

This research is a study to develop a mathematical model by employing individual choice theory to explain population travel demand and mode choice in Greater Bangkok Metropolitan Area (GBA). The concept of the theory is "Trip maker always tries to make trip and select mode in order to maximize his/her own benefit". The main objective of the study is to try to employ different methodology which reflect decision behavior to predict number of trip/s classified by mode of travel in order to use in future planning of transportation system.

The model consists of 2 decision terms : frequency of trip per day and mode of travel, and then employed the concept of simultaneous decision-making structure to explain the choice behavior of trip maker. Results of the study showed that the models could not predict number of population who do not make trip. The main reason was that their decision-making structures differ from those who make trip. Nevertheless, the models still can be used to predict total number of trips by trip rate technique and mode choice of trip in GBA.

In addition, the analysed results showed that aggregate prediction which was calculated from the model by using average mode choice probability of all O-D pairs for each traffic zone differed significantly from the observed trips. The main reason is the model was in an exponential form. Therefore, small increment of value of variable/s in the model would result in a significant amount of difference. This is the main criterion of using the logit model and is recommended that future research should be the development of technique for using the model in order to get adequate accurate results.