension, the mean difference between perceptions and expectations values was obtained as 1.21, and the largest gap is seen in following up complaints item, which is 1.66. According to Table 5, in Empathy dimension, the mean difference between perceptions and expectations values was obtained as 1.24, where the largest gap is observed in To Prevent violation of Rights of Passenger item with 1.37. Eventually, according to Table 6, in Reliability dimension, the mean difference between perceptions and expectations values was obtained as 1.28. On the other hand, the largest gap has occurred in Care to its Own Employees item, which is 1.48. Therefore, the greatest difference between perceptions and expectations values of passengers is seen in Credibility dimension, suggesting that in this dimension, authorities should take more serious measures.

Table 1
Passengers' Perceptions and Expectations

		Completely Agree		Agree		Somewhat Agree		It Does Not Matter		Somewhat Disagree		Disagree		Completely Disagree	
		N*	P*	N*	P*	N*	P*	N*	P*	N*	P*	N*	P*	N*	P*
Costumes of Workers	Expectation	319	83.1	58	15.1	7	1.8	0	0	0	0	0	0	0	0
	Perception	100	26	146	38	125	32.6	6	1.8	7	1.8	0	0	0	0
Subway Stations Locations	Expectation	152	39.6	93	24.2	91	23.7	48	12.5	0	0	0	0	0	0
	Perception	81	21.1	122	31.8	110	28.6	46	12	25	6.5	0	0	0	0
Cleanliness of Stations	Expectation	337	87.8	34	8.9	7	1.8	6	1.6	0	0	0	0	0	0
	Perception	87	22.7	140	36.5	106	27.6	19	4.9	32	8.3	0	0	0	0
Informing	Expectation	237	61.7	100	26	33	8.6	14	3.6	0	0	0	0	0	0
	Perception	93	24.2	80	20.8	106	27.6	20	5.2	54	14.1	24	6.3	7	1.8
Promise to Customers	Expectation	231	60.2	121	31.5	20	5.2	12	3.1	0	0	0	0	0	0
	Perception	72	18.8	102	26.6	90	23.4	14	3.6	67	17.4	25	6.5	14	3.6
Coordination Service with Advertising	Expectation	230	59.9	128	33.3	26	6.8	0	0	0	0	0	0	0	0
	Perception	41	10.7	68	17.7	132	34.4	19	4.9	91	23.7	33	8.6	0	0
Full Guidance	Expectation	264	68.8	87	22.7	27	7	6	1.6	0	0	0	0	0	0
	Perception	74	19.3	118	30.7	127	33.1	6	1.6	33	8.6	6	1.6	20	5.2
Follow up Complaints	Expectation	253	65.9	92	24	33	8.6	6	1.6	0	0	0	0	0	0
	Perception	54	14.1	88	22.9	137	35.7	20	5.2	39	10.2	40	10.4	6	1.6
Accountability	Expectation	118	30.7	106	27.6	106	27.6	6	1.6	21	5.5	27	7	0	0
	Perception	54	14.1	88	22.9	99	25.8	46	12	41	10.7	37	9.6	19	4.9
Provide Information	Expectation	154	40.1	112	29.2	80	20.8	20	5.2	12	3.1	6	1.6	0	0
	Perception	68	17.7	90	23.4	109	28.4	33	8.6	47	12.2	31	8.1	6	1.6
To Prevent Repress Rights of Passengers	Expectation	237	61.7	101	26.3	34	8.9	6	1.6	6	1.6	0	0	0	0
	Perception	67	17.4	101	26.3	105	27.3	45	11.7	47	12.2	12	3.1	7	1.8
Solving Travelers Problems	Expectation	213	55.5	113	29.4	39	10.2	12	3.1	7	1.8	0	0	0	0
	Perception	55	14.3	108	28.1	121	31.5	20	5.2	55	14.3	18	4.7	7	1.8
Empathy with the Passengers	Expectation	285	74.2	73	19	26	6.8	0	0	0	0	0	0	0	0
	Perception	102	26.6	114	29.7	89	23.2	25	6.5	27	7	20	5.2	7	1.8
Understand the Special Needs of Passengers	Expectation	220	57.3	86	22.4	72	18.8	6	1.6	0	0	0	0	0	0
	Perception	53	13.8	140	36.5	113	29.4	52	13.5	19	4.9	7	1.8	0	0
Care to its Own Employees	Expectation	265	69	92	24	21	5.5	6	1.6	0	0	0	0	0	0
	Perception	62	16.1	111	28.9	103	26.8	48	12.5	40	10.4	20	5.2	0	0
Respect for Duties	Expectation	264	68.8	113	29.4	7	1.8	0	0	0	0	0	0	0	0
	Perception	48	12.5	134	34.9	150	39.1	6	1.6	32	8.3	7	1.8	7	1.8
Respect for Travelers	Expectation	267	69	96	25	19	5	5	1	0	0	0	0	0	0
	Perception	58	15	130	33	105	26	54	14	35	9	18	5	0	0
Seeking Trust	Expectation	250	68	104	28	11	3	0	0	0	0	0	0	0	0
	Perception	46	12	132	34	150	38	8	2	36	9	21	5	0	0

*N: Number of Passengers, P: Percent of Passengers

Table 2
Average of Expectations and Perceptions in Items Marked Dimension

	Cleanliness of Stations	Subway Stations Locations	Costumes of Workers	Items Marked
Expectations	6.83	5.91	6.81	6.52
Perceptions	5.60	5.49	5.85	5.65
Gap	1.23	0.42	0.96	0.87

Table 3
Average of Expectations and Perceptions in Credibility Dimension

	Coordination Service with Advertising	Promise to Customers	Informing	Credibility
Expectations	6.53	6.49	6.46	6.49
Perceptions	4.61	4.91	5.10	4.87
Gap	1.92	1.57	1.36	1.61

Table 4
Average of Expectations and Perceptions in Answering Dimension

	Follow up Complaints	Full Guidance	Accountability	Provide Information	Answering
Expectations	6.54	6.59	5.55	5.93	6.15
Perceptions	4.88	5.25	4.69	4.95	4.94
Gap	1.66	1.34	0.86	0.98	1.21

Table 5
Average of Expectations and Perceptions in Empathy Dimension

	Solving Travelers Problems	To Prevent Repress Rights of Passengers	Empathy with the Passengers	Understand the Special Needs of Passengers	Empathy
Expectations	6.34	6.45	6.67	6.35	6.45
Perceptions	5.02	5.08	5.39	5.35	5.21
Gap	1.32	1.37	1.28	1.00	1.24

Table 6
Average of Expectations and Perceptions in Reliability Dimension

	Respect for Duties	Care to its Own Employees	Seeking Trust	Respect for Travelers	Reliability
Expectations	6.67	6.60	6.33	6.67	6.57
Perceptions	5.29	5.12	5.33	5.39	5.28
Gap	1.38	1.48	1.00	1.28	1.28

Based on paired T-Test results, which can be seen in Table 7, Sig. values are less than 0.05, meaning that the difference observed between perceptions and expectations

values of passengers is statistically significant (Taeger and Kuhnt, 2014).

Table 7
Comparing Expectations and Perceptions in Servqual Models

	Sig.	Degree of Freedom	T-Value	Pair Spaces				
				Sig. Value in 95 Percent		Standard Error of the Mean	Standard Deviation	Mean
				Min	Max			
Items Marked	0.00	383	18.368	0.94	0.76	0.046	0.90	0.87
Credibility	0.00	383	21.371	1.79	1.46	0.070	1.48	1.61
Answering	0.00	383	18.737	1.54	1.02	0.453	1.46	1.21
Empathy	0.00	383	15.529	1.37	0.98	0.070	1.42	1.24
Reliability	0.00	383	21.710	1.40	1.17	0.050	1.16	1.28

4. Conclusion and Discussion

Institutions and organizations as well as all public transportation service providers should eventually be responsible for passengers and their service users in their own national or international territory. Therefore, it is of significant importance to evaluate the outcome of the performance of these organizations and the quality level of their service via obtaining and studying passengers' and public thoughts' viewpoints. If the performance evaluation is accomplished properly and constantly, it will lead to improvement and promotion of public transportation system performance.

As Tehran Subway Company offers transportation service to more than 3 million passengers per day in Tehran, passengers' satisfaction rate with the service and quality of the company enjoys great significance.

In this study, attempts were made to evaluate expectations that passengers have about subway company services based on Servqual service quality assessment model first. Furthermore, the perception of service quality which has been developed among passengers after using subway services has also been obtained. The goal of this task is to evaluate the gap between passengers' perceptions and expectations regarding the services presented by Tehran Subway Company. This, in turn, helps to present necessary solutions to filling or eliminating the gap.

The results achieved to show that there is a significant difference between passengers' perceptions and expectations about the performance of Tehran and suburb city railing exploitation company (subway). From the view of items marked, before using the company services, passengers expected that stations would be available across all key places of Tehran. They also anticipated more well-dressed subway personnel and stations with high level of cleanness. However, after using subway

services, what they observed were below their expectations level from the view of credibility dimension. Before using subway company services, passengers expected that the company should inform appropriately, and assure its customers clearly and within the specified time. However, after using and becoming familiar with the subway company, their expectations have not been met.

From the view of answering dimension, before using subway services, passengers expected that the company gave them all information they needed, personnel have the preparation required for answering their questions, the answers are completely clear and transparent and far from any complications and ambiguity. Eventually, if they had any resent or complaint about the services, the Subway Company makes itself committed to pursue it. Nevertheless, after using subway services, most of passengers' expectations had not been fulfilled from the view of empathy dimension. Before using subway service they expected that the company takes passengers' needs into account, be empathetic with passengers and avoid transgressing passengers' rights and does its best to solve problems happened to the passengers during their journey. However, their expectations were greater than what they observed in practice.

From the view of reliability dimension, before using subway company services, the customers expected that the company has completely polite attitude to passengers, can earn the passengers trust, pay necessary attention to its personnel as company's interior customers and does its own tasks properly. Nonetheless, after using subway services there was a significant difference between their perceptions and expectations.

5. Results and Future Studies Offerings

To decrease the gap between passengers' perceptions and expectations about the status of Tehran subway public transportation system, many practical measures are needed.

Establishing toilet in subway stations, using boards and directing signs in the manner that every station position in the cite is well exhibited, using uniform clothes for all station personnel, being more serious in cleaning stations, cell phone connection lines covering in subway stations, developing stations to key parts of the city, addressing the problems due to vendors' presence in subway wagons, allocating a part of each station to answering to passengers questions about subway transportations service, planning for more wagon and facilities on rush hours to reduce passengers crowds in subway wagons, predicting better medical places and facilities for passengers who suffer from unexpected physical difficulties, preparing booklets to guide better the passengers that are not familiar with subway transportation routes and facilities, establishing an accountability culture by subway company, presenting primitive education to subway personnel to increase their abilities are among deficiencies which resulted in passengers' dissatisfaction with subway transportation

facilities in the city of Tehran. These trainings could be prepared by precise investigation on these deficiencies so that the solutions to tackling with dissatisfaction are found. In this way, the public satisfaction level with subway facilities, for which staggering costs have been spent, will be enhanced.

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