Economical and Technical Analysis of Urban Transit System Selection Using TOPSIS Method According to Constructional and Operational Aspects

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Abstract : Nowadays, one the most important problems in megacities is public transportation and satisfying citizens from this system in order to decrease the traffic congestions and air pollution. Accordingly, to improve the transit passengers and increase the travel safety, new transportation systems such as Bus Rapid Transit (BRT), tram, and monorail have expanded that each one has different merits and demerits. That is why comparing different systems for a systematic selection of public transportation systems in a big city like Tehran, which has numerous problems in terms of traffic and pollution, is essential. In this paper, it is tried to investigate the advantages and feasibility of using monorail, tram and BRT systems, which are widely used in most of megacities in all over the world. In Tehran, by using SPSS statistical analysis software and TOPSIS method, these three modes are compared to each other and their results will be assessed. Experts, who are experienced in the transportation field, answer the prepared matrix questionnaire to select each public transportation mode (tram, monorail, and BRT). The results according to experts’ judgments represent that monorail has the first priority, Tram has the second one, and BRT has the third one according to the considered indices like execution costs, wasting time, depreciation, pollution, operation costs, travel time, passenger satisfaction, benefit to cost ratio and traffic congestion.

Keywords : BRT, costs, monorail, pollution, tram

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