Finding Constraints of Bus Users and Policy Suggestions for Improvement in Modal Share of City Bus Service

Abstract

This study tries to understand the choice and constraints of daily commuters with reference to the city bus service, and how this work along with the functioning of local government and private operators affects their decision. Also case studies have been carried out to incorporate certain initiatives and strategies in the Public Transportation System in Vadodara. Considering all of these, final recommendations have been given that could help in future decision making and policy formulation. Also recommendations aim to shift commuters from their private vehicles to city bus service and thus increasing the modal share of public transportation in Vadodara.

Keywords: Policy Making, Bus Service, Modal Share.

Introduction

The essence of urban planning is to provide adequate and equitable services to all groups. One of the important urban services is transport services. The urban transport sector, however, has many problems in most developing countries. Inadequate and poor quality infrastructures, mismatch between demand and supply, and increased rate of accidents are some of the problems. Cities play a vital role in promoting economic growth and prosperity. The development of cities largely depends upon their physical, social, and institutional infrastructure. Public transport systems have not been able to keep pace with the rapid and substantial increases in demand over the past few decades. Bus services in particular have deteriorated, and their relative output has been further reduced as passengers have turned to personalized modes and intermediate public transport. Urban travel demand is influenced by number of factors, the primary and important one is being the size of the population, which leads to rise in number of trips by them to reach to their destinations. Simultaneously at the same time with the increase in income levels of households and inefficient public transport, poor traffic management people are likely shifted towards their personalized motor vehicles which fulfils their needs depending upon their necessities.

It is well understood that as the population increases, the average travel distances as well as intensity are expected to increase as there is a direct correlation between the two indicators. The trend in increasing trip length and frequency is only expected to increase with increasing income levels, migration, participation of women and a service-oriented economy. As more people travel over longer distances on regular basis for employment and education purposes it will inevitably lead to road congestion.

As in developing countries the local government lacks on funds that are required to provide services, Public-Private Partnerships have come up and is practiced in several cities in India. IMF defines PPP as "the transfer to the private sector of investment projects that traditionally have been executed or financed by the public sector".

Aim of the Study

The aim of the study is to device strategies to improve the modal share of Public Transit users by reviewing the governance and functioning of city bus service in Vadodara.

Review of Literature

The urban transport sector, however, has many problems in most developing countries. Inadequate and poor quality infrastructures, mismatch between demand and supply, and increased rate of accidents are some of the problems. These problems are triggered by interrelated

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trends such as urban population growth and growth of cities. (Abreha, 2007)

Urbanization in India - In Post-Independent India the rapid urbanization and subsequent growth of towns and cities have played a major role in economic and infrastructural development of the country. Later with the progress of Industrial Economy and growth of urbanization the movement of vehicles of transportation have increased within and between various cities. The function of the city's circulation system is to provide easy movement of people and goods. But in recent decades the ever increasing number of vehicles on the streets of Indian cities have created several problems such as traffic jams, pollution and rate of accidents.

Issues for Performance Improvement of Urban Bus System - Some of the important issues for inefficient performance of public transportation system in Indian cities as identified are as follows:

Environmental Issues-Detrimental Effects of Urban Bus System on City Environment, Operational Issues-Inefficient Operation of Urban Bus System, Overcrowding due to inadequate system, Inefficient & uneconomic bus routes, Irrational location of bus stop, Frequency of service & schedule is not strictly adhered, Inefficient design of buses, Traffic congestion, frequent stopping & starting needs more fuel consumption, wear & tear of vehicle, Higher fleet strength of buses, Higher overall operational cost, Public transport system is less attractive mainly due to unsafe and inconvenient vehicles etc.

Public Transportation in Small and Medium cities - In recent decades it is observed that fast developing small and medium sized cities lack in efficient public transportation system. This situation has increased the dependence on two wheelers and auto-rickshaws, which then leads to high vehicular congestion and resulting in overall poor mobility in various Indian cities. (Prasad, 2013).

Public prefer to use private vehicles due to various reasons including inefficient operations of city bus service and this private vehicles taking up road space along with buses on roads causes several traffic problems and congestions. To make sure that bus service remains efficient its performance review methodology should be done properly (DULT, 2013)

Evaluation of Public Transportation System - The studies carried out on cost and benefits of evaluation of public transit services draw a common conclusionthat a bus service is the cheapest form of mass public transport and can help to travel even to the poorest people. (IUT and CSTEP, 2014; Litmann,2017) . However, one of the most important aspects of efficient functioning of public transportation system is governance. The governance plays an important role in working of any mode of mass transit and can help achieve higher efficiency in the transit system, solve problems in particular which bother the users and make sure that right service is provided to the users. (Institute of Urban Transport, 2013)

Table 1 Percent Modal Share in Vadodara

Mode	TRL 1985	CIRT 1996	RITES 2006	Prajapati 2013
Walk	40.1	36.81	20.65	11.4
Bicycle	15.1	17.41	18.65	10
Auto Rickshaw	5.8	7.15	13.72	13.5
2-wheeler	11.6	23.62	36.45	46.7
Bus	25.8	8.68	5.61	11.8
Cars/ Others	NA	6.33	4.3	6.6

Data

History of City Bus Service in Vadodara

GSRTC

The City Bus Service was primarily run by the Gujarat State Road Transport Corporation (GSRTC). The bus fleet operating within the city declined from 200 in 2003 to 85 in 2005.

VMSS took up the initiative of organizing a city bus service on the basis of public private partnership. They felt that an efficient mass transportation system was needed for sustainability of not only the economy of the city but also for reducing pollution stress on the environment.

VTCOS Bus Service

The VTCOS Transportation Pvt Ltd a Bhavnagar based transportation company had entered on 18th may, 2008 after an agreement with Vadodara Municipal Corporation. Gradually the fleet increased, and in March 2010 there were 120 CNG buses operating in 42 routes.

Vinayaka Logistics

Five-year contract of VTCOSin the city was expired in May 2013, but it was asked to continue operations till further arrangements. Currently, there is total fleet of 67 buses with 30 routes. (2017) Around 1,00,000 passengers travels daily in Vinayaka city bus Services.

To carry out 'Selective Representative Sampling', different sectors like Government Offices, Private Offices, Educational Institutes, Industries, Hospital, Recreation & shopping where selected and survey was carried out. The locations of chosen sectors were such that they were spatially distributed and also supposedly have more number of people commuting or travelling to those location for work and other purposes.

In the process, 292 surveys have been done and following are sample size of surveys of each sector;

Government Office – 62, Private Offices – 65, Educational Institute – 55, Industries – 45,
Recreation and Shopping – 30, Hospital – 15, Main Bus Depot – 20

The sample has 40% female respondents. About 50% commuters spend less than Rs. 1000 per month on transportation, while 31% spend between Rs. 1000 and Rs. 2500. Proportion of major modal share in the sample for bus, auto-rickshaw and two-wheeler was 19%, 18% and 50%.

Figure – Issues for Bus Users in Bus Service
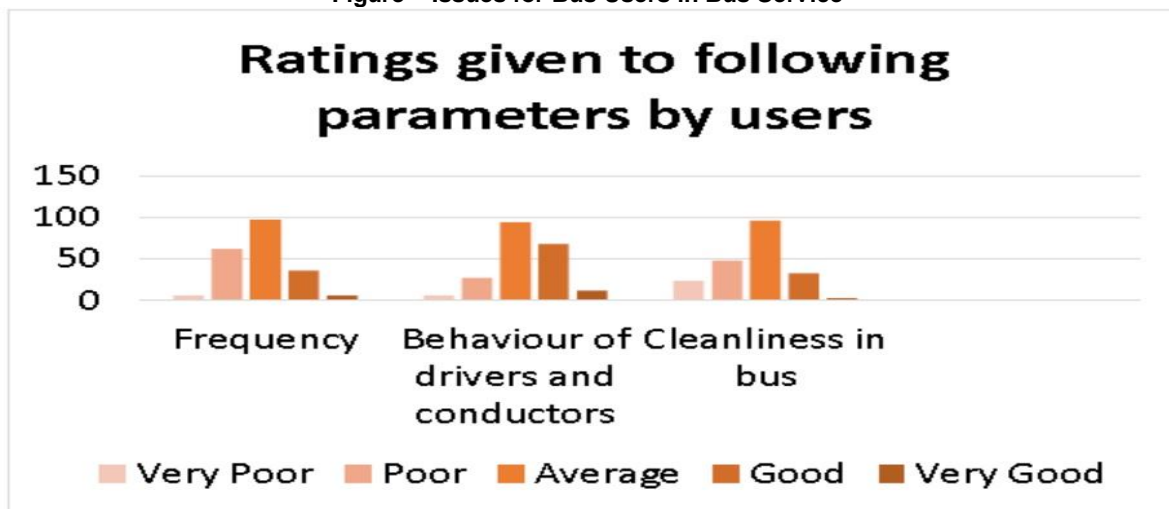
Results
Demography of commuters and use of public transport system
1. On the basis of socio-economic condition, based on their average monthly incomes it is identified that people in lower income groups (>5000 to 5000-10000) use bus service and are captive users.
2. Age group of 18-23 and Student mostly use 2 wheelers. (Forming almost one-third of total number)
3. Age group of 24-60 travelling 5 to 10kms and more than 10kms opt for 2 wheeler only. (They form more than one-third of numbers)
4. Also age group greater than 60 refrain from using public transport and prefer auto or 2 wheeler over it.

Distance Travelled and Use of Public Transport System
1. When distance to be travelled is equal to 5kms or less, people prefer to use 2 wheelers.
2. When distance to travel is more than 5kms and goes up to 10kms or people especially in lower/middle income group are found to use city bus as their mode of transportation.
3. Also when distance is more than 5kms and goes up till 10kms or more people in high income group choose 4-wheeler as their mode of transport

Factors of choice and constraints for use of Public Transport System
Push away from public transport because of factors like; less frequency of buses on certain routes,time taken to travel by bus is more,substandard /absent bus stops, uncomfortable ride in bus andno/less buses in certain areas to travel, No last mile connectivity

Pull Towards Private Vehicles Because Of Factors Like
1. Connectivity from origin to destination can be managed as per individual needs,
2. Travel time can be managed according to individual requirements

What is Governance?
Governance refers to "all processes of governing, whether undertaken by a government, market or network, whether over a family, tribe, formal or informal organization or territory and whether through laws, norms, power or language."

It relates to "the processes of interaction and decision-making among the actors involved in a collective problem that lead to the creation, reinforcement, or reproduction of social norms and institutions."

How things work?
National Level →State Level → City Level
National Level: Central Government, MoUD – NUTP and JnNURM

To support the desired levels of economic activities in urban areas, MoUD has taken following steps;
1. Formulation of National Urban Transport Policy in 2005.
2. Sector linked investments for transport and related infrastructure under JnNURM.
3. Human resources and Capacity enhancement

State Level: State Government
Motor Vehicles Act 1988, Central Motor Vehicles Rule 1989, Gujarat Motor Vehicles Rule 1989, Bombay Motor Vehicles.

Tax Act 1958
Bombay Motor Vehicles Tax Rules 1959, Bombay Passengers Act, Bombay Passengers Tax Rule 1959

Keeping in view NUTP and related transport issues, MoUD has suggested following reforms under JnNURM tied with Additional Central Assistance.
1. Setting up of a city-level Unified Metropolitan Transport Authority (UMTA) to facilitate controlled planning and implementation of projects.
2. Setting up of a Dedicated Urban Transport Fund at the State level
3. The State government and ULB waving all their taxes on urban buses and city bus service

City level: RTO
They give permission and licenses to run vehicles and give out licenses and are responsible to collect various taxes for the same.

Municipal Corporation - They have the main responsibility to cater the people of city

What are the major aspects that should be covered in a tender?

Performance Criteria, Monitoring, Penalties and Complaint Redressal

Some points under general terms and conditions in tender, but which are not followed.

What is Monitoring?

Monitoring is a continuous and ongoing process of observing and collecting information, using indicators to gauge the project and compare it with the expected performance. Regular monitoring assesses progress and allows the timely identification of successes or failures. There are two common forms of monitoring

1. Compliance monitoring ensures that what was agreed upon is actually done
2. Impact monitoring gauges the impact of actions in relation to the objectives

Monitoring information are most likely to contain: profile information on bus riders; basic project record keeping; statistical information; feedback sheets from surveys, focus groups, community meetings; diaries and other records of events; complaints and compliments from bus users.

What is Evaluation?

1. Evaluation uses information from monitoring to analyse the process, programs and projects to determine if there are opportunities for changes and improvements.
2. Evaluation is a more systematic and objective measurement of the results achieved by the project in order to assess its relevance, its coherence, the efficiency of its implementation, its effectiveness, its impacts, as well as its sustainability.
3. In the implementation stage, evaluation is used to determine if the actions are or are not meeting the strategic objectives efficiently and effectively.

Penalties

In tender notice, there is no separate section regarding penalties that shall be laid under various circumstances; but under the head of 'Force Majeure', norms regarding Suspension and Termination are mentioned.

Complaint Redressal

Complaint Redressal is one of the major and important aspects of governance, because without getting real time information of what is happening on ground it is not possible to bring in the positive changes required and improve the quality of service.

Who should be concerned/responsible about complaints of people?

Government because they have the responsibility of providing services to people and any faults or shortcomings in it should reach concerned authorities so that refinement of the same can be done.

Private operators because they are the main service providers, if they have to increase the transit ridership, certain issues and problems should be solved by them with high priority.

Politics

Because of only revenue generating attitude of Corporation, the revenue risk is higher on the side of bidder.

Economy

Ticket rates are stipulated by Govt. of Gujarat Ports and Transport Department

Social

Reservation of seats for Women, Old people and disabled, but no such provisions in buses.

Technology

No real time information of buses, Absence of accurate details of arrival/departure of buses at bus stops

Environment

Compulsory CNG Buses, Validity of fitness certificate and PUC certificate

Legal

Paperwork required for making tender a legal documents are mentioned and have to be obtained before commercial operations date

Results and Inferences

1. Under terms and conditions in tender, criteria for performance rating is provided, but no framework or methodology to work on it, nor any information regarding how the performance criteria will actually be reviewed.
2. Several terms are laid in tender, which are not followed, and which if actually followed can certainly help in increasing share of transit riders.
3. No provision for real time monitoring, what is mentioned in tender under 'monitoring' head is more of an evaluation strategy.
4. For complaint redressal, there is a provision of a helpline number on which complaints can be registered or by reaching at main office. But, any complaints made are received only by operator side and corporation is not aware when any complaints that are made.
5. In tender document, there is a provision which mentions to reserve four seats for women, old people and disabled, but on ground no such practice is followed.
6. The bus service of Vadodara does not give real time information of buses at bus stops and hence service faces a setback in terms of Intelligent Transport System.

Conclusion

The section deals with the conclusions of the study which was outlined by the analysis and all the findings and achievements made as per the objectives of the research. Recommendations presents the issues that could be taken into consideration for future decision making and policy formulation.

From the primary survey carried out, to know the choice and constraints of commuters and to know the approaches and roles of local government and private operators and critically analysing the tender document which forms bases for carrying out work, following conclusions have been drawn:

1. It was found out that socio economic conditions of respondents, distance of work place from home, occupation of given respondents and age

group of respondents are the main parameters affecting their selection of choice of mode of travel.

2. Along with them factors like, time taken in commuting, ease of access for travelling and comfortability while travelling also affect decision making of commuters.

3. As local government does not play an active role and is involved only till the contract is given to the operator several issues of lack of management have come forward.

4. Also because of lack of any tool of proper monitoring, the routes on which buses have to run with pre-decided frequency is not practiced genuinely.

Recommendations

Concerned factors	Strategies to improve existing scenario
Last Mile Connectivity	To develop a plan to integrate existing city bus service and para-transit to achieve last mile connectivity.
Display of arrival/departure at bus stops	To setup a Passenger Information System (PIS) as seen in case study of mysore
Management issues – Existing situation of bus stops, cleanliness in buses	To give out separate contracts for maintenance of bus-stops and buses, and to make sure no unauthorized activities take place
Monitoring of services provided by private operator	To setup a Schedule Adherence System which can help in real time monitoring of buses and their operations
Complain Redressal System	A mobile application can be developed where real time information is provided to both government and private authorities
Evaluating the performance	To use the performance criteria as used in case study of Hassan City Bus Service Evaluation Report
Frequency of buses	To increase ridership, more buses can be made to run in peak hours
Requirement of A.C. Buses	A pilot project of A.C. Buses on selected routes with increased ticket fare price can be worked out.
To increase connectivity	To introduce new routes which connect places where at present bus does not go to increase ridership

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