Applying Built – Operate - Transfer (BOT) Systems for Sri Lankan Expressways: A Case Study

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Abstract

Sri Lankan transport network had a massive development during the last decade experiencing highway infrastructure, with the utilization of foreign concessions and local government funds of the country. Road Development authority holds the pioneering authority to operate and maintain the highway and expressway network in periodically. The user benefits generated with the road network are travel time saving, developed infrastructure and living standards also with the social benefits which are not counter measured in quantitatively.

As a developing country, a lack of financial stability for the infrastructure of the government may lead to foreign loans and concessions. The concessions lead to rapid involvement in the fund involvement for mega infrastructure projects as the necessity and demand of the country. The Build-Operate-Transfer (BOT) concession model is becoming a major trend in the privatization of infrastructure projects and the concession period and interest rate are critical parameters for BOT contracts.

In this study, a model is developed to demonstrate the potentiality of applying BOT system for the expressway network of the country. The demand estimation, operation and maintenance cost and toll revenue used as the inputs for this model and financial viability is observed with different scenarios. The concession period, interest rates and optimality of selection of BOT are decided with different criteria based on financial viability.

As the Colombo-Katunayaka Expressway (CKE) meets the highest demand for traffic in the expressway network, inputs of CKE used to demonstrate the potentiality of applying BOT model and optimum subsidy level was determined with the application of variable concession periods.

This BOT model is further developed to validate any expressway network in urban or sub-urban basis by considering traffic demand with the considerations of unit length costs and revenues in operations with the performed analysis for existing and proposed expressways in Sri Lanka

The urban and sub-urban links were defined for expressways, by considering the actual traffic demands between each intersection of Outer Circular Highway (OCH), Southern Expressway and forecasted traffic on ongoing Central Expressway and proposed Ruwanpura Expressway

and costs and revenue per unit length were determined for each link in respectively by applying actual data.

Keywords: *BOT, Concession period, Financial viability, Traffic demand*

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