

## The Effect of Service Quality on the Bus Users' Satisfaction

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**Abstract:** This study presents to identify the key determinants influencing users' satisfaction of bus transit in the city of Kerman, Iran. It is essential to consider the customer's point of view which is relevant for evaluating the performance of a transit service. Factor analysis is used to examine 29 attributes delivering by service contributors. The factors were judged by the public transport users in the main bus Terminals in Kerman to obtain a deeper understanding of their opinion and concerns which are vital in making the bus transit services more organized. Findings of this study revealed that accessibility is the priority of users' satisfaction followed by five other significant factors including comfort, time, reliability, safety and cost for the users' satisfaction from operating and performance of public transport services. The Kerman Bus Organization (KBO) policy makers may use corrective actions in their strategic plans that can better cater the public transport users.

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### 1. Introduction

Ison and Wall (2002) believe that it is crucial to improve public transportation. In some countries, having observed people's needs and demands, practical strategies have already been started to develop better public transportation. The majority of findings indicated that the quality improvement of service in the public transit is the priority of user satisfaction in public transport. They define customer satisfaction as an overall attainment of customer expectation measured by percentage (Tyrinopoulos & Antoniou, 2008).

To eliminate problems relative to transportation modes in some countries, bus services have been updated and rescheduled, walkways have been installed, and metro services have been reorganized (Pucher, Park, Kim, & Song, 2005). China, India, Mexico and Thailand policy makers put a lot of effort to keep up with people demands relative to transportation to provide them with more and better facilities. When users' needs and expectations are taken into consideration, effective strategies can be identified to improve the problems with the system, and consequently increase customer satisfaction. Eboli and Mazzulla (2011) argue that Customer Satisfaction Survey (CSS) helps the policy makers to find out which factors are more important to their customers to prioritize the future service improvements.

In Iran, bus services have been the major public transportation mode in urban areas than other

alternative transportation mode such as railway transits and those which are not extensively developed yet (see Figure 1). Nevertheless, the supply of the bus services has not been able to keep up with the growth of its population. In short, supply has been maintained the same, whereas the demand has been thriving. Undeniably, a small portion of passengers switch slowly from using the bus services to other alternative modes of transportation including mini-vans, taxis and private vehicles (TDFM, 2007).

Kerman the capital city of the biggest province in Iran faces with increasing car use. According to Official Census Result (2011), the rapid population growth in Kerman over the last decade has increased demand for public transport services which cannot be properly met, resulting in overloading of buses, as well as traffic congestion in the city. So far, the quality of the bus services does not satisfy the public demand which, in turn, attracts increased use of private cars and motorcycles.

Apparently, the bus operating performance in Kerman is far from the World Bank standards (Najafabadipour, 2011). Due to high demand and limited services catered, passengers generally are not satisfied with the bus services; most passengers have no choice, but to board the urban buses. However, it can be seen that car owners has increased dramatically over time, the cost of maintaining and owning cars seem to be much more affordable these days. Low and stable gasoline price in Iran compared to other

countries encourages even more people to own their vehicles. In result, a small portion of passengers switch slowly from using the bus services to other alternative modes of transportation including private vehicles and taxis.

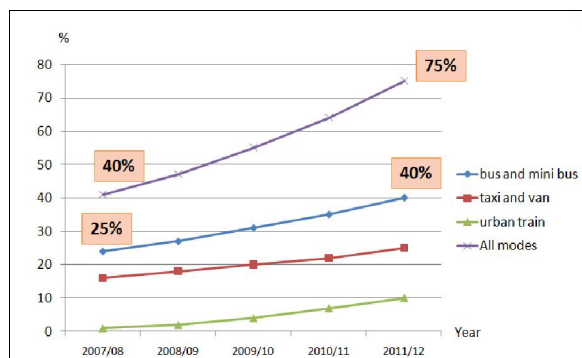


Figure 1 The Share of Urban Public Transportation in Iran Within 5 Year;  
Source: (TDFM, 2007)

The process of assessing passengers' satisfaction is to identify customer's priorities and the measurement by using appropriate method. This paper investigates the theory of customer satisfaction on bus transit in the city of Kerman. The components of service quality of urban public transport operation in Kerman are duly reviewed aiming at determination of respondents' satisfaction by using factor analysis method.

Understanding passenger's preferences is essential to see the reason for choosing transportation mode. People interest to use car as a mode of transport. The reasons are comfort, speed, convenient and individual freedom (Anable, 2005; Hagman, 2003; Jensen, 1999). Beirao and Sarsfield Cabral (2007) believed that to increase public transport usage, the service should accommodate the required levels of customers. They interviewed customers in Porto to find out dissatisfying factors. They count waste time, too crowded, lack of comfort, time uncertainty, lack of control, unreliability, long waiting times, need to transfer, they cannot change route to avoid traffic congestion, lack of flexibility, and long walking time as the factors that dissatisfy them.

Customer dissatisfaction could be a reason for people not to use public transport (Friman, Edvardsson, & Gärling, 2001a; Friman & Gärling, 2001b). Publishing the benefits of using public transport such as environmental concerns and pollution reduction is important to attract people using transport services. (Anable, 2005). In a study conducted by Eboli and Mazzulla (2007) the important customer satisfaction factors for bus transit services were service quality attributes. In his study,

respondents were asked to rate the importance and satisfaction with 16 service quality attributes such as bus stop availability, route characteristic, frequency, reliability, bus stop furniture, bus overcrowding, cleanliness, cost, information, promotion, safety on board, personal security, personnel, complains, environmental protection and bus stop maintenance. Eboli and Mazzulla revealed that service planning which is reflected in reliability, frequency, information, promotion, personnel and complaint were the important latent variables for global customer satisfaction.

Tyrinopoulos and Antoniou (2008) and Geetika (2010) employed factor analysis to identify the factors affecting the level of customer's satisfaction of bus transportation. The objective of the factor analysis is to try to discern and recognize the underlying unobserved factors that the respondents perceive. Therefore, in this study the same method was used to identify factors determining passenger's satisfaction on the urban bus services. From the reviewed literature this study picks up the service quality attributes to investigate the most important customer satisfaction factors for the bus transit users in the city of Kerman, Iran by factor analysis.

## 2. Material and Methods

This study was conducted in the urban area of Kerman, the capital city of Kerman Province in the south-east of Iran with a population of 496,684 in 2006.

Heavy congestion in Kerman is particularly linked with increased number of vehicles on the road, poorly motorized vehicles, and indiscriminate diffusion of the automobile and poor strategies for traffic rule enforcement. Bus fares are gradually increased over time to sustain its operation, but the service level remains poor (K.B.O., 2009). Furthermore, the passenger's satisfaction depends on their attitudes towards transportation. However by improving the public transport system, it is not expected that all bus users, in general, will be satisfied using public transport by considering that the system cannot provide all requirements and preferences of the general public. Regular passengers of urban bus lines were the target of the sample survey to have a service quality measured based on user perceptions. According to Metra (2006), Kerman municipality has 50 bus lines consisting of 31 urban and 19 suburban. The bus lines cover a distance of about 733 km, and the routes have 886 bus stops. Daily service time is about 14 hours, from 6.00 am until 8.00 pm; the bus fleet consisting 152 buses including 10 ancillary buses, with 6 minutes average waiting time in every bus stop while they run on average 21 km/hr. Also, the ticket cost varies with the distance, from a

minimum fare of Rial500 to a maximum of Rial1250 (approximately 10,000 IRR=1.00 USD; 2009). There are about 104,000 passengers commuting by bus daily, with total area population of approximately 500,000.

Kerman is currently facing continuous and critical challenges in sustaining the urban bus transportation. Generally, factors taken into consideration including landscape availability, increasing population, oil resources (accessibility, availability, pricing), automobile dependencies, socio-economics, alternatives to urban bus transportation, feasibility of adaptation, governmental policies and increasing demand for better bus services. With bus price hikes, and more and better alternative modes of travel, potential passengers are demanding for better bus services. Heavy congestion in Kerman is particularly linked with increased number of vehicles on the road, poorly motorized vehicles, and indiscriminate diffusion of the automobile and poor strategies for traffic rule enforcement. All of these factors are linked to the other in one way or another, affecting the overall sustainability of urban bus transportation. The rapid population growth in Kerman over the last decade has driven increased demand for public transport services which cannot be properly met, resulting in overloading of buses, as well as traffic congestion in the city. In short, supply has been maintained the same, whereas the demand has been thriving. Nevertheless, the supply of the bus services has not been able to keep up with the growth of its population.

For instance, network and structural design of the bus organization is poor. Buses in Kerman are operated by KBO, a state owned establishment. Most of the buses (>25%) are assigned to Line 101 from the total 31 Lines. Line 101 is the main line between two city centers Azadi and Moshtagh. On average, only 2~3 buses are assigned per route, in which these routes cover further distances compared to Line 101, which covers only 3.85 km. Despite the unmet demands being covered by taxies and minivans, the bus covering route Line 101 is always overcrowded and unsatisfactory, considering there is a provision of bus only lane along route Line 101 as well.

Financial problem is another issue surrounding urban public bus transit in Kerman. For the past few years, KBO had been making losses. For instance, this can be viewed from the operating ratio calculated from fiscal year 2008/2009, the operating ratio being the total revenue divided by the total cost, which is only 0.926. Line 101 is the only profitable route of the

total 31 routes, and with the current level of subsidy, KBO will unlikely be able to sustain bus services in these other lines in the near future. Despite the overcrowding buses en-route Line 101, the bus company is not making increased profit.

Primary data for operating performance (and service quality) is judged mainly upon commuters' satisfaction through their responds to the questionnaire.

As mentioned in the literature review, the service quality attributes of urban bus customer satisfaction and perceptions were obtained by reviews and exploratory studies. The attributes for satisfaction are identified by interviews which conducted with the passengers. The preliminary surveys and reviews generate general variables for passenger satisfaction on buses, as well as bus stops and terminals which supported by literature review. Then they refined to form a questionnaire. The questionnaire was developed based on previous researches conducted in passengers' satisfaction area (Eboli & Mazzulla, 2007; Hensher & Prioni, 2002).

Before preparing questionnaire, attributes of service quality has to be pre-determined in advance. In a study, conducted by Hensher and Prioni (2002), 13 attributes were used for establishing the weights that signal the contribution of each attribute to the overall service quality index which are: 1. being reliable, 2. frequency, 3. walking distance to the bus stop, 4. waiting time, 5. safety, 6. access to bus, 7. air conditioning, 7. cleanliness of seats, 8. info at bus stop, 9. travel time, 10. bus stop facilities, 11. fare, 12. driver attitude, and 13. safety on board. They believed that although specific attributes may be included or excluded in particular settings and countries, but the measurement approach should remain. The original instrument used to collect data for the present study was in English language. Since the respondents of the current study are Iranian, the instruments were translated to Persian language. The back-to-back translation of the instruments protected the reliability and validity of the items.

The survey questions measured each attribute of a factor on a 5-point Likert Scale with "being very dissatisfied" indicating the least favorable response and "being very satisfied" reflecting the highest favorable response to each statement. As reviewed in the literature, this study picks up 29 attributes and the questionnaire included them to measure the satisfaction from operating and performance of services, as shown in

Table 1. These attributes were applied to public transport users and they were asked to assess the importance and their level of satisfaction about the current bus transport system in Kerman.

*Table 1. The 29 attributes*

- |  |  |
|--|--|
| 1. Existence of Bus Lines;                       | 2. Distance to Nearest Bus Stop;               |
| 3. Access to Next Leg of Journey;                | 4. Network Coverage;                           |
| 5. Service Provision Hours;                      | 6. Bus Stop Location;                          |
| 7. Number of Stops & Distances in Between Stops; | 8. Bus Crowdedness;                            |
| 9. High Floor Buses                              | 10. Availability of Shelter & Benches at Stop; |
| 11. Provision of Information;                    | 12. Temperature/Humidity on Bus;               |
| 13. Driver Behaviour;                            | 14. Availability of Seating on Bus;            |
| 15. Behaviour of Other Passengers;               | 16. Bus Condition;                             |
| 17. Time of Fare Collection;                     | 18. Travelling Time;                           |
| 19. Waiting Time at Stops;                       | 20. Boarding/Alighting Time;                   |
| 21. Punctuality (Runs That Arrive on Time);      | 22. Scheduling (Runs That Arrive on Schedule); |
| 23. Safety at Bus Stop;                          | 24. Safety on Board;                           |
| 25. Security at Bus Stop;                        | 26. Security on Board;                         |
| 27. Cost of Travel Based on Quality of Ride;     | 28. Cost of Travel Based on Distance;          |
| 29. Cost of Regular Buses Compared to AC.        |  |

Construct Validity is used to determine the validity of questionnaires. Kaiser-Meyer-Olkin (KMO) test was used to determine the suitability of data for factor analysis. It measures the sampling adequacy, which is constantly fluctuating between 0 and 1. If the KMO value is less than 0.5, then the data is not suitable for factor analysis. If the value falls between 0.50 and 0.69, the factor analysis needs to be addressed more carefully. In addition, if the value is more than 0.70, the correlations among the data will be suitable for factor analysis, and it indicates the adequacy of the sample and variables. (KMO range=0.0-1.0, acceptable value should be more than 0.5) (Pallant, 2011).

Buses in Kerman are operated by Kerman Bus Organization (KBO). The target population was the Kerman City bus commuters. They were homogeneous in their use of buses, but heterogeneous in other aspects (income, career, etc.). Their opinions were obtained and studied since they would be the best to evaluate the existing level of services and level of satisfaction with such services.

To reduce data collection error and estimates reliability of the scales, a pilot study was conducted. In this study the pilot study was conducted on a small sample of 100 randomly selected respondents. The entire area was clustered by each bus terminal. From each cluster, a number of bus stops were chosen by random selection. According to research protocol, respondents didn't identify themselves to respond to the questions freely. They were also given the options to withdraw from the study or skip questions they did not want to answer. The clusters (main terminals) are illustrated below:

1. Moshtagh containing 10 ends of bus lines;
2. Azadi with 14 ends of bus lines; and

3. Valiasr including 7 lines ends (see Figure 1).

*Figure 1 Data Collection Clusters*

The pilot survey was completed within the last two days of April 2009, whereas the main survey and interview on passengers' satisfaction of the bus services was conducted several days during the month of May, 2009, near the school days. Passengers were asked about their desire to participate in the survey, if so, they were asked to complete questionnaire under the data collector guidance. If the respondents were educated, they filled it by themselves; otherwise the interviewer did it based on the respondent's verbal responses.

The questions raised to respondents include demographic profile such as age, education level, purpose of trip, characteristics of the trip (points of origin and destination, distance of nearest bus stop to their home, number of transfers made to reach final destination, length of travel time) and their perception of the service quality (adequacy of information, security in the bus while travelling, timeliness, fare, etc.). The questionnaires were distributed among 1000 people and 985 were collected. Finally 686

questionnaires obtained after deleting the uncompleted ones, which was an effective response rate of 70% (686 out of 1000).

### 3. Results

The data was analyzed by using SPSS 18 software. The output of the statistical method is then interpreted to assess the users' perceived satisfaction with respect to the bus transit systems. An interview has been conducted for 686 passengers and their characteristics are reported in

Table 2. More than half (65%) of the respondents were females. Majority (86%) of the respondents were younger than 30 years old. Most (76%) of the surveyed people live less than 500-meter walk to the nearest bus stop, and 24% of them live further than 500 meters. Respondents were asked about the purpose of the trip for their recent journeys. The results indicate that "education" and "work" accounts for over half of all trips, and "shopping" accounts for 10% of trips. These percentages imply that the majority (65%) of bus commuters are students and employees.

Table 2. General Characteristics of the Respondents (n=686)

Characteristics	Categories	Percentage
Gender	Male	35%
	Female	65%
Age	<20	44%
	20-30	42%
	31-40	9%
	>40 year-olds	5%
Education Level	Under diploma	31%
	Diploma	35%
	Bachelor	32%
Travel Method to Stop	Master or PhD	2%
	Walking	58%
	Taxi	23%
Distance to Nearest Bus Stop	Other	19%
	<300	50%
	301-500	26%
	501-1000	12%
Purpose of Trip	>1000meter	12%
	Education	31%
	Work	34%
	Shopping	10%
Interchange Between Lines	Other	25%
	0	32%
	1	16%
Travel Time	2	27%
	3 and more interchange	25%
	<30	47%
	31-60	35%
	61-90	10%
	>90 mins	8%

Table 3 shows that the survey comprises some points concerning the local bus services about the passenger experiences of a certain recent journey. The

reason for this is for the passengers to focus on their experiences when answering questions concerning their attitudes toward the bus service. This table shows passengers' response to the questions on a 5-point Likert Scale as "being very dissatisfied" indicating the least favorable response, and "being very satisfied" reflecting the highest favorable response to each statement.

Table 3. Frequency and Percentage of User Responses to Service Quality Attributes

How Satisfied Are You with the Following? From 1 Being Very Dissatisfied to 5 Being Very Satisfied; NA (=Not Answered)							
Satisfaction Rating		1	2	3	4	5	NA
Bus Line Existence	Count	341	194	32	29	9	67
	Percentage	50.7%	28.9%	4.8%	4.3%	1.3%	10%
Distance to Nearest Bus Stop		27.4%	32.3%	20.9%	11.1%	4.4%	3.8%
Access to Next Leg of Journey		24.3%	32.3%	19.5%	10.8%	6.2%	6.9%
Network Coverage		43%	27.2%	12.7%	6.9%	6.6%	3.5%
Service Provision Hours		48.1%	28.8%	7.5%	5.5%	7.4%	2.8%
Bus Stop Location		25.4%	27.9%	20%	12.9%	8.1%	5.7%
Number of Stops & Distance Between them		33.7%	28.6%	16.6%	10.1%	7.5%	3.5%
Bus Crowdedness		69.4%	22.8%	4.4%	1.3%	1%	1%
High Floor Buses		49.7%	20.7%	8.7%	4.6%	2.5%	3.8%
Availability of Benches & Shelter at Stops		50.3%	30.8%	7.6%	4.8%	4.4%	2%
Provision of Information		56%	25.7%	8.3%	4.4%	3.2%	2.3%
Temperature/Humidity on Bus		69.8%	19.1%	4.4%	3.5%	1.9%	1.3%
Driver Behavior		48%	27.9%	14%	6.6%	2.2%	1.3%
Availability of Seating on Bus		55.2%	26%	10%	4.6%	2.7%	1.6%
Behavior of Other Passengers		58.4%	26.3%	8.2%	5.3%	0.7%	1%
Bus Condition		47%	29.4%	9.5%	6.5%	4.2%	3.5%
Time of Fare Collection		25.3%	25%	23.5%	12.2%	11.5%	2.5%
Travel Time		27.3%	21.3%	19.1%	7.8%	19.8%	4.7%
Waiting Time		17.2%	27.5%	22.6%	13.1%	14.4%	5.3%
Boarding/Alighting Time		37.1%	29.2%	14.5%	10.7%	6%	2.5%
Punctuality (Runs That Come on Time)		62%	22.7%	5.6%	2.6%	4.8%	2.2%
Scheduling (Runs That Come on Schedule)		56.8%	23.2%	7.2%	3.5%	5.1%	4.1%
Safety at Bus Stops		32.9%	24.2%	13.1%	7.1%	13.6%	9.1%
Safety on Board		56.7%	26%	8.3%	4.9%	2.8%	1.3%
Security at Bus Stops		36.5%	24.7%	13.7%	9.3%	11%	4.9%
Security on Board		58.2%	22.6%	6.2%	5.7%	4.4%	2.9%
Cost of Travel Based on Quality of service		22%	21.6%	17.3%	12.5%	19.8%	6.9%
Cost of Travel Based on Distance		23.2%	21.1%	18.3%	12.4%	19.3%	5.8%
Cost of Non-AC Buses		68.3%	17.3%	5.3%	4.1%	3.1%	1.9%

Derived from Table 4, adequacy of data is proven by KMO index of 0.885 (a value of 0.6 is a suggested minimum), Bartlett's test of Sphericity with approximate chi-square value of 4246, degrees of freedom 406, and significant value of 0.000.

Altogether, these tests provide a minimum standard, which should be passed before a factor analysis is being conducted. Thus, validity of factor analysis is confirmed.

Table 4. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.885
Bartlett's Test of Sphericity	Approx Chi-Square	4246.17
	Df	406
	Sig.	.000

The observed variables explain latent variables of the unobserved service quality aspects. The latent

variables are defined with an exploratory factor analysis (EFA) utilizing principal component analysis.

To establish the number of components, only the eigenvalues greater than or equal to 1 were used (Guttman, 1954; Kaiser, 1960). The factor analysis revealed that, 6 factors are found to have Eigen values greater than 1 and hence, are significant (Figure 2). In this analysis, using principal component analysis, 50.49% of the total variance is explained by these 6 obtained factors.

The factor loading of the variables determining satisfaction in each factor, Eigen values, and present of variation explained by factors, are shown in Table 5. This table shows 6 factors with a factor loading of at least 0.4 for each question. The factors are labeling as follows: Factor 1 is highly related with bus line availability, distance to nearest bus stop, access to next leg of journey, network coverage, service provision hours, bus stop location and number of stops and distance between them; thus, it represents access. Factor 2 is related with bus crowdedness, bus level floor, availability of benches and shelter at stop, provision of information, temperature and humidity on bus, and behavior of other passengers; thus, it represents comfort and convenience. Factor 3 is highly related with fare collection time, travel time, waiting time, and boarding and alighting time; thus, it

represents time. Factor 4 is highly related with safety and security on board and at bus stops; thus, it represents security factor. Factor 5 is highly related with punctuality and scheduling; thus, it represents reliability factor. Finally, factor 6 is highly related with cost of travel, cost based on quality of service and distance, and cost of Air-conditioned (AC) bus compare to regular bus; thus, it represents cost factor. In addition, given that loading factor of question 16 (bus condition) was less than 0.4, it was excluded from further analysis.

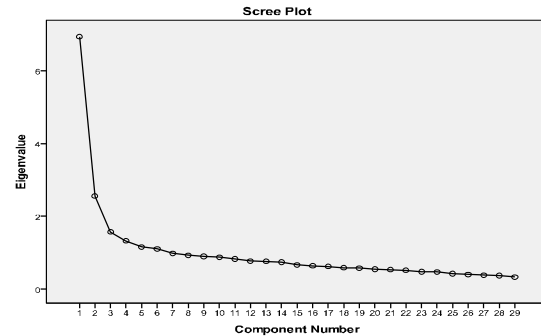


Figure 2. Scree Plot; Eigen Value of Component

Table 5. Factor Analysis Results; Rotated Component Matrix

Attributes	Component					
	1	2	3	4	5	6
Existence of bus line	-.157	<b>.575</b>	.113	.007	.126	.145
Distance to Nearest Bus Stop	.246	<b>.607</b>	-.065	-.066	.166	-.012
Access to Next Leg of Journey	.128	<b>.614</b>	.138	.122	-.059	.109
Network Coverage	-.046	<b>.726</b>	.204	.141	.066	.086
Service Provision Hours	.192	<b>.453</b>	.186	.057	.114	.161
Bus Stop Location	.139	<b>.628</b>	.069	.243	.054	.086
Number of Stops & Distance Between them	.175	<b>.525</b>	.147	.385	.064	-.031
Bus Crowdedness	<b>.503</b>	.287	-.242	.143	.015	.312
High Floor Buses	<b>.510</b>	.333	.350	-.109	-.015	-.127
Availability of Benches & Shelter at Stops	<b>.540</b>	.192	.084	-.030	.321	.054
Provision of Information	<b>.696</b>	.025	.030	.000	.050	.052
Temperature/Humidity on Bus	<b>.706</b>	-.054	.023	.069	.090	-.024
Driver Behavior	<b>.539</b>	.085	.145	.292	.055	.017
Availability of Seating on Bus	<b>.532</b>	-.016	-.090	.461	.041	.102
Behavior of Other Passengers	<b>.490</b>	.198	.256	.239	.126	-.006
Bus Condition	.391	<b>.259</b>	.117	<b>.092</b>	<b>.379</b>	-.016
Time of Fare Collection	.277	.180	<b>.463</b>	.112	.129	.073
Travel Time	-.053	.046	<b>.703</b>	.205	.077	.126
Waiting Time	.034	.120	<b>.668</b>	-.072	-.074	.269
Boarding/Alighting Time	.169	.232	<b>.541</b>	.177	.202	-.050
Punctuality (Runs That Come on Time)	.125	.131	.085	.158	<b>.821</b>	.014
Scheduling (Runs That Come on Schedule)	.160	.063	.095	.023	<b>.807</b>	.137
Safety at Bus Stops	.367	.366	-.070	<b>.402</b>	-.023	.186
Safety on Board	-.038	.166	.454	<b>.535</b>	.279	.074
Security at Bus Stops	.014	.369	.313	<b>.600</b>	.134	.024
Security on Board	.215	.106	.097	<b>.637</b>	.034	.120
Cost of Travel Based on Quality of service	-.100	.206	.320	.054	.058	<b>.710</b>
Cost of Travel Based on Distance	.033	.247	.335	.117	.055	<b>.654</b>
Cost of Non-AC Buses VS AC	.372	.012	-.108	.111	.102	<b>.486</b>

<b>% of Variance</b>	<b>23.895</b>	<b>8.808</b>	<b>5.421</b>	<b>4.579</b>	<b>3.987</b>	<b>3.805</b>
<b>Eigen Value</b>	<b>6.930</b>	<b>2.554</b>	<b>1.572</b>	<b>1.328</b>	<b>1.156</b>	<b>1.103</b>

Extraction Method: Principal Component Analysis  
 Rotation Method: Varimax with Kaiser Normalization  
 Rotation converged in 6 iterations

Descriptive statistics that reflect the mean scores, standard deviations, and variance, are provided in

Table 6. The mean scores of dissatisfaction fluctuating between 3.31 and 4.26 suggest large-scale improvement in each of these dimensions is needed to bring about a satisfying and value driven bus service based on the mean scores illustrated in Kerman. The results also show that the variation of passenger’s

viewpoint is varying from 16% to 31%. The results clearly show how users behold bus services. Access, comprises of seven items, has a mean of 3.65 (s = 0.89); comfort has a mean of 4.26 (s = 0.69); time has a mean of 3.31 (s = 0.98); reliability has a mean of 4.19 (s = 1.13); security has a mean of 3.80 (s = 1.00), cost has a mean of 3.44 (s = 1.06).

Table 6. Descriptive Statistics of Observed Variables

		Access	Comfort	Time	Reliability	Security	Cost
N	Valid	686	686	686	686	686	686
	Missing	0	0	0	0	0	0
Mean		3.65	4.26	3.31	4.19	3.80	3.44
Std. Deviation		.89	.69	.98	1.13	1.00	1.06
Minimum		.00	.00	.00	.00	.00	.00
Maximum		5.00	5.00	5.00	5.00	5.00	5.00
Coefficient of Variation		.24	.16	.29	.27	.26	.31

Service reliability is crucial for the transit users and it is among the six major priorities of users’ satisfaction. When travelling respondents want to feel in control and this comprises punctuality and transport which is on time. Also, direct frequent public transport service is preferred. Changing vehicles during a journey is not favored, unless it is perceived as simple and fast. People also prefer to have a direct frequent public transport service. Generally, people want to have easy and fast journey, therefore changing vehicles during their travel enhance dissatisfaction.

Safety issue is another constraint for people to choose public transport as mode of travel choice. Respondents found that safety and security threats when they travel by bus. This is in line with Smith and Clarke (2000); they found that people do not select public transport when travelling because of safety issues. Pick- pocketing, overcharging due to overcrowding and lack of supervision are some of the important features all of which lead to insecurity among passengers that have a negative impact on their satisfaction with public transportation.

Public transport is cheaper than using a car as transport and users understand this. It seems a main factor for changing to public transportation. Public transport lower income users perceive cost as very important. It is interesting to point out that respondents were unhappy about bus travel cost which is the last important factor. Hence the implication is

cost is perhaps less important than what most surveys suggest (Guiver, 2007). However, if the public transport service is unreliable, has a low accessibility or lack of comfort people tend to shift to other modes of transportation as public transport is not deemed as a suitable alternative.

Moreover, in terms of bus travel, the tendency is to focus on the worst performances, as it may be more influential as compared to average performances (Guiver, 2007). For KBO, the treatment of passengers who are dissatisfied is the implication which should be the main consideration, a finding which supports previous research (Friman et al., 2001a; Friman & Gärling, 2001b; Guiver, 2007).

**4. Discussions**

The focus of this research was on the passenger’s perception of transit performance. Factor analysis has been used as a statistical method to assess the variability of the users’ perceived satisfaction of public transit systems. The analysis of the 29 attributes that affect the public transport users’ satisfaction provides a useful insight about the factors that need special attention. It is therefore crucial to understand what individuals want, the service attributes most important to them, and reasons for switching to public transport.

Among the 29 attributes, factor analysis discerns the major determinants that affect the public transport



users' satisfaction which are: comfort, reliability of services, security, accessibility, time, and cost. The result of this study can be used as a guideline for public transport administration, in accordance with the factors for improving services and commuter (passenger) satisfaction, specifically on bus operation, may be enhanced.

Factor analysis is a good statistical method for the policy makers to make better the transit services provided for the passengers. The key findings indicate that, KBO should improve the service quality to attract more users. The KBO policy makers may use corrective actions in their strategic plans that can better cater the public transport users.

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