

ABSTRACT

Karachi's transportation problems are not new. Increasing urbanization day by day led to congestion for which long flyovers and underpasses have fallen short. Mass transit is considered as optimal solution for such problems in the city.

This report discusses the different practical solutions for optimizing the infrastructure of Greenline BRT Karachi and also the effect of people's choice of mode after introduction of BRT in service. The report has been divided into three segments which covers three objectives.

The purpose of first objective is to provide strategies for cost optimization by provision of at-grade infrastructure without minimizing capacity instead of introducing heavy infrastructure i.e. flyovers. The methodology covers proposing alignment for BRT infrastructure including analysis and comparison of existing infrastructure capacity with it. The study concludes that by reducing the elevated section of the infrastructure by 21% of total route length the cost can be saved by 20% that can be considered as a huge saving for the projects developed from loans and grants of international organizations.

Second objective of this study includes mode choice modelling using stated preference survey for BRT Green-Line Karachi, and the study area was the route of BRT Greenline i.e. from Tower to Surjani town. Due to pandemic demand of BRT Green-Line could not be estimated and concluded the work with the derived utility equation which helped in determining the most influencing attribute of the modes. These attributes include time, cost and comfort. After data collection, data analysis was performed and the final output

i.e. Utility equation of BRT Green-Line was generated using Multinomial Logistic model on SPSS software. Utility equation concluded that commuters are preferring comfort in service of BRT Green-Line Karachi.

Third objective is about the evaluation of super structure of BRT Green-Line, in which permissible stresses were computed using intended BRT load and standard Class-A Truck load. Modelling of section of bridge was performed using CSI bridge 21v according to the specifications of AASHTO LRFD. The stresses were computed and comparison concluded that the bridge section is over designed, as stresses from Truck load was 35.24% more than the bus load.

This entire study concludes that Greenline BRT service's superstructure is overdesigned and cost could have been saved, which is recommended to be invested in raising the comfort level of BRT, since utility equation concludes that comfort is most preferred by commuters.