Evaluation and Prioritization of Rapid Public Transit Systems in Tehran Metropolis with TOPSIS and Shannon Entropy Technique

Ahmad Purahmad
Professor of Geography and Urban Planning, University of Tehran, Tehran, Iran
Behzad Omranzadeh
PhD Candidate in Geography and Urban Planning, University of Tehran, Tehran, Iran
Ali Mahdi
PhD Candidate in Geography and Urban Planning, University of Tehran, Tehran, Iran

Received 22 January 2014 Accepted 2 September 2014

Extended Abstract:

1- INTRODUCTION
Transportation and traffic are one of the major issues and challenges that are facing urban managers, so that they have become one of the major challenges in the political area. Transport is one of the most important elements of urban development which is used for people and goods moving from a different geographical place to other places. In order to achieve efficient productivity in urban areas transportation is needed. Tehran Metropolis along with their many problems has encountered a wide problem in public transport area. In order to solve the traffic problems in Tehran during the last years, there have been discussions and controversies among different authorities of urban management (state and municipal) for choosing urban rapid transportation system for Metropolis Tehran.
This paper sets out to evaluate and prioritize a variety of bus and rail transportation systems for Tehran Metropolis by using MCDM approach.

2- THEORETICAL FRAMEWORK
Urban transportation as part of the overall transportation system is one of the components of municipal communication system. Its purpose is better accessing among the different land users within a city, work traffic and people and goods movement among these adapted areas. In urban transportation systems and choosing various models usually time interval is more important than distance and geographical location. Totally urban transportation means people and goods movement within cities. These movements which are influenced by the exchange of goods and services and social and recreational activities in the cities, not only affect the size of the urban construction and urban development but also it depends on choosing desired transportation systems as well as the size and its urban structure of the area. Basically, urban transportation is defined in three broad
categories, including: public transportation, personal transportation, and goods transportation. However, the general objective of public transportation is providing mobility and better accessing to mass or certain parts of the city. The efficiency of this form of transportation is for people who move a lot. In fact, the public transportation system refers to a system that anyone can be used under defined conditions, such as buying a ticket.

3-METHODOLOGY

This research is based on library studies and analysis. First, based on library research and theoretical literature, which are mostly based on foreign sources, a variety of indicators used in relation to rapid transit systems were determined and the related data were collected for each indicator. Then the TOPSIS algorithm and the indexes into different systems for metropolitan Tehran were prioritized.

4- DISCUSSION

Based on existing studies, Tehran subway system has accounted first rank, having the minimum distance to the closest ideal level. After the subway system, BRT transportation system has the second rank. Above calculations show that monorail system is dedicated the latest rank. This indicates that subway system has been resolving the public transportation problems in Tehran due to the quality parameters and the greatest potential desirability. In contrast, monorail systems have very low priority and capabilities. The result of the study shows that the urban managers of Tehran must consider subway transportation system development as the most fundamental and desirable choice to solve the problem. Regarding high cost and time consumption of the subway system in the whole country, they can use the following ranked choices, including the BRT system to solve existing problems.

5- CONCLUSION & SUGGESTIONS

Transportation systems have a basic role not only in economic life of countries but also in citizens’ life. Transportation and traffic issues have an important and sensitive role in a community’s quality and socio- economical structure. The basic need of modern urban life is transportation. Determining transportation system is one of the challenges that often arise in the context of sustainable development in cities. Transportation system which the pattern and structure of extent. Considering the importance and necessity to evaluate and prioritize different transportation systems particularly rapid public transportation systems, this paper used TOPSIS approach and Shannon entropy and MCDM techniques to prioritize and evaluate these systems in Tehran metropolitan. Finally, conducted studies on the basis of the criteria indicated that the subway system has maximum capacity of public transportation desirability in Tehran. In contrast the, monorail systems have low priority. Therefore, urban managers in Tehran metropolis can use the subway
system as the main and long-term option and other systems such as the BRT for short-term strategies to solve public transportation problems in the city.

**Key words:** Tehran metropolis, Public rapid transit, MCDM, TOPSIS Technique, Metro, Monorail, BRT, LRT

**References**


How to cite this article: