Analysis and Evaluation of Mass Transportation System: A Case Study of Nanded City, Maharashtra

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Abstract: *Transportation is one of key element for socieo - economic development and in emergency situation of a country which can determine the pattern and success of regional development. . A mass communication system should able to develop in countries rather than personal transport system as they are resulted into accidents, congestion, and pollution of vehicle in urban areas. This study focus on providing and providing, strengthening and improving existing mass transportation system in Nanded city. More than 20 busses routes has founded out to perform. O & D Surveys, Public Opinion survey and boarding alighting survey methods are used in this paper. The outcome of this study shows economical mass transportation system with less urban pollution, systematic approach to various developed and undeveloped portions in urban areas and feedback given by commuters for safety travel time, easy approach frequency, comfort and economic model of public transportation system.*

Keywords: Urban transportation, Traffic Congestion

1. Introduction

Transportation plays an important role in development of country. It helps in functioning of urban as well as rural areas & as Day by day increase in population demand not only increase in travel routes as well as increase in travel demand. India as growing most populated country which are now a days faces more demand in travel as it part of development it generates trip length & need to develop faster trips by private public vehicle which results into pollution and traffic congestions. More number of vehicles coming on roads effects on increase in urban pollution and greenhouse gases. Transportation is very essential for development as it link with shelter to workplace and it supports complex economic and social interactions and are thus a component of society. A day by day city is growing through his periphery according to nature of development, demand, cost of housings & amenities provided resulted into increase into transport demand which connects to urban and suburban areas. Migration is also one of important parameter from rural areas which will impact increased population and it increase demand of transport. Urban area system undergone stress due to increase in number of private vehicle users on roads and inadequate supporting system

Objective of study:
- To find need of mass transportation system
- To find out study of Traffic routes parameter in city.
- To study existing transportation facility in city.
- To find gap between transportation facility in terms of efficiency, cost and safety.
- To suggest the alternatives measures to improve the transportations system.
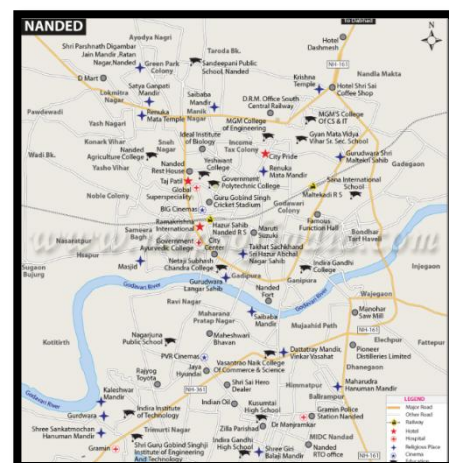
Problem definition:
In urban area, traffic problems are going to increase day by day for this Study and identification include in this topic are
- Requirement mass transportation system
- Traffic congestion and delays
- Lack of capacity of transport system3
- Connection of urban areas to suburban areas

- Improvement in efficiency of transport system

2. Study Area

Nanded is a city in Maharashtra state, India. It is the tenth largest city in the state and located on the banks of river Godavari in west - central India selected as Study area. The huge demand of transportation main reason for using this transportation by people on large scale is for education includes schools, colleges and private coaching classes, jobs, industries etc The various parts of city which connects main part of city to various major corners for survey as Taroda Naka - workshop - Shree Nagar - ITI Chowk - Shivaji Nangar - Bus stand - DSP Office Chowk – Railway station – Chikhalwadi Corner –Hujur sahib Gurudwara - Old Mondha city to selected for survey. All other important network also surveyd and included in study. It is essentially provide to mass transport system from which connects parts of cites and suburban areas though Nanded - Waghala Municipal corporation. Due to lack in public transport in urban area effects more pollution, delays and accidents

Study area: Nanded Map

The major and minor 20 routes are indentified in urban area as follows:

Table 1: Routes Chart

S. No.	From	TO	Route No.	Length (K. M.)
1	T - KH	CIDCO /HUDCO	1	15.6
2	R - STATION	SRTM University	2	9.7
3	WORK SHOP	WAJEGOAN	3	12
4	WORK SHOP	DEGLOOR NAKA	4	10
5	TARODA - BK	BARKI CHOWK	5	9.3
6	BARKI CHOWK	SANGVI	6	9.6
7	R - STATION	GURUJI CHOWK	7	8.7
8	BARKI CHOWK	GAJANAN MAHARAJ MANDIR	8	10
9	R - STATION	D - MART - CANAL ROAD	9	8.8
10	R - STATION	PAWDEWADI	10	9.8
11	R - STATION	TARODA BK	11	7.3
12	R - STATION	TARODA KH	12	9.2
13	NASARART PUR	KAMTHA	13	10.9
14	TARODA - BK	VISHNUPURI / KALESHWAR	14	13.3
15	TARODA - KH	SGGS MEDICAL HOSPITAL NANDED	15	12.6
16	R - STATION	Babulgoan	16	15.7
17	R - STATION	OLD CHOWK	17	4.8
18	R - STATION	kabra nagar	18	5.7
19	R - STATION	Gadegoan	19	7.2
20	R - STATION	FRUIT MARKET	20	6.1

3. Data Collection and Analysis

The methodology involved in this study was need of mass transportation system, channelization of public traffic

System, identification of problems of transportation system, traffic data collection and their interpretation, design and analyze the data and proposals on this data. The primary and secondary data was prepared through different traffic surveys. Road users and different stakeholders are involved in collection of primary data by using questions and answers methodology. The secondary data collected from various departments The data which is collected used for rapid transit service without congestion of traffic, arrival and departure frequency, travel time for origin and destination, their fare, bus stop security, information regarding routes and seat availability etc.

The details work involved in studies area
1) Origin and destination survey
2) Boarding and Alighting survey, Flow pattern and desire line of urban flow
3) Road side interview method (public opinion)

(A) Origin and destination survey: Passengers origin and destination surveys are to be done of various routes in which data are to be collected regarding trip patterns to understand need and development of appropriate solutions for public transport system. In this, starting point means origin of person and end point i. e. destination of person in the urban area are to be studied in detail. This will help in the analysis of the travel pattern observed in the urban area . The manual data survey done on various 21 routes of the city during pick hours.

(B) Boarding - alighting survey carried out in all 20 routes of proposed city bus routes during pick hours. In this proposed routes and their bus stops are to be planned and according to this boarding pattern is to studied and data were collected. The proposed bus routes and their bus stops were planned and on & off patterns of passengers are studied in this survey. In this on each routes observers are to be concentrated on bus stops points. This survey helps in records of number of passengers that have boarded and also alighted at each stop along with the time of arrival probable in each stop.
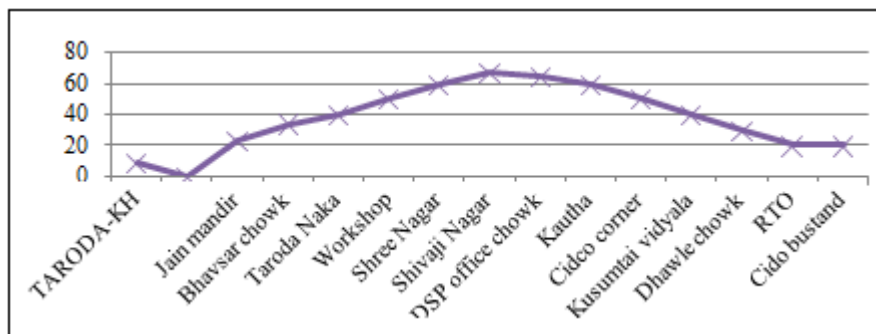The objectives of this survey are
1) To determine profile of bus trip
2) Identify the passenger flow pattern along the route s

This survey carried out on 20 routes and data were collected at each stop. This data analysis show in the chart. The sample of data collection for route No.01 is shown below

Table 1: Route No.01 - Taroda Naka to Cidco Bus stand

Stop	Stop Name	Time	Passengers	Alighting	Total
1	T - Kh		9	-	9
2	Jain mandir		13	-	23
3	Bhavsar chowk		11		34
4	Taroda Naka		16	10	40
5	Workshop		15	5	50
6	Shree Nagar		9	-	59
7	Shivaji Nagar	9.00 am to	8	-	67
8	DSP office chowk	11: 30 am	13	15	65
9	Kautha		4	10	59
10	Cidco corner		1	10	50
11	Kusumtai vidyala			10	40
12	Dhawle chowk		4	14	30
13	RTO		10	20	20
14	Cido bustand			20	00

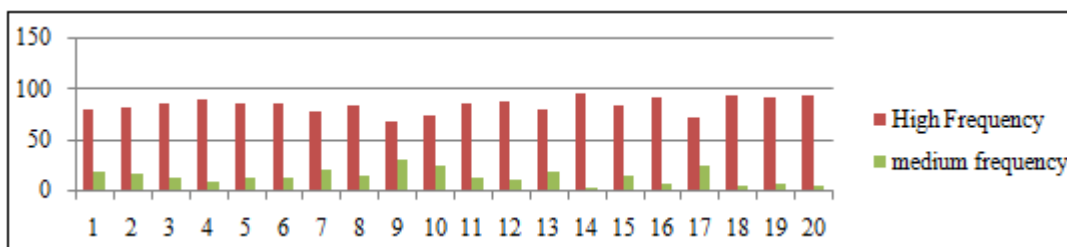**Graph 1:** Graphical representation of passenger and alighting of Route No.01

Analysis results show that route no.1, 2, 8, 14, 15, 17 are highly overcrowded and more passengers flow during pick hours.
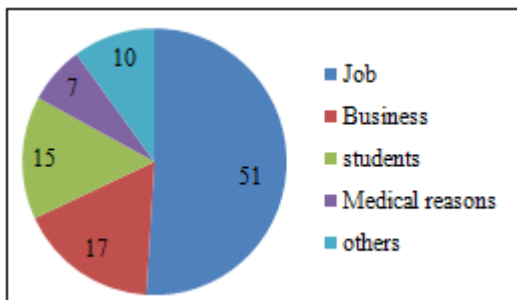
(C) Road side interview method

The questionnaires survey are prepared in the view of stakeholders and it is very important input for providing and improving existing quality for mass transport system. In this detail questioners are prepared to understand traffic routes their preferences and opinion surveys were taken. In this exsting problems of traffic, non avialliblity of bus transport system, travel time and overall performance of mass transport system etc points were covered.

Sample size: 150

Graph 2: Graphical representation for proposed bus frequency on various routes

Graph 3: No. of passenger travel during different time intervals at various locations

4. Conclusion

- Data collection, their analysis and interpretation of data shows city traffic needs mass transportation system. As at present city traffic depends on only private vehicles and autorikshaws,
- For daily users like students and professionals requirement of mass transportation is necessary and it proves economical of communication to sub urban centers
- In study it is observed that road users uses their personal vehicle for transportation. It results that more private vehicles coming on traffic routes hence fuel consumption, traffic congestion and pollution in urban areas increased day by day.
- Data analysis shows inadequate services, discomfort and delays which needs to improve in urban transporation system .

- Proper bus stops are required to retain the passengers. It is very necessary for the survival of public sector transit in the times to come.
- The travel of bus need to improve bus frequency, comfort, ease of transfers and overall quality of buses.

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