

EXPLORING BRTS FOR ACCIDENT REDUCTION: A REVIEW

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Abstract

Public Transport System in most Indian cities is rapidly deteriorating because of the increase transportation system. BRTS is a high user capacity transport system which delivers very fast, reliable, comfort and cost-effective mode of movement for the customers. Since BRTS run in their exclusive lanes, there are very less chances of congestion and accidents. There are various problems related with public transport such that tremendous increase in number of accidents, Environmental degradation, congestion, overcrowding due to inadequate system, frequency of service and schedule is not strictly adhered. By studying 16 research papers, focused on various strategies, tools and techniques like there are various problems related with public transport such that tremendous increase in number of accidents.

Key Words: BRTS, Accident Reduction, Transit system

1.INTRODUCTION

BRTS (Bus Rapid Transit System) is one of successful mode of transport to solve the congestion, delays, accidents and other issues. A country's growth is very much dependent on the adequate transportation systems available to the citizens. The cost involved in the construction of BRTS is quite cheaper than metro rails and light rail transits because existing roads can be converted to BRTS routes. The outcomes of implementing BRTS through the proposed route map would result in economic benefits such as reduced travel times, improved road conditions and also social benefits like easily accessibility to buses, reduced accidents and injuries. Apart from reduction in accidents, an exclusive bus lane carries significantly more people than an adjoining general traffic lane during the peak travel periods.

- To reduce the accident rate.
- To reduce the travel time of the vehicle.
- To improve the mass transport system.
- To reduce the vehicle demand to capacity ratio.

2.OBJECTIVES

The basic objective behind launching Bus Rapid Transit System (BRTS) was to reduce the number of accidents occurring on city roads. The belief was segregated lanes for different types of vehicles would bring down the number of accidents, but that does not seem to be happening in the city.

Rather BRTS lanes themselves have turned into the accident hotspots. Every week at least one fatal or near fatal accident happens on BRTS lanes. More than 75 per cent of these accident caused by vehicles other than BRTS buses.

3. MAIN FEATURES OF BRTS

- Dedicated (bus only) running ways (preferably, physically separated from other traffic).
- Accessible, safe, secure and attractive stations.
- Easy-to-board attractive environmentally friendly vehicles.
- Stations provide level access between the platform and the vehicle floor.
- Existence of an integrated "network" of routes and corridors.
- Low emission vehicle technologies.
- Frequent, all-day service.

4. METHODOLOGY

This paper reviews the BRT systems based on various design and operation characteristics.

1. A route map was selected keeping in mind the feasibility of BRTS and regular travelling by the users.
2. The highest intensity of traffic was found and the timings were inferred.
3. All Bus stops except 4 throughout the route map provided at the currently prevailing bus stops to avoid problems to the public.

4. At some points where no methodologies could be worked out, encroachments had to be done to provide BRT.

4. Since buses share lane with HOV's automobiles may impede bus operations. This make HOV lanes less efficient than bus only lanes.

5.BRTS- BENEFITS

5.1 Short Term Benefits:

1. Efficient, reliable and frequent services
2. Affordable fares
3. A safe and secure public transport system
4. Universal design
5. A decrease in road congestion
6. An enhanced urban environment

5.2 Medium-Term Benefits:

1. Containing urban sprawl
2. Promoting social inclusion instead of isolation
3. Direct and indirect job creation in both the transportation and construction industries

5.3 Long-Term Benefits:

1. Economic development in and around the areas of BRT operation
2. Reduction in pollution
3. Reduction of harmful pollutants and greenhouse gases

6.BRTS ADVANTAGES

1. Grade separated provides high sense of safety and saves travel time.
2. BRTS lanes do not interfere with mixed traffic.
3. Designated curb side bus only lanes improve BRT travel time making buses competitive with automobile.
4. Converted high occupancy vehicle (HOV)lanes, allow buses to operate faster, more reliably and more safely than buses in mixed traffic lanes.

7.BRTS DISADVANTAGES

1. Construction of graded lanes has high capital value.
2. Lanes with no interference may not be attainable always.
3. Implementation of new bus lanes with street widening may displace parking and pedestrian paths.

8.CONCLUSION

BRT is a great opportunity to provide high quality service and capacity within short time period and with limited resources. There are some improvements that are still needed, especially the implementation of a performance monitoring systems to enhance reliability and comfort.

We have designed a BRT System with the following features to reduce travel time by 15min and also reduce accidents, avoid congestion.

- Dedicated Bus Lanes
- Elevated Bus Stops
- E- Ticketing
- Smart signals
- Increase in ridership
- Volume demand to capacity ratio stabilized
- Online passenger information
- Level boarding

Detailed area survey, economic growth, population of the area has to be carried out to improve the mass transportation constantly.

Alignment in the center of the road, station with off board fare collection and bus priority at intersection work has to be carried out in order to implement BRTS for longer stretch.

Implementation of BRTS by creating segregated bus lanes and re-designing intersections, conflicts between buses and other motorized traffic can be reduced leading to a sharp decrease in the number of accidents and fatalities for buses and other motorized two-wheelers.

REFERENCES

1. Ahmedabad Bus Rapid Transit System, Urban Transport Initiatives in India: Best Practices in PPP report by National Institute of Urban Affairs, India <http://www.niua.org/projects/tpt/AHMEDABAD%20BRTS.pdf>
http://www.ahmedabadbrts.com/web/About_JanMar_g.html
2. Bus Rapid Transit System Bhopal, Presentation by BCEOM International France, Bhopal Municipal Corporation, Sept. 2008 Downloaded from Internet on Aug. 2013)
3. Transportation Systems Engineering Group, IIT Bombay. (2014). "Report on Road Safety Audit of Pilot BRTS Corridor at Pune. Pune Municipal Corporation.
4. Weinstock, A., Hook, W., Replogle, M., Cruz, R. Recapturing Global Leadership in Bus Rapid Transit- A Survey of Select U.S. Cities. USA: Institute for Transportation & Development Policy; 2011.
5. BRT Case Study, Curitiba, Brazil.
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp90v1_c_s/Curitiba.pdf 5. Colleen McCaul (2009), Project Manager of GTZ Consulting Team: Johannesburg Rea Vaya BRT Project, South Africa
http://www.unhabitat.org/downloads/docs/7997_81569_rea_vaya.pdf 6. HT Correspondent, Hindustan Times Bhopal, June 20, 2013
<http://www.hindustantimes.com/Indianews/Bhopal/3-thingsmissing-from-Bhopal-BRTSestimates-panel/Article1-1079470.aspx>.
6. Jaiswal Anuj, Sharma Ashutosh (2012); 'Optimization of Public Transport Demand: A case study of Bhopal' IJSRP/Vol.-2/Issue7/July 2012, ISSN No.: 2250-3153.
7. Kadiyali L.R, (2008), Traffic Engineering and Transportation Planning, Khanna Publishers, Seventh Edition, Delhi. 9. Kumar Manish, Sustainable Cities Collective, Article (Downloaded from Internet net on 6/10.2013)
<http://sustainablecitiescollective.com/kumar-manish/180741/mybus-brts-launched-bhopal-bridges-old-city-and-new-city-india>
8. Agarwal P.K., Sharma Anupama, Sing A.R. (2010),

An overview on Bus Rapid Transit System, JERS/Vol.-I/Issue-II/ Oct.-Dec./ page. 195-205.
9. Badami, M.G. (2005), "The Urban Transport Challenge in India: Considerations, Implications,

and Strategies." International Development Planning

Review, Vol. 27, 169-194.

10. ADB (Asian Development Bank) (2010) 'Urban development policy of India (Part 1): Mobility of People by Bus Rapid Transit', Urban Innovations and best practices, ADB, April, Manila
11. Advani, M. and G. Tiwari (2005) 'Evaluation of public transport systems: Case study of Delhi Metro, START-2005', IIT Kharagpur, India
12. Ahluwalia, I. J. (2010) 'Bringing speed to bus rides', The Financial Express, Indian Express Pty Ltd, Delhi
13. AMC (Ahmedabad Municipal Corporation) (2011) 'Janmarg BRT Homepage', <http://www.ahmedabadbrts.com/>, last accessed 13 January 2011

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