

## Dissertation Abstract

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Dissertation title	A STUDY ON TRAVEL MODE CHOICES OF STATION-AREA RESIDENTS TO ENCOURAGE SUSTAINABLE TRANSIT-ORIENTED DEVELOPMENT (TOD) IN BANGKOK (バンコクにおける適正なTOD促進を目的とした鉄道駅周辺地区住民の交通手段選択に関する研究)		
<p><b>Abstract</b></p> <p>※ The abstract should be in keeping with the structure of the dissertation (objective, statement of problem, investigation, conclusion) and should convey the substance of the dissertation.</p> <p>The rapid growth of the urbanized areas in Bangkok city causes various issues on transportation and land use developments including urban sprawl, segregation of land uses, traffic congestion, inequities of living and job opportunity and negative impacts on environment. As expected, mass transit system expansion in the next 10 years would improve the life quality of residents in Bangkok, especially the station-area residents, in terms of more a variety of travel choices, travel cost saving and shorter travel time of their daily trips. However, from some previous studies, it can be implied that people in Bangkok still depend on automobile. Their rates of car use and car ownership are also quite high and keep increasing but road capacity in Bangkok remains the same. Consequently, traffic congestion in Bangkok becomes more serious as shown in the ranking report of TomTom Index that Bangkok city is the second most congested city in the world after Mexico City. All drivers and road users spend 61% extra travel time stuck in traffic at any period of time of the day in average. One of the causes of unsuccessful switching people from automobile use to urban rail dependence is the poor transit accessibility. Environment around stations does not perfectly support the rail use trips of people to use rail, especially the station-area residents. First, the pedestrian's characteristics is unfriendly. Second, there found a lot of obstacles on the sidewalks. Third, there are not enough facilities for pedestrians and transit users. Fourth, there are plenty of unattractive places around transit stations. Transit-oriented development (TOD) is an urban planning concept encouraging the residents near transit stations to use transit more but depend on car less. This concept focuses on having an easy access to transit stations in order to encourage walking, cycling (a non-motorized transport) and reduce motorized vehicle use to transit stations. In addition, creating the pedestrian-friendly environment and planning high density of mixed land use development and population in TOD areas are necessary for the sustainable TODs. Bangkok has implemented TOD concept in urban planning policy since 2006 but it has not achieved in attracting the pedestrians around transit station and the rail ridership number does not reach the target, too. However, the assessment of travel behaviors and mode choices characteristics of the station-area residents should be conducted to understand the current impacts of transport in TOD areas.</p> <p>This research consists of nine chapters including five main research papers published in journals and presented in conferences. This research mainly studies the travel mode choices in both of main travel modes and transit access modes of residents near mass transit station within 1 km., called TOD residents. The analysis of the attitudes on transit access and influences of six built environment factors (six Ds: Destination, Distance, Density, Diversity, Design and Demand management) on mode switching</p>			

from car to rail use is included. The analysis starts from data collection from questionnaire and site surveys, selection of TOD residents, the determination of travel choices characteristics, factors affecting their travel mode choices, attitudes on walking to transit stations and the influences of built environment on mode switching from automobile to rail use, and ends with the drawing outcomes. The recommendations on urban planning policy are then presented in the last chapter of the dissertation.

Based on highlights of findings, it can be concluded that most TOD residents can walk to station less than 500 m. The most popular walking access mode among station-area residents is within 500 m from the station, and motorcycle taxis is the most popular access mode among those who live within 500-1000 m. from the station. However, the walking distance would be longer when the station-area residents get more positive attitudes on walking to transit station. As found, if they feel that walking is comfortable, having sense of freedom, relaxing, safe and useful for health, they will walk to transit station in the longer distance and time. The longer acceptable walking distance of TOD residents can reduce the use of motorcycle taxis to transit stations. These hired-motorcycles are the main obstacle in promoting pedestrian-friendly environment because they usually park, ride and provide service on the sidewalks. Pedestrian accidents grow continuously higher. 40% of walkers to station feel more unsafe and 25% of station-area residents who use motorcycle taxi to station do not walk to station because they are afraid of pedestrian accidents. Furthermore, income, the distance to the station, residential location characteristics and pedestrian obstacles especially the higher density of motorcycle taxi on sidewalks near transit station and non-continuous sidewalks, are the main factors determining whether to walk to transit station. As for the main travel mode choices, most TOD residents are car dependent associated with the higher number of car parking in the residential and office buildings located within the walking distance from transit station. As investigated, car ownership directly affects TOD residents' using car and transit services by non-motorized transport (walking and cycling). To reduce the car ownership in TOD areas, free car parking availability in residential and office buildings near transit station should be limited. Finally, the influences of built environment factors on proper mixture of land use development, well-designed pedestrian facilities, providing the rail use-supportive facilities and limiting car parking spaces in TOD areas can encourage people to use car less but depend on rail transit more.

Hopefully, this research can contribute some new knowledge, information and experiences to urban planners and authorities in Bangkok Metropolitan Administration (BMA) to more deeply understand the current travel mode choice characteristics, attitudes on travel mode choices and influential factors of choosing the sustainable travel modes of TOD residents by TOD methods. Based on these attempts, the findings would provide the effective ways how to plan the sustainable integration between transportation systems and land use development in TOD areas based on actual travel mode choice characteristics of station-area residents. If the urban planning policy implemented in TOD areas become more practical, the rate of rail ridership and non-motorized use would increase and the rate of car dependence in TOD areas would reduce. Then, traffic congestion in urban area of Bangkok would be relieved.