

## Evaluation of VITCOS City Bus Service of Vadodara City

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### Abstract

The main objective of this study is to define detail study on existing city bus service of Vadodara city which is manage by VITCOS(Vallabhipur Transportation Cooperative Society Pvt Ltd).The research work involves assessment of operational performance of VTCOS city bus service. Operational performance is carry out by commuter survey.

**Keywords-** Public bus transport; VITCOS; operational performance; financial performance; TRANSCAD

### I. INTRODUCTION

Today for any Indian city mobility on major road is an important issue due to higher growth rate of vehicles. Public transport system plays a vital role by providing cost effective and energy saving means of transport. The public bus transport system provides a better and safer environment by reducing congestion, pollution and creating more efficient solution to transport problems. The development and growth of an urban centre largely depends on the efficiency of prevailing transport system. Inadequate transport system tends to hamper the steady progress of towns and cities. Properly designed and operated city bus service is the solution to uncontrolled growth of intermediate public transport and increased use of personalized vehicles. Thus, there is an immediate need to improve the performance of bus system to retain the passengers and discourage the use of private vehicles

Public Transport can operate over existing roadway facilities with minimum construction cost, offer transit services at a much lower cost per passenger. Furthermore, buses provide the greatest flexibility in service routes to meet the current transport demand. Thus, improved performance of urban bus service could essentially contribute to improved environmental conditions in cities by shifting mobility from private modes towards more efficient environmental-friendly and safer travel modes. However, improvement in City bus system is not an easy task due to the fact that city bus systems are affected by socio-economic, financial, environmental, and political factors along with technological factors and physical problems. Performance of a bus system is affected by several criteria, such as increase in the number of buses, bus stops, and passengers, and changes along roadways and in land uses. Therefore, the various issues causing inefficient operation of bus services needs to be identified and also appropriate techniques/measures should be formulated to resolve these issues.

### II. NEED FOR STUDY

Public Transport has a vital role in urban development. Vallabhipur Transportation Cooperative Society Pvt. Ltd. (VITCOS), is a city bus service provider runs throughout the

city of Vadodara. Because of absence of an efficient bus system in the city people have begun to switch to other modes of travel. To overcome with these situations improvement of public transport services quantitatively as well as qualitatively is become necessary. This is possible by evaluating large scale bus transportation system and making guidelines for other

### III. LITERATURE REVIEW

Megha Verma et al. (2014) studied gap between commuter's expectations and actual service provided in urban bus transport service of BMTC. They evaluated service quality parameter like Tangible, Reliability, Responsiveness, Assurance and Empathy. The **statistical** analysis of results shows that expectations are higher than perception.

Patel Jigar (2013) studied existing Bus Transportation of Ahmadabad city which is manage by AMTS. He involved assessment of the infrastructure, operation, quality of service, performance and financial position. All parameters evaluated in his study much improvement is expected for better service to the citizen of Ahmadabad City.

Patel Krunal (2013) studied Vadodara Intra-city bus services (VITCOS), with the existing transportation system by using Trans CAD GIS tool. He revised bus route based on distance, fare and time and identified shortest path using Trans CAD GIS tool.

Danil Kitaw (2013) evaluated existing operational and financial performances of Anbessa City Bus Service Enterprise (ACBSE). They evaluate operational performance by fleet utilization, passenger carried per vehicle per day (PPVPD), Kilometer per vehicle per day (KPVPD), and Percentage Load Factor (PLF). Financial performances by profit earned, ratio of cost to revenue, revenue to labor cost, revenue to fuel cost, revenue to spare parts and revenue to labor cost.

Ali Ghufuran & Zeeshan Amir (2012) studied city bus service in Lucknow city. In this study they focused on attitude of passenger towards the city bus service in Lucknow. They studied parameter such that frequency, travel time,

punctuality, price, information, cleanliness, staff behavior, bus comfort, seat availability, bus stop security, safe from accident, bus stop condition etc.

Shah Priyank (2012) studied on public transport network of VITCOS city bus service in Gandhinagar. Vehicle occupancy survey was carried out between five major routes in three different session for understanding of required improvement parameters. He conclude that people are not feasible with Current Public transport network of Gandhinagar and capacity of the buses is not so good.

#### IV. STUDY AREA

Vadodara is the third largest city in the state of the Gujarat having population of 1.8 million (as per census of 2011). Vadodara is a traffic congested city. Traffic problems are increasing day by day. The reason is increasing private vehicles. Different modes of public transportation are available in Vadodara city like Auto, Taxi, city bus service etc.

Among them City bus service is most commonly use because of its flexibility, expandability, and low cost. City bus service operated by “Vallabhipur Transportation Cooperative Society Pvt. Ltd (VITCOS)” and is located at the CBD area of city near the bus station. It provide its service throughout the city from 6:00 AM to 9:30 PM. Total 101 number of buses are available for 33 routes with 124 pick-up stands.



Figure 1 Map of Vadodara

Table 1 Bus route attributes

Route ID	Actual Route ID	Name of Route	Distance (Km)	Max. Fare
1	3	Bapod bypass	10.1	11

2	3/D	Bapod bypass	11	11
3	4	Sayajipark	8.5	11
4	4/D	Sayajipark	7	11
5	5	Station circular route	12	13
6	6	Station circular route	11	13
7	7	Dabhoi bypass	9.7	13
8	7/D	Dabhoi bypass	11	13
9	8	Kaladarshan	8.3	11
10	9	Somatalav	10	13
11	10	Vadasar	14.1	13
12	10/D	Subhodhnagar	7.5	11
13	11	Tarasali	8.2	10
14	11/D	Ravipark	10	10
15	12	Maneja	9.3	11
16	14	Jambhuva	10.2	13
17	15	Harni	8.4	11
18	18	Sama	7	11
19	19	Channi	9.4	8
20	19/B	Prayag	7.8	9
21	20	Danteshwar	11	11
22	21	Rameshwar	6	9
23	22	Atladara	10	11
24	23/A	Bhayali	7.61	11
25	24	Aksharapartment	7.5	11
26	25	Panchvati	9	9
27	27	Gokulnagar	10	11
28	27/D	Sevasi	7	9
29	28	Balajinagar	6.7	9
30	29	Jalaramnagar	7	8
31	30	Laxmipura	6.8	11
32	31	Bajwa	13.1	13



Figure 2 Bus Route Network

## V. DISTRIBUTION OF POPULATION

Vadodara city is divided into 10 wards. There is a large different in the distribution of population densities in the municipality area.

Table 2 Ward Wise Population of Vadodara City

Ward No	Ward Name	Area (sq/Km)	Population (2011)
1	City	1.48	76578
2	Fatehpura	9.31	143663
3	Wadi	8.73	123531
4	Makarpura	40.49	246535
5	Balajipura	7.15	107135
6	Sayajigunj(s)	30.70	161058
7	Sayajigunj(n)	13	219038
8	Raopura	7.10	143518
9	kishanwadi	11	190974
10	Gorwa	19.28	182986

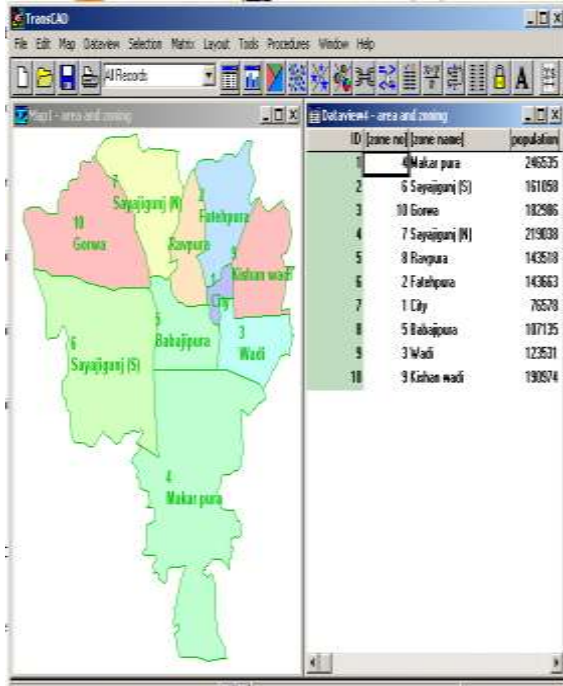


Figure 3 Zoning of Study Area

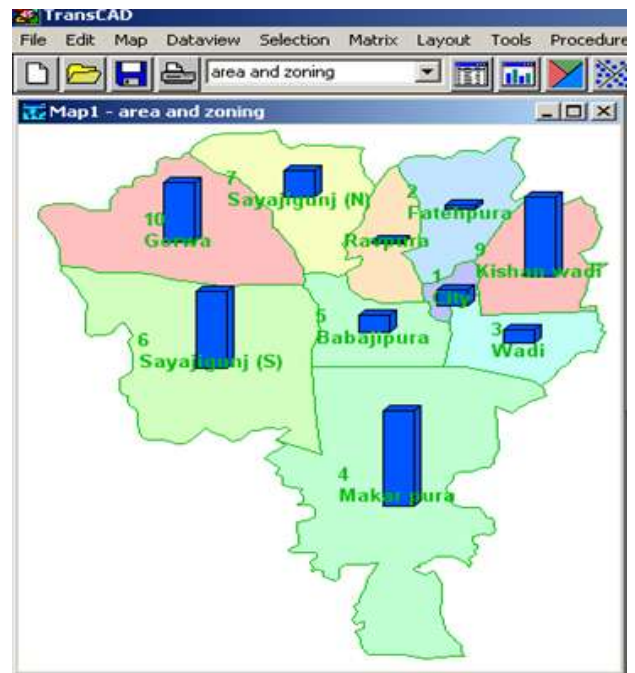


Figure 4 Population Growth Rate

The population growth rate, where ward 4 and 9 shows highest positive growth rate. The reason for high growth is development of educational, infrastructure, industry and good road network in the area

## VI. DATA COLLECTION & ANALYSIS

Table 3 Route Selected for analysis

Route ID	Actual Route No	Ward No	Name of Route	Distance	Max. fare
1	3	9	Bapod Bypass	10.1	11
2	10	4	Vadasar	14.1	13
3	18	10	Sama	7	11
4	29	7	Gotri	9.7	8

### 1. Station to Bapod

City Bus Stand- Sayajigunj- Kamatibuag- Tower- Nayaymandir- Mandavi- Panigate- Suryanagar- Uma- Zavernagar- Vrundavan- Bapod jakatnaka- Ambe School- Bapod bypass.

Route id	Actual Route	Name of Route	Length	Travel time per trip	Number of trips
1	3	Bapod	10.1	30	72

1.

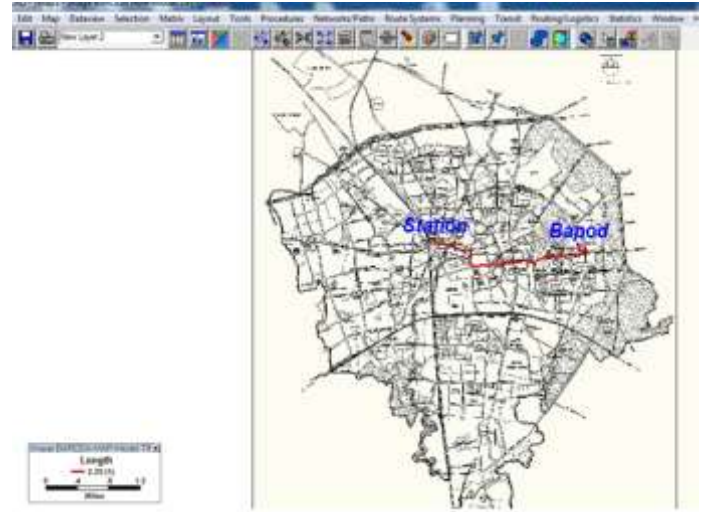


Figure 5: Selected Route

Commuter survey was carried out for operational evaluation on Selected Routes. Results are as below:

### A. Operational Efficiency-Passengers

#### Observations:

1. **39%** of the commuters are **Male** and **61%** of the commuters are **Female**.
2. Along this route, most of the trips made are either for **Work (49%)** or **Education (35%)** followed by **other(16%)**.
3. **74% of commuters** use city bus service for their **daily** commute.
4. **68% Commuters** feel that Bus Stop is available.
5. **21% of the commuters** feel the need of **bus shelters** and **79% bus route information** at the bus stop.
6. **45%** of the people need to walk 15-30 min. to reach the nearest bus stop.
7. **71%** of the commuters need to wait for **15-30 min** for the next bus.
8. **66% commuter** feel that Bus not arrived at scheduled time.
9. 79% Commuter are Satisfied with current Bus fare System.

10. **62%** Commuter feel that Bus service is **Cost saving** ,  
**28%** feel that it is **Comfortable** and **6%** feel that it is Safe.

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