

ABSTRACT

Today the traffic scene in the Indian medium-sized cities is a confirmatory evidence that the effective demand for automated two-wheelers (ATW) is increasing at a fast rate. This increase is attributed to the increased distances of travel, inadequacy of public transport systems and easy availability of ATWs within affordable means. In the present study an attempt has been made to determine the levels of utility of ATWs vis-a-vis other alternative modes of travel consequently leading to modal split. A few selected areas of three medium sized Indian cities namely Midnapore, Kharagpur and Durgapur have been considered for detailed examination.

Techno-economic characteristics of ATWs are obtained from the respective manufacturers through a structured questionnaire. A critical review of literature has indicated that a number of both quantifiable and abstract attributes are determinants of the levels of utility of travel modes. Thus a multicriteria decision model has been developed not only to compare the levels of utility of a particular mode (ATW in this case) with other competing modes, but also to predict the probable modal splits. The model can also determine the stability of the preferred mode.

The data required for the verification of the model has been collected through a structured questionnaire survey of selected ATW owners in the three cities. Psychometric scaling technique has been used for quantification of the abstract attributes.

The model provides utility wise ranking of the modes through preference and non-preference analysis. The study reveals that ATW has the highest utility according to preference analysis irrespective of trip purpose and trip lengths for ATW owning households. However, non-preference analysis does not always indicate the highest utility for ATW. The observed and computed modal split values are in agreement in cases of work trips. For market and recreational trips the predicted modal splits show variations from observed values. The reasons for such variations have been analysed.

It has been concluded that the multicriteria analysis can be effectively applied for determining the utility-wise ranking of travel modes. The technique can also be used to carry out sensitivity analysis and predict the probable modal split.

Key words:

Automated Two-wheelers (ATW), Preference analysis, Non-preference analysis, utility, Modal choice, Abstract attributes, Psychometric scaling, Medium-sized Indian cities.