

Passenger's Perception and Consumer Satisfaction towards Public Transportation in Karnataka

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Abstract:

Roads and highways are regarded it as arteries and veins of transportation because they mirror the country's economic growth. Karnataka has a well-developed mass transit network that combines the state's various regions. Karnataka's administration is among the first to take the bold step of promoting public-sector cooperation and infrastructure growth. Karnataka's road network has had a major impact on passenger expectations, service efficiency, access to public responsibilities, as well as, most importantly, standard of living. In general, passengers have a variety of issues while travelling in public sector bus transportation, and this study aims to quantify these issues and suggest solutions to minimize needs and enhance understanding, as well as determine the degree of passengers' perceived service quality in the Karnataka State Road Transport Corporation.

Keywords: Customer Satisfaction, Efficiency, Passenger Perception, Service Quality, Transportation.

1. INTRODUCTION:

1.1. Theoretical Framework:

Transportation plays a major role regarding country's financial growth and community expansion. Road transport particularly one of the highly extensively used type of transport all over the world. Also important is that to provide accessibility to rural areas. Transportation helps in economic development by creating employment and involving the physical movements of individual and goods. The people in India use bus as a transport for the short and medium distances[1]. Apart from buses the railways are also offering the night trips within the long distance. In order for the world of public transportation to be examined, it's important to wonder about:

- How satisfied the customers are?
- Which factors affect (dis)satisfaction from the provided services?

It's for a product or a service, service quality is considered to be among the most crucial component. As organizations providing different products need to be much more cautious so there is a specific mindset that plays a critical role in attracting and maintaining customers, the company is overshadowed through others if it fails to satisfy the customers. The fundamental premise is that there is a direct correlation between a specific service and the customer's understanding of it. To increase transportation usage, the infrastructure should be planned and delivered in such a way that it accommodates the level of service needed by consumers. The current global problems have also impacted many individuals and businesses. The scarcity and rising prices of petroleum products were one of the main causes of these crises. As a result of the rise in inflation, layoffs began to decline. Because of the lower job security, luxuries were less affordable. The goals of this paper are to examine the problems, as well as the factors that influence people's perceptions of the quality of service offered by public transportation companies, and to gain a deeper understanding of overall customer satisfaction in these companies.

1.2. Industry Overview

Karnataka, situated on the western edge of Deccan Plateau, has been one of Today's most important states for transportation. It opens bent the sea for its neighbors Maharashtra and Goa on the north, Andhra Pradesh on the east, state and Kerala on the south, and it opens bent the sea for its neighbors Maharashtra and Goa on the west. It covers an area of 191,791 square kilometers. Bangalore is really the capital of this southern state and is known as the geographical center of India. Roadways, railroads, airways, as well as waterways link the state's 27 districts. The total length of motor-able roads is 150,000 kilometers[2]. Only within Karnataka state, how both public and private sectors (operating through Karnataka State Road Transport Corporation, KSRTC) provide road transportation services. KSRTC is in charge of 14 Karnataka zones. KSRTC and specific drivers are also both present in several districts. Just KSRTC operates bus services in the remaining districts.

In India, public bus transportation is extremely important. Not only as an effective public bus system for meeting mobility needs in this increasingly rising economy, but a higher proportion of bus transportation will have a positive effect on congestion and energy demand as well (by reducing the pressure on private transport vehicles). Appropriate policy initiatives in developed countries will aid in the expansion of rural mobility in

particular. Buses now account for 34% of total transit ridership[3]. Depending on road conditions, the numbers of crossings, as well as favorable treatment, today's buses are normally conventional as well as run at reasonable speeds. The modes of travel chosen by travelers is determined by a number of considerations. The current research focuses on tracking subjects as they meet the goal of determining the need for public bus transportation.

- Mandate of the Transportations
- Eminence of Service
- Behaviors of Customer

1.2.1. Mandate of the Transportations:

The regressions are bus fares and motoring costs, real personal income, and repair frequency provided by vehicle kilometers per person, and the demand for transportation is defined as passenger journey per person. With the help of a separate panel, demand for transportation is estimated as a function of fare, service quality, and income. The cost of the item, the cost of available alternatives, and the amount of wealth or income are all monetary variables. Non-monetary variables include product attributes such as consistency and other features, as well as customer preferences. Non-economic characteristics of households, such as demographic or cultural characteristics, are used to describe consumer preferences. such as occupations, lifestyles, ages and genders.

1.2.2. Eminence of Services:

Quality of service is more difficult to maintain than quality of product. It backed up the customer's viewpoint. It's almost always the contrast between some of the service's final outcome and the customer's expectations prior to just the service. There are four intrinsic characteristics of service that are not present in products. Intangibility, perishability, inseparability, and variability are the four characteristics. SERVQUAL is a research instrument that measures service efficiency. The SERVQUAL methodology was built on the assumption which quality of service is the discrepancy between what customers expect and how they rate the service they got.

1.2.3. Behaviors of Customers

In response to technological activity, consumer behavior is thought to have a mental decision-making process. The decision process and physical activity that individuals participate in when assessing, purchasing, using, or discarding goods and services can be described as consumer behavior. The following factors have been established as having the greatest overall impact on consumer behavior:

- Outside ecological variable manipulating behavior.
- Determining factor of Separate behavior
- Choice of processes for customers.

The demand for KSRTC buses in the Bengaluru, Mysore, Shivamogga route is evaluated using a theoretical framework but upon analyzing demand for transportation, service quality, including customer behavior[4].

Nowadays competition has increased between the competitors because of the kind of survival in business world. In this competitive world the customer is demanding and expecting to be served better by the service organization. So public transportation industry focus on a lot of challenges for providing high quality service to passengers[5]. Therefore, providing superior service should be an important strategy by public transportation system and satisfy their customers. Nowadays, transportation service is rapidly growing all over the country, especially in the cities. So, customer can choose best performer among their transportation. However, it is still questionable how people identify the service quality as well as the satisfaction stages provided by the public transportation.

As a result, the current research focuses on the Karnataka State Road Transport Corporation's operational success in the Bangalore, Mysore, and Shivamogga divisions. The study examines customer loyalty and perceptions, and suggests ways to enhance the services they provide. The primary focus of this research is on passengers' perceptions of KSRTC service efficiency. This research is primarily focused on the cities of Bangalore, Mysore, and Shivamogga. This study is based primarily on primary and secondary data. The total sample size for these three cities is 300. For this study, the passenger service efficiency of the KSRTC questionnaire is framed from the passengers' perspective.

1.3. Current Situation of the Transportation System:

The country's transition through a farming to any manufacturing economies, as well as the resulting rise in populations modes of transportations, have put significant strain on the passenger road transportation system. State Road Transport Units (SRTUs) seem to be unable to generate sufficient financial revenues, resulting in insufficient facilities and sluggish growth. From both inside and outside the STUs, there is a desire to improve their performance.

KSRTC's operations in the Bangalore, Mysuru, and Shivamogga routes were investigated[6]. The study included only passengers travelling from Bangalore to Mysore and Shivamogga and vice versa. The passengers largely varied in terms of their socioeconomic circumstances, which may have influenced their perceptions and expectations of the KSRTC's services. In this context, the research was carried out to discover the factors that

contribute to and also affect passenger satisfaction with regard to the quality of service offered, the attitude of service staff, problems experienced, and various changes anticipated while using the services. Once identified, the flaws and difficulties would aid KSRTC in meeting the transportation industry's challenges. The KSRTC's transportation services, according to the report, play an important role in the country uplifting.

2. LITERATURE REVIEW

Several researches have been done to analyze the satisfaction of consumers and passengers of public transportation and what are the customer perception towards public transportation services and also to examine the customer's suggestion and recommendation to improve service level of the passengers. In this customer's satisfaction is linked with the customer's perception before buying the services in public transportation (KSRTC). Like what made customers to choose services from KSRTC from many other offering the same transport services. Later in the research is attempt for filling research gaps and understand and analyze the factors that are contributing to the customers' satisfaction of public transportation.

The importance of transport regulation cannot be overstated[7]. It implies that individual transportation services are available in adequate quantity and consistency (in terms of safety) to meet demand. The most important thing is to offer facilities at a reasonable cost. Using results from case study method conducted in Faisalabad in Pakistan, Colombo in Sri Lanka, as well as Dar es Salaam in Tanzania, this paper aimed to demonstrate its need for and value of transportation programs in developing countries like Tanzania.

In this research paper, mainly it shows the passenger perception towards usage of KSRTC local area buses and it gives its best in service and the focus of this paper is on passengers' perceptions of the quality of service provided by KSRTC local buses, as well as passengers' understanding of the services provided by the passengers[8]. KSRTC had a strong culture that "passengers' satisfaction is more important" but this paper says that there is a lot of things to do in matter of passenger's satisfaction and this transportation must implement the more potential as well as qualified and highly efficient workers to achieve its goal.

The factors affecting passenger satisfaction with public transportation in the Czech Republic are the subject of this article[9]. The aim of this study was to measure and classify the most important factors affecting customer satisfaction with Czech public transportation services. To categories variables according to their reciprocal relations, a factor analysis with method Varimax was used. The proposed model was evaluated using structural equation modelling, and the best model with the most important factors was found. This paper also covers the theoretical underpinnings of these processes. Questioning yielded the data that was analyzed.

In these journals mainly we can see the focus on the passenger's perception and tells the service quality of the Tamil Nadu state road transport corporation (K)ltd. [10]. Its researches essentially after main as well as secondary information in this they are going to find the service quality of public transportation system. They tell there is a need of uniformity to attracts the customers or passengers they are asked to music sound system in buses and first aid kit is also the important thing is important for the safety of the passenger's and passengers are asking to the table showing the departure and arrival of bus is important. These are important things tells about the research paper.

We can see that the objective one mentioned that all of the subsequent attributes on served have a big impact on overall satisfaction with public transportation shuttle transportation[11]. Traveler time, punctuality, clear details, good staff conduct, and assured board protection are qualities that attract and satisfy customers to shuttle transportation. As a result, passengers are drawn to public shuttle transportation because of the pace of departures, as most travelers are time aware.

3. METHODOLOGY

3.1. Design:

The aim of this study is to determine customer satisfaction as well as the organizational effectiveness of KSRTC, a public sector undertaking that operates in Bangalore, Mysore, and Shivamogga, in based on qualitative as well as quantitative aspects of transportation services. It is an observational research. The secondary information for this analysis was gathered from the official website of the KSRTC. Purposive sampling techniques have been used for data collection. Only those who use Public Transportation were concentrated on this study.

3.2. Sample:

Sampling technique supports a great deal in research. It is one of the most important factors that determines the accuracy of your study/survey results. If there is a problem with the sample, it is explicitly reflected in the final test. Depending on the situation and need, we can use a variety of techniques to obtain samples. In the study Purposive sampling technique is used. Purposive Sampling is based on study objective or goal. Only those elements will be selected from the population that best fits for our study purposes. We have used this in this study as we have only concentrated on Public Transportation (KSRTC).

3.3. Tools of Analysis:

Tools used are Descriptive Statistics, Factor Analysis and Chi-Square test. The study was conducted among the consumers of public transportation only in the city Bangalore, Mysore and Shivamogga.

3.4. *Data collection:*

The analysis necessitates the gathering of both primary and secondary data. The primary data for the analysis is gathered by administering a questionnaire survey to responses of the passengers. Secondary data is gathered from published and unpublished sources such as books, journals, reports, magazines, and the internet, among others.

3.5. *Data Analysis:*

The output from the primary data collected are as follows:

Table 1: Demographic Profiles of the Respondents on KSRTC in the Research.

Variable		Frequency	Percentage
AGE	Below 20	40	13.2
	20-30	196	64.9
	30-50	32	10.6
	Above 50	34	11.3
Total	Total	302	100.0
Gender	Female	156	51.7
	Male	144	47.7
	Prefer not to say	2	.7
Total	Total	302	100.0
City	Bangalore	151	50.0
	Mysuru	69	22.8
	Shivamogga	82	27.2
Total	Total	302	100.0
Occupation	Student	182	60.3
	Employee	62	20.5
	Businessman	11	3.6
	Unemployed	29	9.6
	Retired people	18	6.0
Total	Total	302	100.0
Annual Income	Under 2L	201	66.6
	2L-5L	58	19.2
	5L-10L	31	10.3
	Above 10L	12	4.0
Total	Total	302	100.0
How Often Use of KSRTC?	Daily	76	25.2
	Weekly	34	11.3
	Twice in a month	37	12.3
	Once in a month	44	14.6
	Rarely	111	36.8
Total	Total	302	100.0
Overall Services	Highly dissatisfied	7	2.3
	Dissatisfied	14	4.6
	Neutral	116	38.4
	Satisfied	138	45.7
	Highly Satisfied	27	8.9
Total	Total	302	100.0

Table 2: Component Rotated Matrix Measured Passenger Observations on KSRTC.

Component's Rotational Matrix			
	Components		
	1	2	3
KSRTC staff dressing sense	.811		
KSRTC staff communication	.808		
KSRTC staff behavior	.780		
KSRTC service	.738		

Reliability of KSRTC buses	.713		
Seat quality inside the bus		.826	
Internal space sitting arrangement		.752	
Physical bus condition		.751	
Security inside the bus		.654	
Cleanliness and hygiene in bus		.646	
Air condition facility.			.820
Online reservation			.795
Pillow and blanket are clean and hygiene			.683
Offline reservation			.591
Abstraction Methods: Main Components Enquiry.			
Rotations' Methods: Varimax through Normalizations of Kaiser.			
a. Rotations come together within 5 repetitions.			

3.5.1. Findings of Components Rotational Matrix:

A rotated components matrix was run on 14 questions that measured the current levels of passenger perception and consumer satisfaction towards public transportation (KSRTC) are explained in Table 1 and 2. The sustainability of Rotated Components Matrix was assured before exploring.

All of the variables have at least one correlation coefficient greater than 0.36, according to the correlation matrix.

The data was interpreted in accordance with passenger perceptions and consumer satisfaction with public transportation i.e. KSRTC. In this Rotated Component we have identified the most three components, they are

3.5.1.1. Component -1 Discipline and behavior of employee:

Indicates all the aspects of behavior and discipline of KSRTC workers in this we can see that KSRTC staff dressing sense, KSRTC staff communication, KSRTC staff behavior and KSRTC services we can also see the reliability of KSRTC buses these are the things we can identified in component one.

- KSRTC Staff dressing sense
- KSRTC staff communication
- KSRTC staff behavior
- KSRTC services
- Reliability of KSRTC services

3.5.1.2. Component -2 Infrastructure:

Mainly tells about the Infrastructure of KSRTC buses and in this component, we can see the Seat quality inside the bus, Internal space sitting arrangements, Physical bus condition, Security inside the bus and Cleanliness inside the bus these are the factors we can see in this component.

- Seat quality inside the bus
- Internal space sitting arrangements
- Physical bus condition
- Security inside the bus
- Cleanliness inside the bus

3.5.1.3. Component -3 Other services:

It mainly states that the other services provided by KSRTC like Air condition facility, Offline reservation, Pillow and blankets are clean and hygiene these are the components we can see in these components.

- Air condition facility
- Online reservation
- Pillow and blankets are clean and hygiene
- Offline reservation

These are all the above factors which indicates the passenger perception and consumer satisfaction towards public transportation (KSRTC).

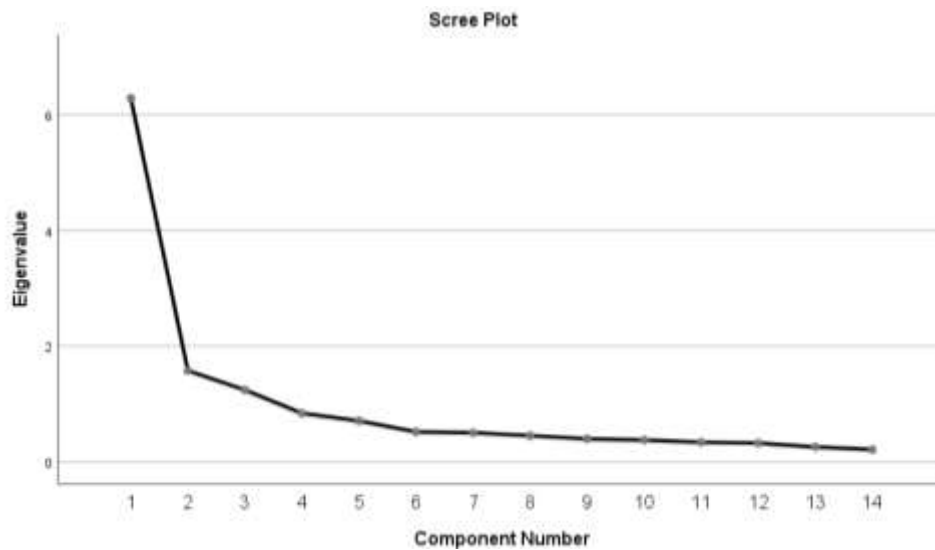


Figure 1: Scree’s Plots Against Component Numbers with Eigen Value in the Scree Map

The eigenvalues in the Figure 1 are plotted against factor numbers in the scree map. These figures can be found in the table's first two columns. You'll notice that the path flattens out after the third factor, indicating that each successive factor accounts for a smaller and smaller proportion of the overall variance.

A scree plot is a graph that compares the total variance described by each component (its "eigenvalues") to its individual components. The scree plot has 14 components due to the large number of variables. The components to keep are those shown in the graph before the (last) inflation stage. The inflation point is meant to reflect the point at which the graph starts to level out and subsequent components contribute little to the overall variance.

3.5.2. *Chi-Square:*

Table 3: Demographic Data of the Respondents with Corresponding Descriptive Statistics and Chi-Square Test

Factors	Overall Satisfaction	
Age	Chi-Square	26.063
	DF	12
	Sig.	0.011
Gender	Chi-Square	9.120
	DF	8
	Sig.	0.332
City	Chi-Square	11.309
	DF	8
	Sig.	0.185
Occupation	Chi-Square	12.228
	DF	16
	Sig.	0.728
Annual Income	Chi-Square	23.169
	DF	12
	Sig.	0.026

**Significance level at 0.05*

From the following Chi-Square analysis in Table 3, we can interpret that:

- Chi square value is 26.063, p is 0.011 ($p < 0.05$). Since the p value which smaller as compared to 0.05, this null hypothesis is on rejection. That’s means the satisfaction of respondents does significantly vary according to their Age.
- Chi square value is 9.120, p is 0.332 ($p > 0.05$). Since the p value which greater as compared to 0.05, this null hypothesis is considered. That’s means the satisfaction of respondents does not significantly vary according to their Gender.
- Chi square value is 11.309, p is 0.185 ($p > 0.05$). Since the p value which greater as compared to 0.05, this null hypothesis is considered. That’s means the satisfaction of respondents does not significantly vary according to their City.

- Chi square value is 12.228, p is 0.728 ($p > 0.05$). Since the p value which greater as compared to 0.05, this null hypothesis is considered. That's means the satisfaction of respondents does not significantly vary according to their Occupation.
- Chi square value is 23.169, p is 0.026 ($p < 0.05$). Since the p values which smaller as compared to 0.05, this null hypothesis is on rejection. That's means the satisfaction of respondents does significantly vary according to their Annual Income.

4. RESULTS AND DISCUSSION

Among the respondents replied even though the number of female respondents is more than the number of male respondents, the difference is just 5%, so there exists an equally distributed with both Genders in this study.

We can see that the most of the people will use public transportation and with the Half of the percentage are from Bangalore and remaining half of the respondents are from Mysore and Shivamogga.

We can see that there is a high response from the age group 20-30, among the various age groups which we have used in the survey, and the results were positive that they use KSRTC bus services as the age group 20-30 are students, we can conclude most of the students are using public transport.

Among the respondents we can say that almost 40% of people are using public transportation (KSRTC) rarely while 25% are it using daily but 11% of respondents say that they are using it weekly and the rest 27% are using once or twice a month. So, we can say most of them are using public transport

We can see that 71% of the people know that there is a first aid box available in the bus and the rest 29% people say that they do not know anything about the first aid box, we can say that good number of people are aware about first aid kit which is very important.

We can see that the 46% of the responses are satisfied with the public transportation (KSRTC) services and 27% of the responses say that they are high satisfaction of the services providing by Public Transportation and remaining 27% of respondents say that they are dissatisfied with the service provided by KSRTC. We can say that KSRTC is doing very well in terms of services however there is always a space for improvement.

To test the reliability of the questions we did reliability test was conducted on few aspects of data the finding they are as follows

- In reliability test the Cronbach's Alpha was come up to 0.868 which has considered the data has been entered containing 16 questions.
- So therefore, we can conclude that the data is quite reliable and also it has proven in the reliability test. Factor analysis is also used for this study, where KMO and Bartlett's test result have been derived which is deriving up to 0.868 which is high score and it indicates that the data is very good for Factor Analysis.
- Scree plot was also done to identify the inflation point; 16 question has been considered for Scree plot.
- Correlation matrix is also derived and we can conclude that the variable is very much correlated and understandable giving a positive sign.
- The total variance explained in a column which gives eigenvalues or the original values accounted by each component.

Majority 46% of the passengers are satisfied with the service provided by the Public Transportation

5. CONCLUSION

The present study attempts to explain the extent to which passengers are satisfied with the quality of the services being offered to public from KSRTC in city Bangalore, Mysuru, Shivamogga. It also attempts to penetrate into critical attributes leading to high degree of dissatisfaction among the KSRTC customers. The KSRTC organization has a clear culture that "passengers' happiness is more significant." However, when it comes to passenger satisfaction, there are also things that can be done.

Public transportation refers to all modes of transportation in which people do not ride using their own vehicle. it's one among the foremost important ways of transportation because it covers most areas and modes. India's increasingly growing urban population is engaged in a variety of financially viable activities in rapidly expanding cities, resulting in rapid increases in urban travel demand. Rolling, cycling, two-wheelers, para-transit, conveyance, automobiles, and other forms of transportation are all available. In the future, conveyance should be a part of a solution for sustainable transportation. However, in order to remain in business and draw more passengers, transportation must have a high level of service in order to meet and serve a wider range of customer needs. For future transportation ventures, the area establishes a long-term transportation blueprint for Bus services. Here are some recommendations:

- The results indicate that there must be a close correspondence between bus comforts and overall satisfaction and thus steps towards improving the comfort will automatically increase the usage of transportation.
- Public transportation wants to improve the online portal service and they want to maintain punctuality in timing.
- From the study most of the respondents say to improve in the infrastructure. We want to keep separate seat to handicap passenger so that can be helpful for them.

- Most of the people expecting good responses from drivers, conductors and all other staff.
- Drivers must ensure that pregnant women, disabled people, and sick people are treated with care and respect, and the most important thing is to stop using foul language with their customers. They must also undergo professional training.
- To escape traffic, they must ensure that vehicles are well maintained according to preventive maintenance procedures and that they follow the correct route and schedule.
- Passengers and students must pay the same fare and refrain from using abusive language against drivers and conductors, as well as refrain from smoking inside the bus while travelling.
- According to the report, there are obstacles that public transportation in cities faces, such as passengers.

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