

Criterion for Selecting Appropriate Rapid Transit Technology for Colombo

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Traffic congestion is a condition on road networks that occurs as use increases and is characterized by slower speeds, longer trip times, and increased vehicular queuing. As demand approaches the capacity of a road (or of the intersections along the road), extreme traffic congestion sets in. Traffic congestion contributes to waste of time and money every second. Many developed/developing countries find solution for the traffic congestion at roads with the help of rapid transit systems.

Rapid transit systems that are widely in use can be dividing in to four major categories; Mass rapid transit (MRT), Light rapid transit (LRT), Monorails, Bus rapid transit. (BRT)

The main objective of this research is to find a criterion for selecting most suitable rapid transit system for Colombo Metropolitan Region from among the above four types. The study consists of collecting user preference based on a questionnaire survey, evaluating different systems based on considering land availability, passenger demand, road network system, passenger transfer from other modes & environmental issues, and calculating costs & benefits for each rapid transit system. A case study for Battaramulla corridor is presented.

The questionnaire collects from the passenger who travels the Battaramulla-Fort corridor. This road section is highly congested at peak time and it will be increase at future due to administration city will become Sri Jayawadanapura Kotte. Hence it is essential to give proper solution for the increasing traffic in this corridor.

In addition to user preferences the questionnaire focuses on the drawbacks in existing systems, user expectations for a new system. These were used to identify the user related issues in existing systems and to find whether a rapid transit can address those issues.

According to the survey results, more than 50% respondents of indicated that BRT may be the better option for Colombo. Most of the passenger who travel daily for the work and low income (less than Rs: 50,000 per month) prefer BRT over others.

According to the cost for install of new rapid transit system, MRT is more expensive than LRT system. Source of power can be use as Electrical power system because we have limited power supply for usage .Alternative other solution of energy we can think of renewable energy. BRT system need to more space than improving the current system and Monorail system is

consume less space and required the mode of power to operate. The land value is going up day by day it will take considerable cost for land acquisition. According to the cost calculation for the selected road trace of Battaramulla -Fort, It is considerable cost reduction for the BRT system than the installation of Monorail system.

It is required to establish criteria based on the cost /benefits, passenger's preference, accessibility, connectivity with other modes, future expansion possibility, incentives for the land use development along with new system and emission levels of vehicles.

According to the research, passenger preference for the BRT system, with the connectivity with other modes monorail systems is better than BRT. Possibility of future expansion of the system, there is a difficult with BRT system due to problem of Land acquisition. That can create significant social issues due to resettlement of people. From the environment point of view, more missions are expected from BRT system as compared to Monorail. Incentive for land use development along with BRT is restricted due to limited access to other vehicles considering all of the above monorail seems to have an edge over BRT.

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