

# **Development of a choice model for Railway ticket class selection**

P.D.S.B.Chandrasena

(158320P)

Degree of Master of Science in Transportation

Department of Civil Engineering

University of Moratuwa  
Sri Lanka

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P.D.S.B.Chandrasena

Index No 158320p

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## **DECLARATION**

I declare that this is my own work and this dissertation 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 belief 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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## **ABSTRACT**

Sri Lanka Railway is a significant component of the public transport sector in the country with the passengers varying from office workers to tourists. The ability of the railway system to provide accessibility to rural areas and mobility in urban congested areas has resulted in railway system that was earlier established for goods transportation to be a more passenger centric transportation mode in the present.

The railway system consists of three classes namely 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> class with the latter two being considered as non-reservation based or reservations at the counter being based on the availability and hence the focus area of the research.

Currently due to the non-availability of class wise passenger demand calculations has resulted in overcrowding in compartments with passenger complaints of no value for money paid which ultimately will result in passengers shifting to other modes. The research addresses the issue by identifying the behaviour of passengers in choosing the class.

Passenger data related to 333 railway station combinations was used to develop the choice model. Data preparation included calculating the passenger proportions for the two classes for each observed station combinations as the data was treated as aggregate. 7 utility forms were considered based on various combinations of distance, price, connectivity strength & travel time attributes.

Based on the estimation results the utility function form with the best fit included price, connectivity strength and travel time as attributes. Travel time influences most towards 2<sup>nd</sup> class selection whereas connectivity strength or availability of directly connected trains with 3<sup>rd</sup> class compartments contributes most towards the 3<sup>rd</sup> class selection.

The developed class wise choice model has the ability to identify passenger behaviour with respect to selecting 2<sup>nd</sup> class or 3<sup>rd</sup> class. The model can be further developed by considering more attributes related to facilities of the compartments and also the choices can be expanded to incorporate 1<sup>st</sup> class also by extending towards reservation based data.

**Keywords:** Class wise choice model, Railway passenger demand, ALOGIT

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P.D.S.B.Chandrasena  
158320P  
University of Moratuwa

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## **LIST OF ABBREVIATIONS**

Abbreviation	Description
SLR	Sri Lanka Railway
GM	General Manager

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