

学位論文の要旨 (論文の内容の要旨)  
Summary of the Dissertation (Summary of Dissertation Contents)

論 文 題 目

Dissertation title Policy Analysis of MRT Development Impacts on Commuting Mode Choice

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Jakarta as one the most congested cities in the world has modestly estimated to loss 5.6 billion USD a year, which accounts for approximately 5% of GRDP of Jakarta. The growth rate of vehicles continues to be much greater than that of transport infrastructure provisions. To mitigate the congestion while addressing both the travel demand and supply in Jakarta, Mass Rapid Transit (MRT) has been constructed and it is expected to be operated in 2020. MRT as a mass public transport has a big capacity and railway based system that gives some benefits such as not facing congestion, and environmental friendly since using the electricity as the energy source. The main target of MRT is to attract the private commuters to shift to MRT.

The main objective of this research is to provide analytical results of commuters' behaviors and preferences on transportation mode choices, if the development of MRT would be successfully completed, and its benefits to the economic and environmental improvement. The choice experiment approach to analyzing the travel behavior change in response to hypothetical choice experiment is the method. Repeated choice experiments for private vehicle commuters in Jakarta on preferences if they would be willing to shift to the MRT once it becomes available, have been conducted before and after removal of the fuel subsidy. The main target respondents are the commuters who use private vehicles as the main transport for daily commuting.

Before knowing the future commuters' behaviors, the research is started by understanding the current commuters' behaviors and attitudes in choosing the transport modes for daily commuting. By knowing current behaviors and attitudes, it can reflect the result in future and it can affect the future commuters' behaviors. The method used is descriptive analysis through tabulation and chi-square test and multinomial logit model to know the determinant factors in choosing current transport mode. The main findings of first chapter are the characteristics of commuters in Jakarta have been changed within the last six years in term of education, income and the distance in commute. The higher the income, cars are preferable and surprisingly motorcycles are chosen by commuters in all the income ranges. The main reasons for using cars and motorcycles are more comfortable, more flexible and could save the time especially for motorcycles. However, the commuters will avoid using cars or motorcycles if the traffic congestion is getting worse and the

parking space is limited and also put high charge.

To analyze the future commuters' preferences on transport mode choices once MRT successfully completed under different policy scenarios is the main objective. Balancing conflicting policies are important. Fuel subsidy is such policy that hampers potential impacts of MRT being currently under construction. The mixed logit models revealed that scale of impacts on probability to shift to MRT due to the subsidy removal is significantly large compared to that of the best available feasible options for MRT service improvements. Moreover, this effect is leveraged by joint implementation with road pricing and more the impact is expected for car commuters than motorcycle commuters. However, after the actual implementation of fuel subsidy removal, more motorcycle commuters are willing to shift compared to the hypothetical scenario of the fuel subsidy removal.

In addition, by providing MRT it can give the economic and environmental benefits. The total economic value that can be generated from car and motorcycle is maximum 0.9 million USD and it is increased after the fuel subsidy was removed to be 1 million USD. Shifting from cars or motorcycles to use MRT also can reduce the CO<sub>2</sub> emission. Under the assumptions that MRT will be operated electric based and the CO<sub>2</sub> emission is negligible, the shifting of commuters from cars and motorcycles can reduce the CO<sub>2</sub> emission by 10.67% per year and using the year 2013 as the base year. Moreover, because of fuel subsidy removal, the reduction of CO<sub>2</sub> emission will be 13.28% per year.

備考 論文の要旨はA 4判用紙を使用し、4,000字以内とする。ただし、英文の場合は1,500語以内とする。

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