

**Title of Thesis:**

**Total Pages : 106**

***A Study on User's Behavior For Pre-trip  
Dynamic Bus Information System***

***Keywords : Dynamic bus information system, Stated Preference , Disaggregate  
mode choice model***

***Name of Institute:***

***Graduate Institute of Transportation Science, Tamkang University***

***Graduate Date: Jan 2004***

***Degree Conferred: Master Degree***

***Name of Student: Cing-Hung Haung***

***Advisor: Dr. Shiao –Shyan Luo***

**黃錦虹**

**羅孝賢 博士**

***Abstract:***

The aim of this research is to perform an analysis to evaluate passengers' willingness of utilizing Pre-trip Dynamic Bus Information System ( Pre-trip DBIS), and to understand how this depends on passengers' personal preference and accessibility of various media types. This information is critical in formulating a proposal to develop Pre-trip DBIS by the government or the public transportation agencies. The Stated Preference method was used in this study to collect data on passengers' preference, and depending on the trip purposes, Multinomial Logit Model and Nested Logit Model were used to perform a simulative estimation for the commute trip or non-commute trip.

This study demonstrated that: (1) Analysis of the commute trip model showed that factors affecting passengers' willingness to use Pre-trip DBIS include: level of education, geographical restriction (metropolitan vs. suburbs), and ability to accessing media information via cable television or internet or cellular phones. In addition, passengers are more inclined to consider obtaining the information from Pre-trip DBIS if their locations of boarding are along the bus itinerary or if they experience high level of stress from commuting long distance with high incident of unexpected congestion. (2) Analysis of the non-commute trip model showed a similar trend, in which age, level of education, geographical residence and ability to access internet are major factors affecting their willingness to utilize Pre-trip DBIS. Also, for non-commute trip , passengers who are unfamiliar with the bus schedules tend to make use of the Pre-trip DBIS, especially if their boarding locations are along the route or if buses arrive infrequently or delayed. (3) The result of the simulative

analysis has shown that Nested Logit Model is preferred because of its explicatory ability. (4) Market Segment was employed in the analysis to evaluate the effect of differences in the expected level of education on the need of Pre-trip DBIS by the passengers. In fact, the  $\rho^2$  resulted from the post-Market Segment Multinomial Logit Model is better than the  $\rho^2$  from the pre-Market Segment Multinomial Logit Model analysis. (5) According to the market share estimation from the best Nested Logit Model analysis (the commute trip or non-commute trip), 38% of the frequent commuters will not access the Pre-trip DBIS; whereas more than 60% of the frequent commuters will utilize such system. (These number are different from the actual sampling data.) Specifically, 29.76% of the frequent commuters will acquire Pre-trip DBIS information from Internet, 14.1% from television, and 17.18% from the toll free telephone information center. For the non-commute trip, more than 60% of passengers are estimated to be acquiring the Pre-trip DBIS information; however this number is an over-estimation when compared to the actual sampling data. The model analysis showed that most of the non-commute trip of passengers will obtain the Pre-trip DBIS information from the Internet (around 27.9%), and rest of them will obtain from either television or telephone.

Keywords: Pre-trip Dynamic Bus Information System, Stated Preference method, Disaggregate mode choice model