PERFORMANCE EVALUATION OF MASS TRANSPORTATION SYSTEM: A CASE STUDY OF JUNAGADH CITY

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Abstract: Urbanization is an important feature of modern civilization. Sustainable Transport System allows accessibility, mobility and development needs of individuals and society to meet safely and in a manner consistent with ecosystem health and encourage the equity between successive generations. Transportation problems are arising due to gap between supply and demand of transportation facility or infrastructures .For the evaluation of performance of public transport facility, a study is carried out using statistical analysis for measuring the commuter's responses towards the transportation .Transportation related problems or parameters like congestion, rush, delay, travel cost, parking problems, accidents, pedestrian facilities etc. affect the growth of public transport. After the analysis, some recommendations and suggestions are given to improve performance of public transportation system.

Keywords – *Evaluation, Mass Transportation System, Sustainable Growth, Service Quality*

I. INTRODUCTION

Transportation deals with the movement of goods and people from one place to other. Air, Water, and Land are the medium of transportation, and in land transportation, the most utilized form of transportation is Road Transportation. Urbanization is the most important feature of modern civilization. The growth of urban population is increased by 28% in 2001 and is predicted to increase by 58% by 2025 thus urban population has been growing fast rate.

Thus increasing population demands for the better and efficient transportation facilities. Public Transportation does not endanger public health or environmental ecosystem. Whatever be the stage in the evaluation of a city, unplanned growth can lead to congestion problem in the city center.

II. OBJECTIVE OF STUDY

- To evaluate the socioeconomic characteristics of bus commuters.
- To evaluate the performance of Junagadh Mass Transportation System.
- To provide recommendations and suggestions

III. LITERATUREREVIEW

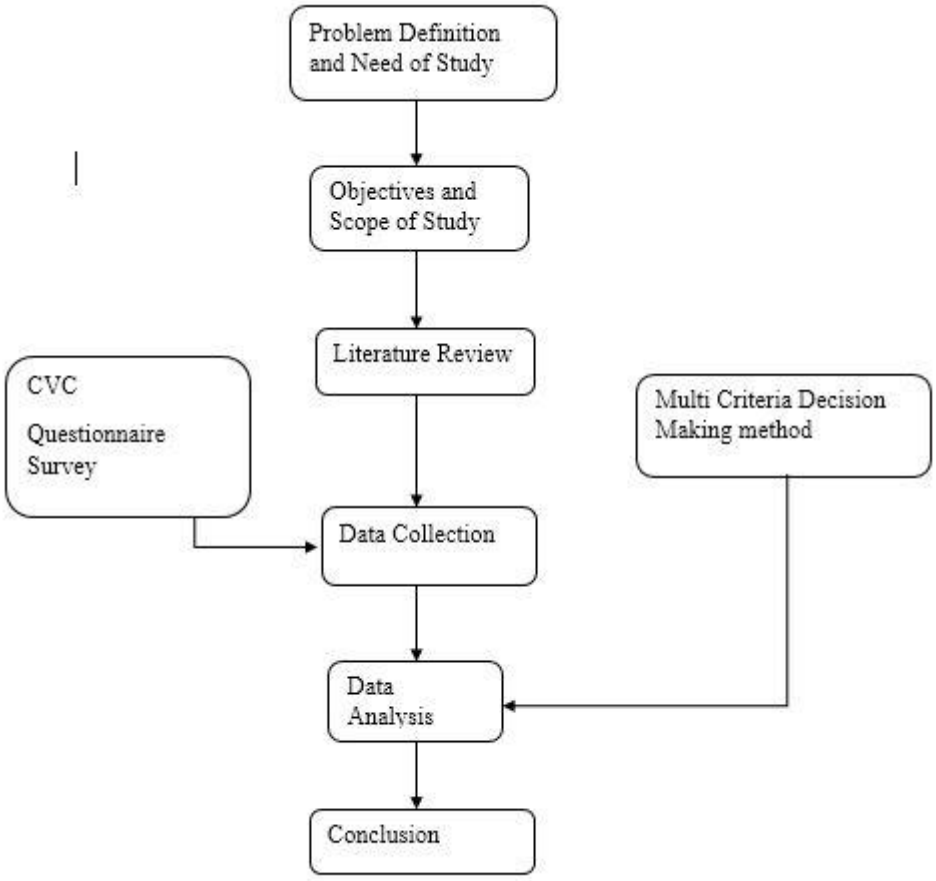
Electrical Fatima, Rakesh Kumar (2014).Introduction of Public Bus Transit in Indian Cities ELSEVIER (International Journal for Sustainable Built Environment

Studies about the planning of MTS system in Barolo is shown. Various data are collected and about 9 of the most important input variables are considered. The corridors are planned and then model is developed. Analysis is carried out using SPSS software.

R.Baskaran, K.Krishnaiah,
Performance Evaluation of Bus Routes using AHP, European Journal of Scientific Research, ISSN 1450-216X Vol.66 No.4 (2011), pp. 631-642

Studies about the various parameters affecting the performance of Mass Transportation System. Further these parameters are analysed using the Analytical Hierarchy Process by comparing these criteria's with each other using Multi Criteria Decision Making method.

IV. METHEDOLOGY



V. STUDY AREA

The scope of study is limited to Azad chowk to koyli. Study area stretches were selected based on the category of the road, terrain, traffic conditions and geographical location

Junagadh district is located at the South Coast of India in Gujarat city

Coordinates

- Latitude- 21.52^0 N
- Departure-70.47^0 E

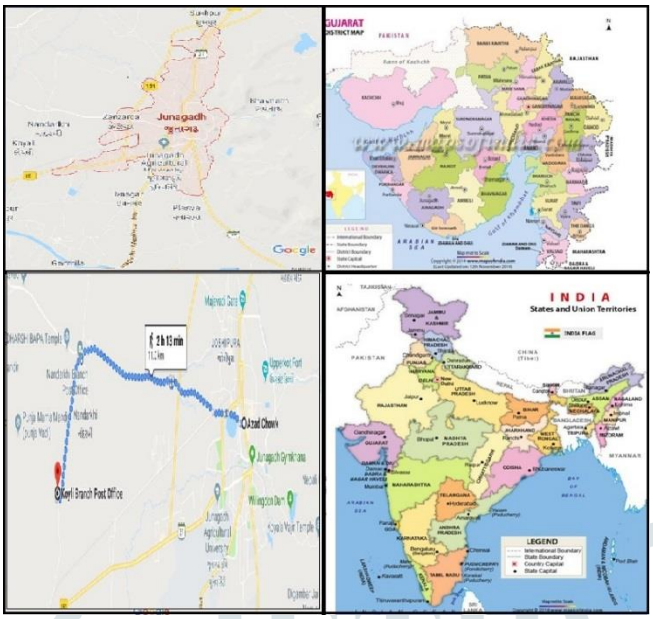


Figure.1 Study Area Map

VI. DATA COLLECTION

Surveys are to be carried out, both field based and technology based can be administered to gain more understanding of the issues. Field Surveys include observational surveys and passenger interviews. Observational surveys are conducted to understand the behaviour. Such surveys includes traffic counts (boarding and alighting counts, vehicle counts etc.) transport inventory survey etc.

❖ PASSENGER AND ROAD SIDE INTERVIEW SURVEY

The end user of the bus service is a commuter and understanding the view of passenger is an important input to improving the service quality of any transit system. Following surveys can be conducted to understand the travel behaviour and user performances.

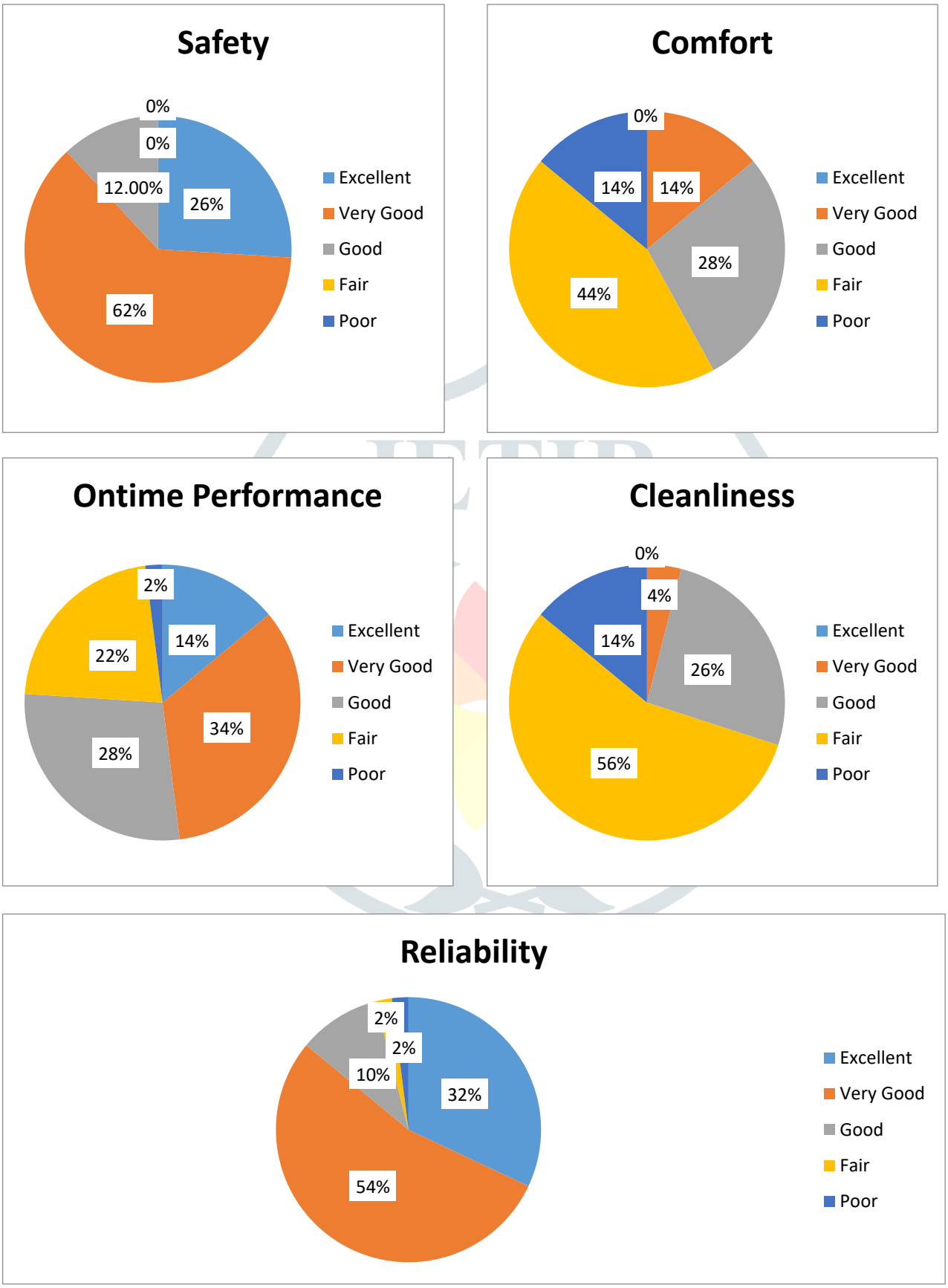
- On-Board Survey
- Intercept Survey
- Telephone Surveys
- Web Based Surveys
- Mail Surveys

However on board and intercept surveys are to be preferred over other methods primarily. The surveys can be custom created to cover variety of topics including customer level patterns, travel behaviour, demographic conditions, customer satisfaction and other attitudes reasons for using transit and ways to attract ridership.

Some of the most common questions to be asked are following

- OD details
- Travel time involved in journey
- Waiting time at the bus stop
- Age of respondents
- Occupation of respondents

VII. DATA ANALYSIS



Responses of people on different qualitative criteria

Quantitative criteria

1) Bus Stop Spacing

Bus stop Spacing = (Total Route length in km/No. of Bus stops)*1000

= 734m

2) Average Travelling Speed

Average Travelling Speed = (Total Distance Travelled *60) /Average Travel Time in min

= 20 km/h

3) Bus Hour Utilization = (Total Travel Time*Frequency)/ (N. of bus *Working Hour)

= 0.3

4) Average Passenger per Trip = Bus seating Capacity + Standing Passenger Count

= 1.4

Overall Qualitative and Quantitative Ratings

Route No	safety	comfort	on time Performance	Cleanliness	Reliability	Bus stop spacing	Travelling Speed	Passenger per trip
1	Very good	fair	fair	fair	Very good	poor	fair	good

CONCLUSION

- It is observed that lot of congestion occurs during the peak hours and frequency of the bus service is 1 bus per hour per direction which does not meet the demand for all the commuters.
- Enhancement of Buses are required as they are obsolete and has very low passenger carrying capacity.
- Frequency of the Bus service is to be increased from 1 bus per hour per direction to 2 bus per hour per direction.
- No physical Bus Stop or Seating Facility available, hence they should be provided along the route.

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