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論 文 内 容 の 要 旨

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Exploring influencing factors to optimize the public transport sector with the aspects of mode choice behavior and road safety measures: A field study on Colombo Metropolitan Area in Sri Lanka
（公共交通における安全性と交通手段の選択を最適化するための影響因子の探索－スリランカ・コロンボ都市圏におけるフィールド調査研究）

Increasing private vehicle usage is directly affected to increase the traffic congestion on road. Traffic congestion is a serious issue in a country and it is a burden to the economic development of a country. Increasing share of public transport system is a massive solution to reduce the congestion as the public mode can carry more passengers in one car and it can carry a significant amount of trip during the congestion hours. The traffic growth rate was 5.4% per annum in Sri Lanka and public bus and train transport growth rate were 4% and 2.8% respectively. But private transport growth rate was 11.8%. It has been estimated that growth rate of trips by car accounts six times while public transport growth rate accounts only 1.5 times during the period of 2013-2035. Hence Colombo Metropolitan Area (CMA) was selected as the study area with the intention of encouraging people for the public transport. The objectives are starting from the identification of feasible field for the data collection and then identify the factors influencing to mode choice behavior for private and public modes and to assess the relationship between access mode choice and public mode choice.

Statistically significant number of data was collected by using pre-formatted questionnaire and analyzed to assess the influencing factor for mode choice behavior modeling. By conducting descriptive analysis and Factor Analysis, the results show that the peoples who have low income level to middle level, likely to use the public transport. Majority of peoples use public transport for long distance trips and young people greatly use public transport. It may for the purpose of education as they do not have any vehicle ownership. Most private vehicles are used for a short distance trip at the peak hour by the residence and then the roads fill with vehicle and cause to congestion. As the next objective, logistic regression was contended to find a probabilistic model to identify the likeliness for the public transport. In addition to that, the relationship of the access mode with public mode was modeled up with Structural Equation Modeling (SEM) approach to find the relationship of the access mode and public mode. With that model depicts that there is a relationship between access mode

and public modes. The traveler first selects the public mode and then select the access mode for a journey.

The last objective is to evaluate the road accident to find the severity impacts of the accidents and to discover the high rate of road accident locations for the pedestrians. The calibrated model with accident severity explores that the pedestrian location is a significant point for the accident severity. Accordingly, pedestrian accident was mapped with GIS software and run the hot spots analysis to find the pedestrian accidents prone locations. There are nine critical locations have been identified. Beyond the objective of this study, the pedestrian safety issues have been identified and suggested some solution by designing the road as a specific model to improve the road network with the aspects pedestrian facilities.