# Summary of Thesis

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**Thesis Title:**

(English): An Analysis of Business Process Reengineering in the Public Service Delivery System of the Government of Sri Lanka

（日本語）： スリランカ政府の公共サービス提供システムにおけるビジネスプロセスリエンジニアリングの分析

## 1. The Thesis Summary

Sri Lanka's colonial heritage has a significant bearing upon the design as well and functioning of its public service apparatus. Despite being a British colony like many other countries in the region, Sri Lanka's society and government structure is a special case unlike many of its neighboring countries. I have attempted to put the case of BPR and PSD in a broader perspective, however this is a case with evidence and analysis related to original field data collected from public sector in Sri Lanka. While the data is unique, the model used and the findings are applicable to many other countries seeking improvement of PSD through BPR expecting improved efficiency of the public sector administration.

Sri Lanka Administrative Services (SLAS - established 1972) is the successor to Ceylon Administrative Services (CAS – established 1963). CAS was, in turn, successor to a much older Ceylon Civil Services (CCS – established 1833). While the purpose of CCS was to help British colonial power to govern over its colony, SLAS has significantly different demands and expectations from its Sri Lankan clients. While, SLAS is one major public service provider in Sri Lanka, its functions are supplemented, and sometimes even duplicated, by layers of other offices, across several ministries and departments. It certainly has been a great challenge for SLAS, along with other departments and ministries, to deliver service in modern times with a design and functionality inherited

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from CCS. As a result of mounting expectations and demands of more modern, independent and highly educated populace, SLAS and many other departments and ministries of Sri Lanka underwent a major BPR regime during the last decade. BPR regime, in this context, meant (i) *structural* reforms, (ii) *regulatory* overhaul, and (iii) better performance *control* mechanisms. These three measures were put in place as mainstay of the BPR regime in order to ensure an efficient delivery of public services. In this paper I analyze the post-BPR-implementation state of affairs and measure the efficiency of the service across 29 ministries and departments of Sri Lankan government through which most public services are delivered to the populace.

BPR is a continuous process instead of one time even, thus it is imperative that a continuous IOI feedback process be carried on and thus allow innovation be incorporated into the process. This way of defining BPR takes account of two key areas important to our case i.e. fundamental rethinking and radical redesign. Two critical areas that stand out as prime targets for a BPR regime are: *first*, fundamental rethinking of the philosophy; *second*, a complete redesign of the structure of the business process in order to provide public service in an efficient manner. In Sri Lanka BPR process happened incrementally over many years by 2010, almost ten years have passed since various BPR measure were implemented. In the next section, I lay down the details of the data used and the methodology applied to estimate the outcome of the BPR. I conducted a two-pronged analysis of the situation as explained below.

### 1.1. The Data

A broad-based ground survey on a five-point Likert scale was carried out, and performance data was collected. Data was collected through a questionnaire-based field survey conducted across 29 departments and ministries of the Sri Lankan government. I collected a total of 290 responses—each questionnaire composed of 40 questions regarding the inputs and the outputs of the regime's implementation. The survey was

conducted during the February and March of 2020. In total 290 respondents returned the completed questionnaire. The questionnaire was designed on 5-point *Likert* type scale with 5 meaning strongly agreed, 4 agreed, 3 neutral, 2 disagreed and 1 for strongly disagreed. Input questions were categorized into three areas of the regime i.e. (i) *Structure*, (ii) *Rules*, and (iii) *Control* and compared with the set of questions related to outcomes. The questions were deliberately planned per se to verify the inputs the outcomes of the BPR regime for PSD.

### 1.2. Stage I - Analysis

Using the data, a non-parametric data envelopment analysis (DEA) has been employed to measure the performance of ministries and the departments denoted as decision making units (DMUs). A DMU's efficiency is depicted by the ratio of the sum of its weighted outputs to the sum of its weighted inputs. DEA is applicable to the case of both public and private sector entities. DEA has widespread use across a whole host of areas of public or private service provision industries. The data was analyzed using data envelopment analysis program DEAP Version 2.1 developed by Coelli (1996). DEA enables us to construct a non-parametric frontier over the input and output data and calculate the efficiency scores. I assess input-oriented constant return to the scale (CRS) and variable return to the scale (VRS) models to calculate technical efficiency and scale efficiency for 29 DMUs in our data. Using DEA, one can calculate each DMU's efficiency score, calculated in relation to an efficiency frontier. DMUs positioned on the efficiency frontier have an efficiency score of 1. DMUs operating below the frontier have an efficiency score lesser than 1. DMUs can also be used for benchmarking, as DMUs that fall on efficient frontier can serve as benchmark for the DMUs that fall below the frontier and hence peers at frontier can serve as guideposts for the slackers. A non-parametric DEA can be conducted both from an input orientation as well as from an output orientation in order to ascertain efficiency scores. However, for this very situation that we are dealing with input orientation will be most appropriate, as DMUs have control

over only the inputs; public service DMUs are expected to provide a minimum level of service which is usually given and cannot be arbitrarily controlled.

### 1.2.1. Primary research questions – Stage I

The stage I analysis was conducted in order to evaluate the overall as well as unitary efficacy of the implementation of the BPR regime in the public services of the country. So we can identify the basic research question that needed an answer from the outcomes of the analysis. Those questions can be listed as;

- Has implementation of the BPR regime resulted in increasing the efficiency of the system as a whole?

- How disparate are the outcomes of the BPR regime across various DMUs of the government of Sri Lanka?

### 1.2.2. Outcomes - Stage I

The data analysis shows that 4 DMUs out of a total of 29 DMUs are efficient with reference to the scale. The disparity of the scale efficiencies can be attributed to the latent inefficiencies or lack of full implementation of the BPR regime across the DMU. Out of 29 departments and ministries, 12 are having IRS, meaning there is still a room to improve performance in order to achieve full-scale efficiency. 5 DMUs are faced with DRS meaning there is a capacity to increase the scale of service delivery in order to achieve scale efficiency. Other 12 DMUs are in a state of CRS, including 4 DMUs (DMU14, DMU22, DMU27 and DMU29) who have achieved CRSTE, VRSTE as well as scale efficiency, adjusting the scale towards optimum scale we can enhance the level of efficiency. We can therefore safely conclude that out of 29 DMUs, 25 DMUs can increase public service delivery efficiency by adjusting the scale of their operations. Additionally, we have also prepared results on peer, groups, targets and slacks too and individual DMU results too.

**1.3. Stage II - Analysis**

In the second stage of the analysis, applying an ordered multivariate logistic regression model, I have estimated correlations amongst inputs, results, and overall perception of success or failure of the BPR regime across ministries and the departments (29 in total). I have also tabulated summary statistics and regression results.

The analysis also allows us to test the efficacy of IOI based systematic innovation ingrained in the regime. We can summarize the primary research questions raised in this paper as follows:

### 1.3.1. Primary research questions – Stage II

- What is the relationship amongst the various BPR measures (structure, rules and control) and the outcomes (effectiveness) of the BPR regime in total?
- How are the outcomes perceived by employees, i.e. level of agreement/disagreement level of effectiveness of the BPR?
- How correlated are the BPR measure per se to understand the inner structure of the BPR measures?

### 1.3.2. Outcomes – Stage II

The outcomes suggest that while all inputs and outputs are significantly correlated, some inputs have a more significant effect on the results expected from the BPR regime. I have used original data acquired through a survey carried out directly through the PSD organizations in the country, and this study is the first of its kind in this regard. expect this study will be of high utility to the personnel engaged in the planning and implementation of PSD. Through systematic innovation and BPR, not only in Sri Lanka but also for many other professionals and researchers who are engaged in designing and execution of similar service improvements and reengineering strategies in different countries around the world.