

**ESTIMATION OF A MODE CHOICE MODEL FOR
BOAT PASSENGER TRANSPORT FOR WORK TRIPS
IN COLOMBO**

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Degree of Master of Science in Transportation

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DECLARATION OF THE CANDIDATE AND SUPERVISOR

I declare that this is my own work and the thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and believe it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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Signature of the supervisor:

Date:

DEDICATION

I dedicate this thesis to my family for helping me to complete this thesis with all their
love and strength

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Estimation of a Mode Choice Model for Boat Passenger Transport for Work Trips in Colombo

Public transportation service in Colombo canal network is an applicable alternative in addition to roads and railway network on Colombo Metropolitan Region (CMR) corridors. Though it is an environmentally friendly and one of the most economical mode of canal boat service, it remains largely under exploited in Sri Lanka. The prevailing public transportation modes such as bus, train and private transportation modes such as Cars, Motor bikes, Taxis play vital roles in passenger movements within the country. But with the increasing population & the land scarcity in Colombo Municipal Council (CMC) region vast traffic and congestion problems exists in prevailing conditions. Thus, introducing another transportation mode is essential for future. Lack of data availability in the transport mode choice modelling has create problems implementing passenger boat transportation in CMR that leads to do more researches in the field. This study intends to present an idea of developing suitable choice model on the basis of discrete choice modelling technique. Nested logit modelling is an improved version to Multinomial logit models due to its ability of modelling alternatives which have correlation among them. ALOGIT software has been used for model setup and data analysis process. A stated preference pilot survey has been carried out in CMR region by proposing a public boat service route from Wellawatta to Battaramulla. The estimated results of nested logit model indicated that Alternative Specific Constants (ASCs) and considered travel time attribute had significant effects on the choice of proposed public boat transport service in CMR. The coefficient value of travel time was -0.006835. Compared to the travel time attribute, the travel cost attribute coefficient value was less, -0.0003279. the estimated ASC values showed the preference of public for given alternatives as ASC2 (0.8978, Alternative 3) > ASC3 (0.8516, Alternative 4) > ASC 5 (0.8324, alternative 6) > ASC 6 (0.7385, alternative 7) > ASC 4 (0, alternative 5) from highest to lowest. According to the estimated nested logit model results people choose to use available bus mode option though it introduced new passenger boat service to the public transport system.

Key Words: Utility Theory, Discrete choice modeling, Multinomial logit model, Nested logit model, Boat passenger transportation, ALOGIT

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LIST OF ABBREVIATIONS

Abbreviation	Description
ASC	Alternative Specific constant
CMR	Colombo Metropolitan Region
CMC	Colombo Municipal Council
CM	Choice Modeling
MNL	Multinomial Logit
NL	Nested Logit
RP	Revealed preference
SP	Stated Preference
Tt	Travel Time
Tc	Travel Cost
RT	Ride Time
WT	Wait Time
TT	Transfer Time