

# Evaluation and Improvement of Toll Collection System in Sri Lankan Expressways - Case Study for Colombo-Katunayake Expressway

H.B.N.S.Kumara<sup>1</sup>, G.L.D.I. De Silva<sup>2</sup>

## Abstract

With the latest development, three expressways were opened to the public in Sri Lanka and the number of users of the expressway network is expected to rise. The pay toll system in the road is based on the traditional method, which is the collecting of the toll by road barriers installed at the entrance & exit points of expressways. Although in this system the toll is collected directly from the drivers, the existence of barriers causes increased travel time, increased fuel consumption and consequently increased pollution in the road environment. For a more continuous flow of traffic, an Electronic Toll Collection (ETC) system was introduced in Colombo – Katunayake Expressway (CKE) since June 2015 to help alleviate traffic congestions, reduce environmental pollution, reduce cash circulation, integrate the financial system, elevate passenger comfort, and specifically reduce the service time at Toll Plazas.

This research focuses on the economic and technical analysis of the existing toll collection systems in the Colombo-Katunayake Expressway. The study is aim to evaluate the newly established ETC Toll collection System CKE.

In detail, the objective is to assess the amount of delay of the individual lanes dedicated for MTC and ETC, their service time, lane capacities and the forming of the queue in each lane and compare with the different modes of toll systems used in other countries. The study also aims to find out the specific factors that affect the delays experienced at Toll plazas & decrease the system performance, and recommend ways to improve the service. Not only that, the study is focused on the evaluation of the economic loss caused by the delays in toll lanes and level of lane utilization by each mode of vehicles. The analysis of the current toll systems in CKE under the system, financial, traffic, environmental, infrastructure and socio-economic aspects would be conducted using SWOT method.

Then, the different toll collection methods & technologies are to be studied under this research and characteristics and performances of each individual technology is to be compared. Analysis would be done to identify the appropriate ETC toll collection method for Sri Lankan Expressways. Consequently, short-term and long-term recommendations, for the Sri Lankan road tolling system, will be proposed, in terms of transportation.

**Key words:** ETC, MTC, Service Time, Delay time, Toll - Lane Capacity, SWOT Analysis

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1. Post Graduate Student, Transportation Engineering Division, Department of Civil Engineering, University of Moratuwa, [hbsumithkumara@gmail.com](mailto:hbsumithkumara@gmail.com), Doctor,
  2. Department of Civil Engineering, University of Moratuwa  
dds@hbaspecto.com 0112650567 (Ext: 2024)