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Assessment of Service Quality of Public Bus Transport System (TNSTC) Tiruchirappalli

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***Abstract**: In this study an attempt has been made to evaluate customer satisfaction level upto some extent. Frequency and trips data of bus services in particular routes collected from the government sources. Primary data was collected from 120 respondents of different economic strata by adopting stratified random sampling technique. Crisps model approach was performed on the data obtained and analysis was done. The evaluation will help State transport agencies in identifying performance gaps and effecting improvements, ultimately resulting in better services to the users.*
***Keywords**: Level of service, Customer's satisfaction, Public transportation, Attributes*

I. INTRODUCTION

Public transport system has become increasingly popular in India. It will have to attract the public. In our transport system there exists private public participation. Introspection of the system shows whether the prevailing transport system is neither a substitute nor a complement. There aseems that there are certain externalities in using this public good. The Public transport system has a overwhelming growth at present. Hence it is indispensible to assess the Service Quality of Public Transport system.

II. A BRIEF OUTLINE ABOUT SERVICE QUALITY

One of the major ways to differentiate a service firm is to deliver consistently higher quality service than competitors. The key is to meet or exceed the passengers' service quality expectations. The service provider needs to identify passengers' wants in the way of service quality. Clearly, customers will be satisfied if they get what they want, when they want it, where they want it, and how they want it. Service providers must do their best to identify the expectations of their target customers' .i.e. passengers with respect to each specific service.

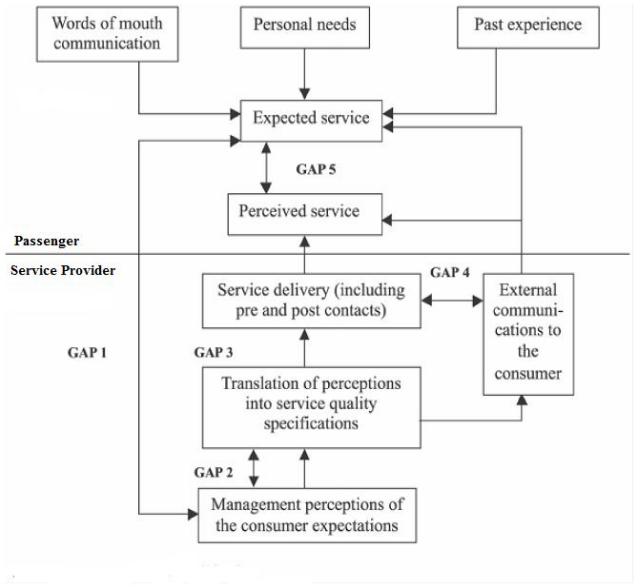

Figure.1 Service Quality Gap Model

Parusuraman, zeithml, and Berry formulated a service quality model that highlights the main requirements for a service provider delivering the expected service quality. The model, shown in figure, identifies five gaps that cause unsuccessful service delivery.

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Gap 1 is between passenger expectation and management perception .i.e. management does not always perceive correctly what customers want or how customers judge the service components. Gap 2 is between management perception and service quality specifications. i.e. Management might not set quality standards or very clear ones; or they might be clear but unrealistic; or they might be clear and realistic but management might not be fully committed to enforcing this quality level. Gap 3 is between service quality specifications and service delivery. Many factors affect service delivery. The personnel might be poorly trained or overworked. Their morale might be low. There might be equipment breakdowns. Those handling operations typically drive for efficiency, and sometimes this runs counter to a drive for customer satisfaction. Gap 4 is between service delivery and external communications. i.e. Consumer expectations are affected by promises made by the service provider's communications. Gap 5 is between perceived service and expected service. This gap results when one or more of the previous gaps occur. It becomes clear why service providers have a hard time delivering the expected service quality.

III.OBJECTIVE

The objective of this study is to evaluate the passengers' perception towards the existing public transport system and to identify the facilities that are need to be improved.

IV.METHODOLOGY

Tiruchirappalli is situated at the centre part of Tamilnadu and it connects all other destinations situated in all the four directions. The present study revolves around the assessment of Service Quality approach of Public Transport System prevailing the study area. In order to assess the Service Quality of Public Transport System, Primary data have been collected from 120 passengers as convenient with a help of a Questionnaire and secondary data pertaining to the study have been collected through the government sources. The collected passengers opinion data and the secondary data have been analysed for evaluating the level of public transport service by applying Crisp weighted average model and percentage analysis has been done for evaluating the data collected for the study. In order to describe the study area geo referencing has been done by using software QGIS.

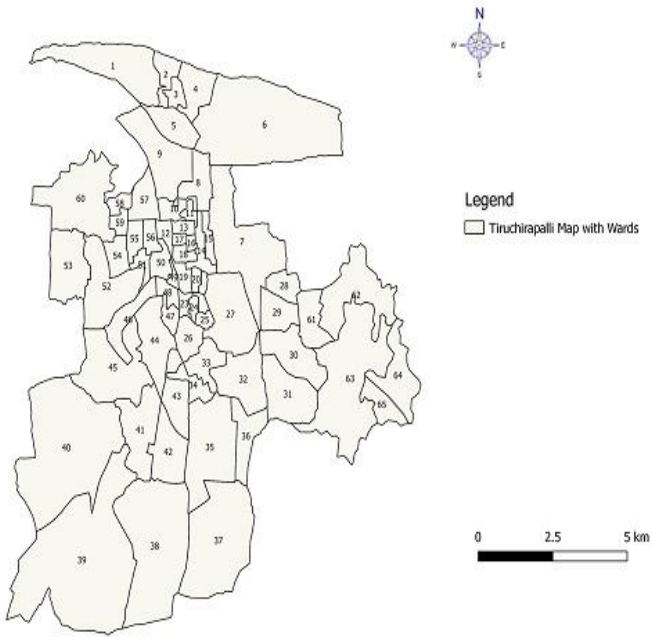

Figure 2. Tiruchirappalli city Corporation map [Source: QGIS]

V. DATA ANALYSIS

A. Questionnaire survey

120 Passengers were surveyed at Chatram Bus Stand, Railway Junction and Central Bus Stand using linkert five point scale technique regarding their opinions on existing public bus transport system.

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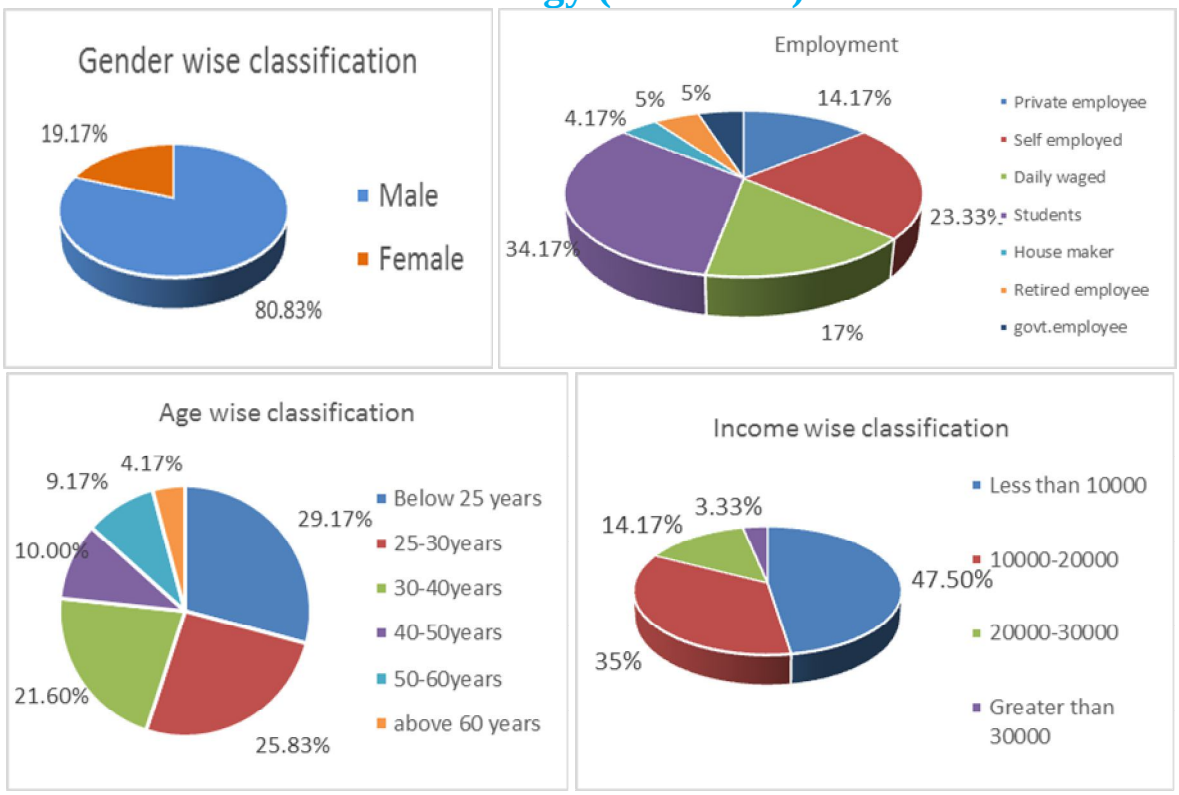

Figure 3.Demographic details of passengers

Demographic variables such as Age, Gender, Education, Income, Occupation, Traffic related variables like frequency of trips, purpose of trips etc..details were collected in the survey. Attributes (scale 5 to 1) were scaled to five point scale measurement. Rating and Weightages of the following attributes were taken. 1. frequency/regularity of particular bus service 2.bus shelter condition/facilities 3. Comfort level of seats 4.condition & cleanliness of bus 5.congestion in bus 6.safety of passengers and goods 7.help by conductor/driver 8. Peak hour service 9.late night service.

B. Evaluation of Level of Service of Public Transport Services(LOPTS)

Crisp value approach has been adopted for evaluating the level of service of public transport services.[11]

$$\text{LOPTS} = \frac{\sum_{i=1}^{N}(R_i \times W_i)}{\sum W_i}$$

Where N = no. of attributes that define the overall LOPTS, W_i = weight associated with i^{th} service attribute, R_i = value score for the i^{th} service attribute. Maximum possible LOPTS is 1. From the literature 0.6 is taken as accepted service level[10] and the 5 Point Scale: A-5 B-4 C-3 D-2 E-1

For the calculation purpose, scaling has been doubled and weighted average has been calculated. i.e. $\frac{26x10+42x8+30x6+15x4+7x2}{120}$ **=7.08**

Table.1 Average Rating of Service Qualities for Town Service

Attribute	No. of passengers rating on					Average Rating Score
	A	B	C	D	E	
1.Frequency/regularity of particular bus service	26	42	30	15	7	7.08
2.Bus shelter condition/facilities	10	18	40	32	20	5.43
3.Comfort level of seats	2	18	38	35	27	4.88
4.Condition & cleanliness of bus:	6	32	45	25	12	5.92

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5.Congestion in bus:	10	16	22	43	29	4.92
6.Safety of passengers and goods:	15	20	59	17	9	6.25
7.Help by conductor/driver	54	31	20	12	3	8.02
8. Peak hour service	25	43	32	11	9	7.07
9.Late night service	12	18	23	39	28	5.12

Table 2. Relative Weights of Various Attributes for Town Service

Attribute	No. of passengers' weights on					Average weights by Crisp value Approach (1)	Relative weights from (1)
	A	B	C	D	E		
1.Frequency/regularity of particular bus service	28	32	43	15	2	7.15	0.118
2.Bus shelter condition/facilities	12	46	45	11	6	6.78	0.112
3.Comfort level of seats	17	18	37	33	15	5.82	0.096
4.Condition & cleanliness of bus:	27	33	40	15	5	7.03	0.116
5.Congestion in bus:	11	29	38	30	12	5.95	0.098
6.Safety of passengers and goods:	21	57	29	10	3	7.38	0.121
7.Help by conductor/driver	24	54	25	11	6	7.32	0.12
8. Peak hour service	12	37	61	6	4	6.78	0.112
9.Late night service	13	28	64	9	6	6.55	0.108
						60.76	

Table.3 Service Levels and their Deficiencies from Acceptance Levels as per Crisp value Approach

Attributes	1	2	3	4	5	6	7	8	9	
Relative weight(1) (scale value)	0.118	0.112	0.096	0.116	0.098	0.121	0.12	0.112	0.108	
Service quality(2) (with respect to unity)	0.675	0.543	0.488	0.592	0.492	0.625	0.802	0.707	0.512	
LOPTS(3)=(1)x(2)	0.080	0.061	0.047	0.069	0.048	0.076	0.096	0.079	0.055	0.61
Acceptance level(4)(60% of scale value)	0.071	0.067	0.058	0.07	0.059	0.073	0.072	0.067	0.065	
Sufficiency or deficiency from acceptance level (3)-(4)	0.009	-0.006	-0.011	-0.001	-0.011	0.003	0.024	0.012	-0.010	

Composite Index i.e. (LOPTS) Level of Public transport service by crisp model for Town service is 0.61 which is equal to acceptance level (0.6). So the passengers were at satisfied level at the present bus transportation system. But some of the attributes are to be improved.

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Table-4 Attributes which are above acceptance level (in percentage)

Attribute No.	Attribute	%
1.	Frequency/regularity of particular bus service	12.67
6	Safety of passengers and goods	4.11
7.	Help by conductor/driver	33.3
8.	Peak hour service	17.91

Table-5 Attributes which are below acceptance level (in percentage)

Attribute No.	Attribute	%
2.	bus shelter condition/facilities	8.95
3.	comfort level of seats	18.96
4.	condition & cleanliness of bus	1.43
5.	congestion in bus	18.64
9.	late night service	15.38

The attributes.,i.e. Congestion in the bus and comfort level of seats , are having the highest percentage below acceptance level. The attributes in the table 5,which are below acceptance level are to be improved.

VI. DISCUSSION AND CONCLUSION

The research findings indicate that it is not enough that people reach their destination cheap and quick, but it also involves certain qualitative factors that are difficult to measure, which are of great significance for how passengers experience their trip such as comfort, convenience etc. The service provided by the Bus Transport System is at satisfactory level. Most of the passengers (53.33%) travelling for work purpose. Bus is the most preferable mode of travelling for the regular passengers. The attributes shown in the table.5 are to be improved .i.e. bus shelter condition, comfort level of seats, condition & cleanliness of bus, congestion in bus and late night services. To summarize, the overall result show that service quality attributes influences overall customer satisfaction in using public bus transport. The overall aim is to make public bus transport an attractive, satisfied, and marketable mode of transport.

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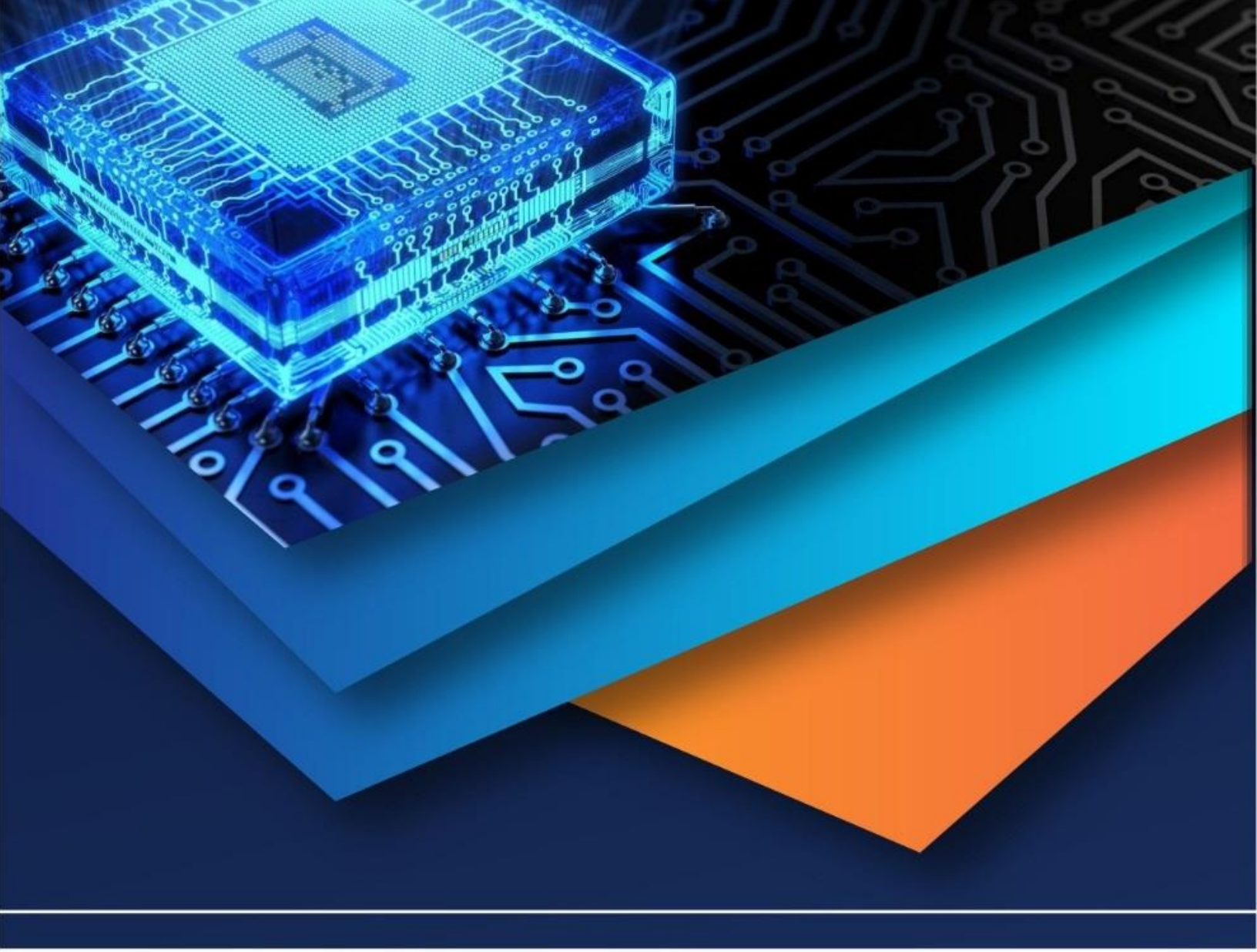

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