

Study of transportation planning in Bangalore and performance of services in BMTC

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Abstract

The transportation infrastructure play a vital role in economic growth of the country. Various method for forecasting the vehicular and population growth is necessary to planning for present and future transportation system. The traffic projection from various methods includes exponential, linear, logarithmic, polynomial, slope intercept and compound rate of growth based on IRC method. Rapid process of urbanization and growing population in cities it is essential to provide safe, easy, and fast transportation network. The purpose of the study to provide effective transportation on timely movement of human and goods from one place to another place. Transport infrastructure planning, regulation, and implementation involve different ministries, departments, and agencies across central, state, and city levels with various responsibilities. This is about case study of transportation planning in Bangalore. Transport planning in Bangalore is characterized by institutional fragmentation, increasing private modes of transport, and questionable investment decisions in the transport sector. In the Bangalore city where the sustainability impact due to introduction of congestion in the CBD (Central Business District) during peak hour. BMTC (Bangalore Metropolitan Transport Corporation) is a government agency that operates the public transport bus services of BMTC operating in Bangalore city. This paper include that the spatial planning of transportation facilities and public transport facilities in Bangalore by BMTC.

Key words: Bangalore Metropolitan city, BMTC, Sustainable transport, Transportation planning, public transport

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I. INTRODUCTION

Transport system have a huge impact on the way people travel with the rapid growing economies and population increase in developing countries. In India Bangalore is the third most populous city. According to Census of India 2011 population of Bangalore is approximately 8 million. The vehicular population of over 6 million with over 5 million of those being private vehicles. According to last five-six years vehicular population is increased every time. Due to this roads are highly congested, road accidents, noise pollution, air pollution and many other problems occurs. Everyday more than 30 accidents occur out of which 21 persons are injured and 2 to 3 persons killed. To solve this problem the state and city governments have a promote sustainable transport with some policy like National Urban Transport Policy (NUTP), Comprehensive Traffic and Transportation Plan (CTTP), Comprehensive Development Plan (CDP), etc. Implementation of transportation system governments increasing number of buses and bus routes operated by the Bangalore Metropolitan Transport Corporation (BMTC). It deals with urban transport planning and promotes public transportation planning. A total of 3700 trips is being operated by all the premium buses and carries over 0.1 million passengers every day. The service area characteristics, in particular the density of operations and demand. The factors that influence performance of a transit system are its consumers, operator, and supervisors, and thus form the basis of selection of performance indicators. In this paper focused on various options and possibility of sustainable transport planning strategies for Bangalore public transport system.

Study area

The study area selected is Bangalore. It is capital of the state of Karnataka. Bangalore has a population of over eight million. Bangalore is the second fastest-growing major metropolis in India. The total area of Central Bangalore is 709 km². This picture shows CBD area of Bangalore.



Figure 1: Map showing the location of Bangalore

Objectives

- Study about quantify the performance of the premium bus services operated by Bangalore Metropolitan Transport Corporation and promote public transportation.
- To study Sustainable transport network and facility taking into consideration different conditions such as travel time, distance and cost.

Bangalore Metropolitan Transport Corporation (BMTC)

Now a days BMCT is the major mode of public transport bus services in Bangalore city. BMTC is the Municipal Transport Undertaking to make accounting and economic profit to governments. Headquarter of BMTC is at central office, K.H. road, shanthinagar, Bangalore. It is operated by government of Karnataka. BMTC using both the operational and financial parameters.

➤ Operational parameters include:

- Vehicle utilization which defines the extent to which vehicles are used. i.e. Average daily kilometers operated per vehicle per day
- Fleet utilization is defined as the ration of total number of vehicles on road to the total number of vehicles held by the company
- Staff per schedule
- Staff productivity
- Breakdown rate is defined as number of vehicle breakdown per 10000 vehicle kilometers

➤ Financial parameters include:

- Total Revenue generated per vehicle per day
- Total Earnings per passenger kilometer
- Total Cost per passenger kilometer

One of the main reasons for this being the expansion of the transportation network without the integration of entire system, leading to underutilization of resources and descent in service levels. It is also provide Intelligent Transport System. Due to this buses were equipped with GPS which would show the location of bus. Mobile app is also launched by governments of Karnataka. BMTC also introducing about prepaid smart cards. It also benefits to economically weaker sections to save on the total cost of transportation.

Routing Pattern of BMTC Buses

BMTC is to provide point-to-point services throughout the city. Buses are routed point to point implying that from a given major origin there are buses for all other major destinations. BMTC has total 34 bus

stations. It is connected with and the 3 major bus stations are located at (1) Kempegowda Bus Station, Majestic (2) K. R. Market (3) Shivajinagar

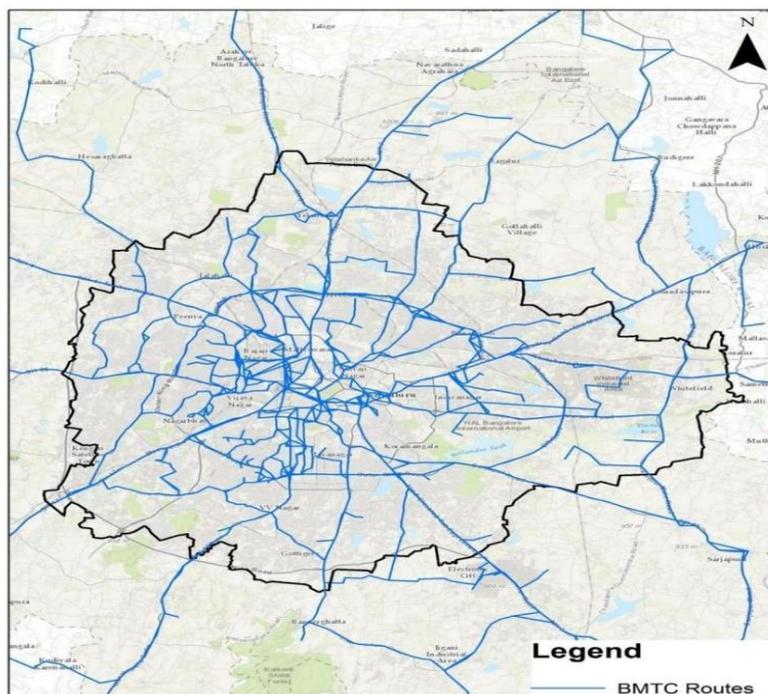


Figure 2 shows BMTC bus routes

This study is to understand the impact of alternate methods of routing on service levels and operational efficiencies. In the present operations the focus is on point-to-point service due to this services being low and large waiting time for people.

Smart card

BMTC start a smart card for its bus services in June 2016 for the first time. The company introduced smart cards on trial-basis on BMTC Bus No. 335 operating between Majestic and Kadugodi bus stations in March 2017. Apart from serving as an identification document the smart cards can be used to purchase bus tickets and also swiped at point-of-sale enabled merchant establishments. The card costs ₹5 and can be recharged for up to ₹10,000. Recharges higher than ₹10,000 require the customer to provide identification. According to Axis Bank, the BMTC's partner in the project, the smart card is India's "first open loop EMV contactless smart card".

Focus points of BMTC System

- Buses are the only mode of transportation for people who enter in the system.
- The arrival rate was found to be inconsistent because of that there is large fluctuation to reached at destination.
- Breakdown of buses do not happen because of particular lane provided for it.
- Buses have average constant speed of 40 kmph.
- The route time for the buses is assumed to be constant.
- The total capacity of the bus is assumed to be 50.
- There is huge decrease in travel time, which came down by more than 50% in peak hour.

Congestion charge determination

The value of congestion charge was found by dividing the total congestion cost imposed by each vehicle type in Bangalore by the total vehicle trips by that vehicle type. Only motorized vehicles were used in this estimation. The calculation of congestion costs imposed by each vehicle type on other vehicles. In Table a PCU (Passenger Car Unit) Value of 3 and 0.5 was assumed for bus and two-wheeler.

From the above table the congestion cost imposed by each car while making a trip came as 38 Rupees and by two-wheeler while making trip came as 19 Rupees. So in the study we tried implementing a congestion

cost of 40 Rupees for car and 20 Rupees for two-wheeler. The variation in congestion price was accommodated in the travel cost variable of the model.

II. CONCLUSION

As the present scenario it is benefits to both commuters as well as the BMTC. It will Reduced total travel time of commuters. This can reduce the travel time by over 40% and the waiting time of the commuters. It will make transportation easy, cheap and comfortably so people can use this system and it will increased in revenue. Buses stop at every point due to this commuters are waiting for large time. This review is comprises of transport planning strategies for Bangalore in order to obtain multimodal integrated transportation system along with Bangalore metropolitan transport corporation operations.

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