Development of transportation models based on students' interest in a parking charging system at Universiti Malaysia Sabah (UMS)

ABSTRACT

Transportation management and sustainable transportation planning were critical. A well-planned transportation system is extremely beneficial in terms of efficiency and environmental friendliness. To that end, parking charging was one of the transportation management topics covered in this study. A parking charging system is one in which a user can leave their vehicle at a particular place and pay a price based on the amount of time it was left unattended. Given the rising use of private vehicles, which has resulted in an increase in congestion and air pollution, it is believed that a parking fee system can be implemented to alleviate the situation. The primary purpose of this research is to develop a transportation model based on the parking price factor in Ringgit Malaysia (RM). At the completion of the study, a transportation model based on parking rates will be developed, and it is projected that once implemented, the percentage of private vehicles that use public transportation will increase. This model is deemed necessary in order to mitigate the harmful effect of an excessive number of private vehicles at UMS. The State Preference Survey (SPS) method was used. A questionnaire form was developed and distributed online to 300 respondents among the students of the Faculty of Engineering at UMS, in order to collect the required data. The data collected was then analyzed using linear regression to develop several transportation logistic models. The transportation models that have been developed in the form of a logistic model that can reflect the willingness of UMS students to shift from private vehicles to public transport. These models predict that when the parking price increases, the percentage shift of private vehicles to public transport will increase linearly. It is also found that 100% of drivers are willing to shift from private vehicles to public transport if the parking price per hour is RM 4.00. Shifting private vehicle users to public transportation may assist lower the number of private vehicles on the road and thus indirectly help mitigate the negative consequences of an excess of private automobiles.