

Development of a Choice Model for School Trips

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Abstract

The school bus service has become more of a necessity due to two major reasons: it engages with the most sensitive crowd in the society, and operates at the most crucial time of the day. A high quality bus service is one of the most important parts of the transportation system as it will reduce the congestion by a large number.

Currently it can be clearly seen that many school bus services are not up to the required standard in Sri Lanka with the lack of safety and efficient conditions. Moreover, the dissatisfaction of both parents and their children with the service, has made people switch to the alternative of using the private vehicle to commute to school. Therefore, the transportation industry is in dire need of a high quality school bus service. This study focuses on the attributes of a high quality bus service, compared to the existing transport modes for school trips. Analysis on desired attributes in a high quality school bus service and the model shift from the existing system to the new system, will be stressed.

Stated Preference (SP) theory will be the main methodology utilized in the study to find out all the required data. Stated Preference survey or self-stated preference is an efficient method to analyse consumer's evaluation of multi attributed services, specifically when there are hypothetical choice alternatives and new attributes. In the case of Colombo, Sri Lanka there are no revealed Preferences (RP) data for the high quality school bus service as it is only a Megapolis proposal. Therefore, a Stated Preference survey must be well designed and implemented. There are few objectives defined for this study such as the quantification of sensitivity to the level of service, by varying values of access time, waiting time, travel time and cost etc. to measure the willingness to pay, and to investigate effects of attitudes and perceptions.

There are few most probable choice sets to commute to school around Colombo, such as using the private car, school vans and Sisuseriya or other public bus services which have numerous attributes to be considered. Furthermore, the new high quality bus service includes door to door arrivals and drop offs, information services such as Internet, telephone, and GPS navigation, a tracking system and air condition etc. The process of developing the SP survey is categorised in few major steps;

- I. Defining important attributes
- II. Designing the questionnaire of SP survey
- III. Experimental Design
- IV. Testing the Synthetic Data
- V. Pilot study and Analysis
- VI. Revising SP Survey
- VII. Implementing an Internet survey and supplemental presentable survey

When defining important attributes, a focus group discussion will be conducted to collect data. And the questionnaire of the SP Survey will include social-economic information,

current travel behaviour, attitudes and perceptions. Model Estimation will be conducted for the travel data. Different model specifications will be compared in this regard. In general, discrete choice models based on a maximum likelihood estimation technique will be used. Further, logit models will be used throughout the analysis. These models capture the influence of attributes and characteristics on the decision makers' preferences.

Key words: Stated preference theory, travel behaviour, mode choice model

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