Examine Sri Lanka Institute of Information Technology Students Travel Pattern - A Hierarchical Tree-Based Regression Model to Student's Mode Choice

D.P. Attanayaka[1]

Abstract

This research attempted to find out important factors influencing Sri Lanka Institute of Information Technology (SLIIT) students' travel patterns. There are a large number of students who travel daily to/from SLIIT and it has become a huge traffic generation and attraction center in the neighborhood. Therefore, examination of students' travel characteristics and the consistent correlations of the students' travel mode choice is important. SLIIT is a leading degree awarding institute in Malabe area and over 8000 students study in Malabe main campus. The number of students' registration increases due to newly established Engineering Faculty. The number of trip generations increase with respect to the new student registrations. Therefore SLIIT Engineering Faculty was selected as the study location.

A random sample of 219 engineering students participated in this quantitative study through a self-administered online questionnaire. Crosstab analysis was applied to analyze data. According to factor analysis, it is shown that students' daily travel behavior vary on different factors. The survey identified that the student travel behavior is influenced by students living status, travel time and travel distance of their trips. In addition, the study revealed that a number of demographic and socio-economic characteristics including gender, household vehicle ownership, household income and travel distance significantly correlated to student mode choice.

To get a better understanding of student travel characteristics in the university, a nonparametric statistical method, hierarchical tree-based regression (HTBR) model was used to explore university student mode choice patterns in SLIIT.

The HTBR model indicates that travel distance is a first level influence factor for the student mode choice because the distribution of all six modes (bus, by foot, car alone, car share, university shuttle service and motorcycle) significantly varies with the increase of travel distance. When the travel distance is less than 2km, 76% of students chose walking as their

main mode of transport. But when the distance is over 4km almost no student chose to travel by foot. Particularly the model indicates the most feasible travelling distance for car is less than 20km. It is because after 20km, the percentage of private car users decreased sharply with the increase of travel distance. Also over 30km travel distance, almost all students travel by bus.

The household vehicle ownership is the second level influence factor. 35% of students whose houses own more than one vehicle, use their private vehicles as the primary mode of transport.

Gender and household income are the third level influence factors for student mode choice. The male students are more like to choose private vehicles as their main mode of transportation and female students tend to choose public transport and car share. Also household income has an impact on single vehicle ownership and the distribution of all six modes significantly varying with the increase of monthly household income.

Key words: Demographic and socio-economic characteristics, Crosstab analysis, Hierarchical tree-based regression model

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1. Department of Civil Engineering, Sri Lanka Institute of Information Technology, Malabe, Sri Lanka, attanayakadp@gmail.com , +94716420890