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"An evaluation of existing BRT system & planning of new corridor of Rajkot city"

Bharat Parmar[1], Prof. Rahul M Kasundra[2]
[1]PG Scholar, [2]Assistant professor, Department of Civil engineering, Atmiya Institutes of Technology and Science, Rajkot (003)

Abstract: ***Urban transport system is a key issue in nowadays scenario due to incredible growth rate in urban areas and improper planning to accommodate incoming migrants. Rajkot city being the education hub and industrial hub becomes an epicenter for opportunities which in turn attracts a great number of man-power. The huge population and increasing requirements towards transportation challenges the existing service in the heart of the city. To face challenge, BRTS turn out as a sustainable transit system looking toward the availability of space and existing network of roads. This thesis deal with assessment of less preferred existing operational BRTS. It works with 3 corridor and only single is operational out of 3 and 2 are in under planning and it known as blue, Red, and Green. Congestion and Connectivity has been the concerned issue and need to be resolved by planning of another corridor to provide better transport to the public.***
Keywords: BRTS, evaluation of BRTS, Passenger frequency, planning of new corridor, Travel time

I. INTRODUCTION

Bus rapid transit System is a transit option that is flexible in implementation and can be designed to fit a variety of local conditions along routes with relatively high levels of activity, density, and demand for trips throughout the day. By investing in roadway, right of way, intersection, and signal improvement, BRT system can provide improved travel speeds, reliability, and quality of transit service. BRT can help local jurisdictions and transit operators offer their customers sustainable transportation option that facilitate the safe, convenient, affordable, and efficient movement of people. However, BRT is not always the "Best" solution. Implementing or expanding commuters bus service, express bus, and new local bus route or improving the existing bus
Service could be more appropriate option for local jurisdictions and transit agencies to explore when deciding how best to meet their transportation needs. Public transport system is a key component of development of a country. Public transport faces severe problems in almost all developing countries. The situation varies from one country to another and even from one city to another. The lack of financial resources restricted the necessary investment for maintenance and up gradation of existing public transport system. Due to efficient public transport system in India various problem like accidents, Environmental degradation, congestion, and overcrowding have increased. There is a great need to ensure that the public transportation systems are safe, efficient, affordable and effective. BRTS is designed and developed to tackle all the drawbacks of the existing bus systems in an economical and efficient manner.it is a low-cost option for providing cities with a quality transit option. India currently has a number of operational BRT system in various cities like Ahmedabad, Pune, Delhi, Mumbai, Indore, Bhopal, Jaipur and Rajkot. Performance evaluation may be defined 'determining how well policies, programs and projects perform with regard to their intended goal and objectives'.

II. OBJECTIVE

A. To evaluate the existing corridor of BRTS by various traffic survey.
B. To design and plan for new corridor between Madhapar chowk to Morbi road.

III. LITERATURE STUDY

A. Review on performance of BRTS: overview bus rapid transit system and say that Bus rapid Transit System (BRTS) is a pioneering, high capacity, lower cost public transport solution that can significantly improve urban mobility. They discuss about the need of BRTS in Indian cities as central Business districts have continued to grow that require more capacity and improved access. They also discuss the positive and negative impacts of BRTS. BRT system can often be implemented fast and incrementally. For a given distance of dedicated running way, BRTS is generally less costly to build than rail transit. BRTS can be the most cost-effective means of serving a wide variety of urban and suburban environments. BRTS can provide quality performance with enough transport capacity. BRT system can utilize a wide range of vehicles, from standard buses to specialized vehicles. A wide variety of ITS technologies can be integrated into BRT system to improve system performance in

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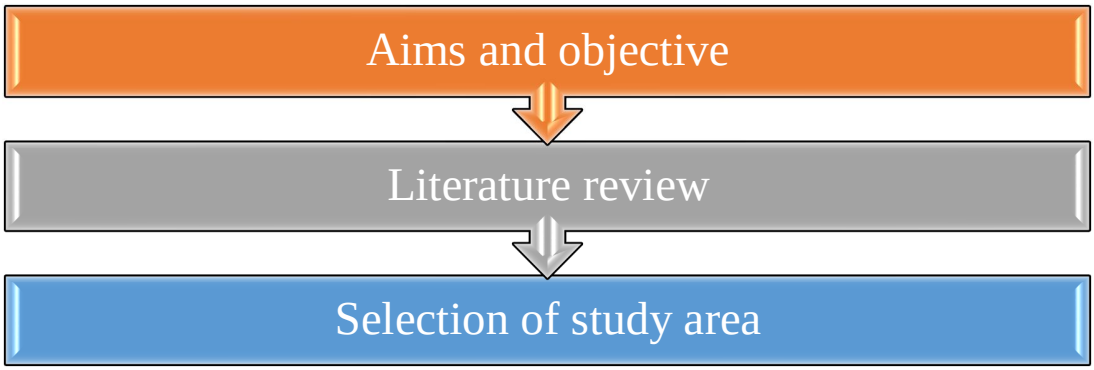
terms of travel times, reliability, convenience, operational efficiency, safety and security. Designing a service plan that meets the needs of the population and employment centers in the area and matches the demand for services is a key step in defining a BRT system. Saving travel time. By creating segregated bicycle lanes and redesigning intersection, conflicts between motorized traffic and bicyclist can be reduced leading to a sharp decrease in the number of accidents and fatalities for bicyclist and motorized two-wheelers. Exclusive travel ways result in to increased capacity.

B. Review on Bus Rapid Transit System: Bus rapid transit system has the potential to provide a higher quality experience than possible with traditional bus operation due to reduce travel and waiting times, increased service reliability and improved usability. Today bus rapid transit system (BRTS) in various forms are in operation in more than70 cities around the world, and being planned in dozens more. The increased interest in bus Rapid Transit System (BRTS) is the result of its ability to deliver high-performance transit services at relatively low costs, with short implementation times and high positive impacts. Bus Rapid Transit System (BRTS) is a bus-based transit system which allows higher speed, improved capacity and better bus safety by segregating them from another road way traffic into a separated bus way (Levinson et al. 2003. Bus Rapid Transit System gives scalable solution for providing better mobility, easy accessibility, Comfortable and safer service, at lower costs using efficient utilization of limited resources, energy and land. As more and more cities throughout the world opted for Bus Rapid Transit System (BRTS), further work into Bus Rapid Transit System design and performance has made BRTS evolve into an advanced and enhanced “Bus” system with increasingly flexible and adaptable, Operational and service characteristics. More than 150 cities in the world now operate BRTS corridor. However, discussions remain for BRTS i.e. which features are better and in which manner is it better.

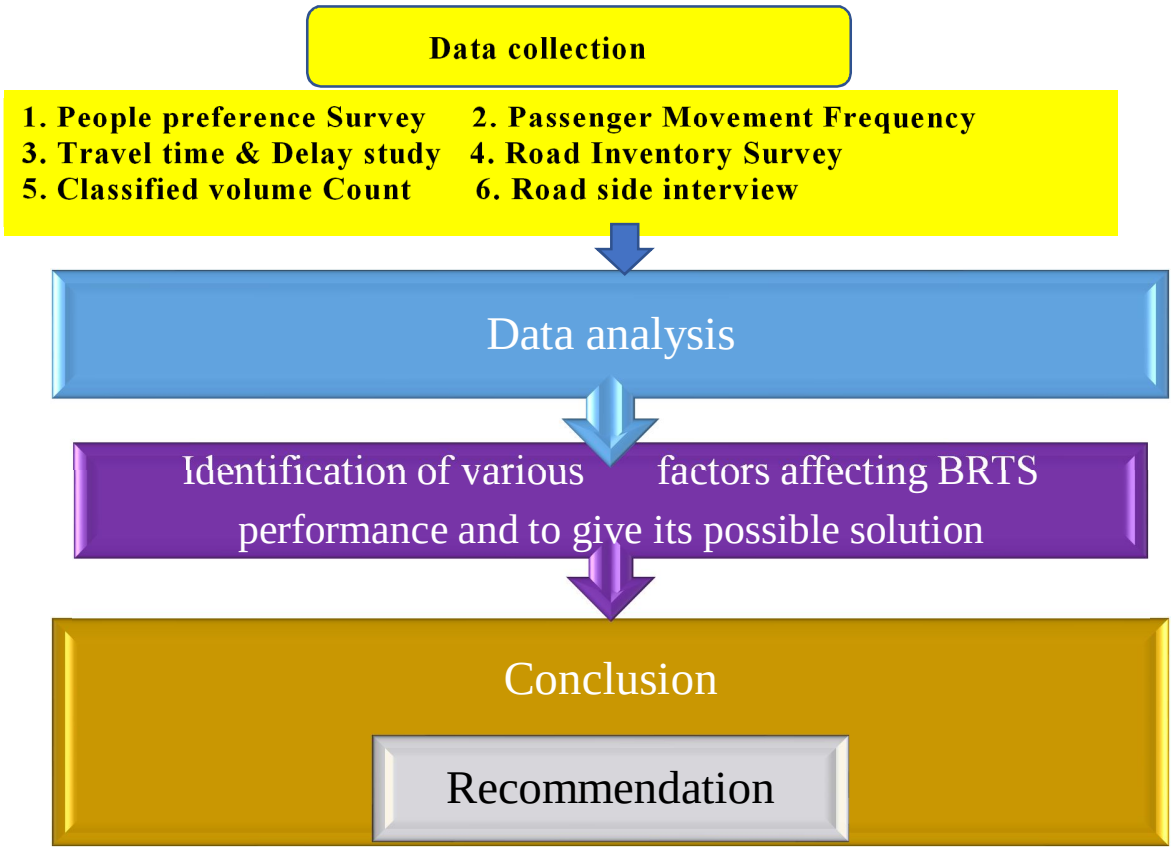
C. The BRT planning guide, institute for transportation development policy (ITDP), 4th edition, in this book Volume 1 lays the groundwork for initiating a Bus Rapid Transit (BRT) system from the initiation of a project to sparking real momentum that will bring the project into reality. BRT systems have become increasingly popular as a cost-effective way for cities around the world to provide high quality transit. However, it is crucial to the success of a project’s development that a driven and committed group of people advocate for BRT (Chapter 1), explain how the system works and the reasons why it is needed (Chapter 2), and capture the necessary political commitment and leadership to catalyze a fully comprehensive setup and planning process (Chapter 3). Project teams will need to look at a number of factors that are described in detail in Volume I, as these will determine the BRT system potential for success. These include: capital and operating costs, performance, flexibility, scalability, implementation speed, and the impact the system will have socially and environmentally on the immediate surroundings of the system as well as the metropolitan region as a whole. The first three chapters of the BRT Planning Guide delve into these factors among others while providing examples of how advocates, governments, and citizens alike have provided the vision, leadership, and action to see the project through and launch a successful BRT system.

IV. METHODOLOGY

To fulfill objective of thesis, require proper methodology for research followed below methodology decide study area& identification of problem which is facing current time. Then decide aims and objective after that studied literature study by various journal which can help to solve problem and fulfilled objective. It should some technical survey to find out problem which is conducted like **1.** People preference survey **2.** Travel time & Delay study **3.** Passenger movement frequency **4.** Road inventory survey **5.** Classified volume count by survey concluded which factors affecting on BRTS performance to recommend to the region office Rajkot Municipal Corporation.



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V. CONCLUSION

Performance of BRTS is define by survey which is carried out on the field. Some of them are the below

A. Most of the stations are not signalized so it leads to heavy traffic congestion at the intersection which cause delay.

B. Rajkot Bus Rapid Transit System (BRTS) service is more affected by the intersections delay, on the selected approach there is a heavy traffic causing delay on intersection. Bus Rapid Transit System (BRTS) priority signal rule should be applied in practice to increase demand.

C. In People Preference Survey carried out that many problems they are facing which is given in data collection chapter-5 and some of them is given below

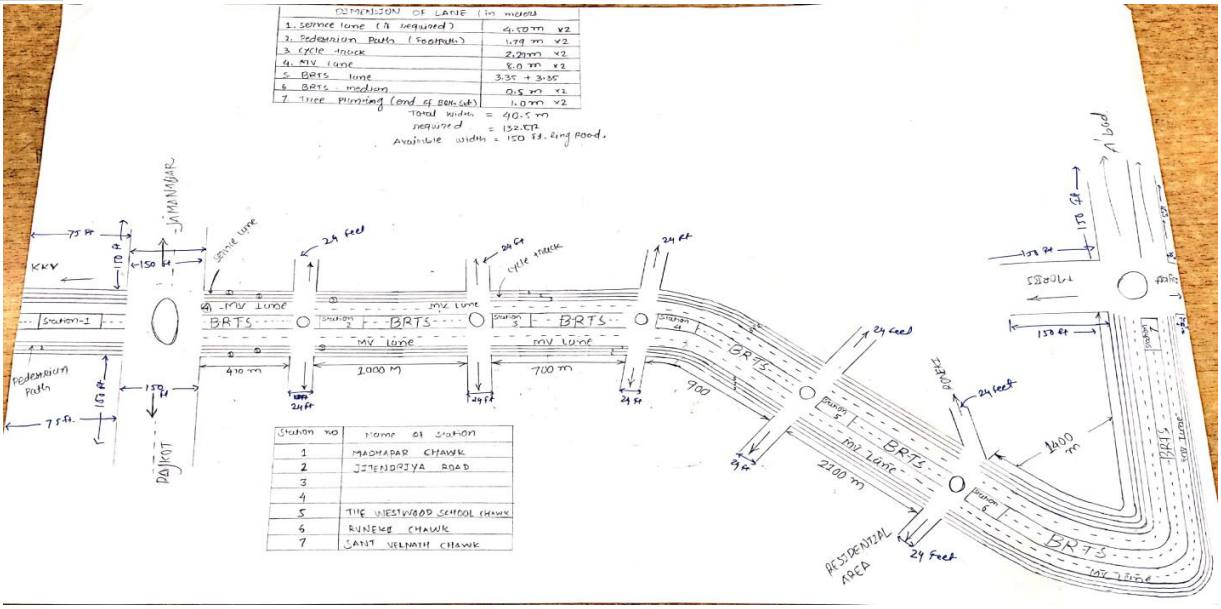
1) Driver should be careful
2) Student should follow and maintain some discipline
3) For senior provide seats
4) Intersection delay, sometime it takes too much time
5) Provide more buses
6) Heavy rush during peak hour
7) Time span 10 min reduce & provide at every 5 min
8) Passenger should be in some discipline

D. Maximum boarding and alighting at Indira circle chowk station because of significant travel demand of student and due to heavy rush is required another platform boarding gate.

E. After conducting CVC peak hour is 9:30 to 9:45 AM and PCU/Min is 3196.235.

F. Design of proposed corridor prepared in AutoCAD for fulfillment of second objective. *Design of rough sheet as below snapshots. Followed by ITDP and Road safety guideline.

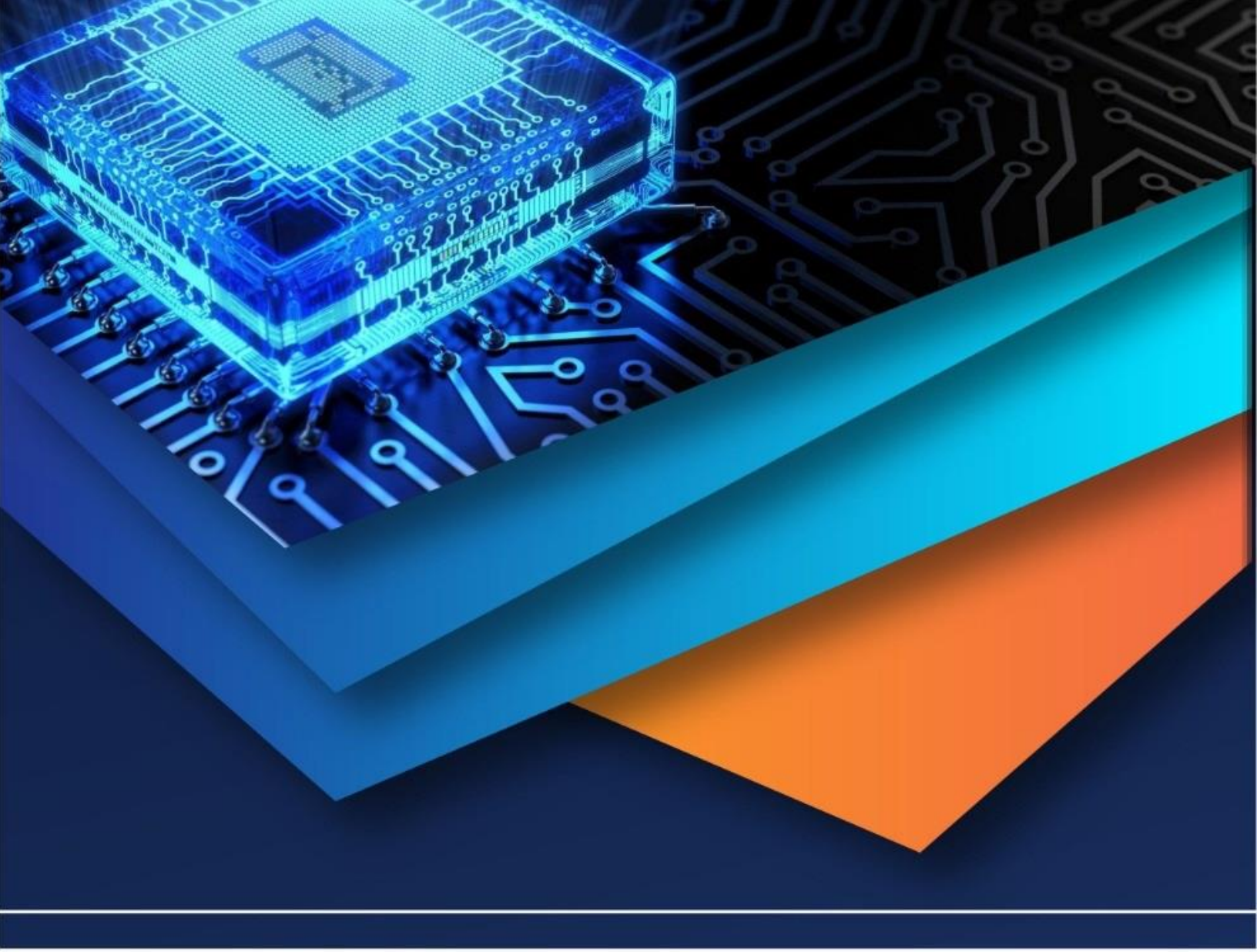
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REFERENCES

[1] Agarwal P. K., Gurjar J. & Gupta V, Evaluation of Socio-Economic Impact of City Bus Services in Developing Countries, Accepted in World Conference on Transport Research – WCTR, Shanghai. (2016)
[2] Chaudhari Dron, Prof. N.D Hajiani, Traffic Impact Analysis of BRTS - A Case Study of Ahmedabad BRTS, - L. D. College of Engineering, Gujarat Technological University, Ahmedabad, 2014
[3] Chaurasia D., Bus Rapid Transit System (BRTS): A Sustainable Way of City Transport (Case Study of Bhopal BRTS). International Journal of Engineering and Advanced Technology (IJEAT), (2014) ISSN: 2249 – 8958, Volume-3, Issue-4
[4] Taotao Deng, Mulan Ma, Evaluation of Bus Rapid Transit Implementation in China: Current Performance and Progress, - Shanghai University of Finance and Economics, Journal of urban planning and development ASCE / September 2013
[5] George Papa Georgiou Athanasios Maimaris, Planning for Effective Bus Rapid Transit Systems: A scenario simulation modelling-based approach, Petros Ioannou Thrasos Aphamis, 2012
[6] Jaiswal A., Sharma A. &Krishnan Y, Potential of Bus Rapid Transit System for Million Plus Indian Cities: A Case Study of Janmarg BRTS, Ahmadabad, India, International Journal of Advanced Engineering Research and Studies. (2012)
[7] Krystian Birr*, Kazimierz Jamroz, Travel Time of Public Transport Vehicles Estimation - Wojciech Kustra Gdansk University of Technology, ELSEVIER Narutowicza 11/12
[8] Shah Shaishav, Patel Ravi, Jain Saurabh, Appraisal Study of BRTS Surat-A Sustainable Urban Transport, (Civil Engineering, C.G. Patel Institute of Technology, India),2015
[9] Satiennam T., Fukuda A., & Oshima R, (2006), A Study on the Introduction of Bus Rapid Transit System in Asian Developing Cities: A Case Study on Bangkok Metropolitan Administration Project, Journal of International Association of Traffic and Safety Sciences, Vol.30, No.2, 59-69.
[10] Takeshita H., Kato H., Hayashi Y.& Shimizu K., Evaluating Bus Rapid Transit System in Nagoya City" 89thTransportation Research Board Annual Meeting, Japan, 200

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