THE DEVELOPMENT OF PERFORMANCE MEASURES IN THE MANAGEMENT OF WATER UTILITIES IN SRI LANKA

Uditha Saman Vithana

(118443H)

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Department of Building Economics

University of Moratuwa

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Declaration

I declare that this is my own work and this 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 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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The above candidate has carried out research for the Masters Dissertation under my supervision.

……. …….

Dr. Thanuja Ramachandra Date

Dissertation Supervisor

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Abstract

The Development of Performance Measures in the Management of Water Utilities in Sri Lanka

In developing countries, water utilities bear massive challenges, in supplying pipe-borne water. National Water Supply & Drainage Board (NWSDB), the sole supplier of safe drinking water in Sri Lanka, under the Ministry of City Planning & Water Supply, increased its piped water services to cover 34% of population in 2014. NWSDB's Corporate Planning Division presents its performance, showing access to safe drinking water, via Annual and Key Performance Indicator (KPI) Reports, using different ratios with eleven variables. Performance is imperative for the betterment of a water utility. Recognizing this fact, the study proposes an alternative way of presenting performance of NWSDB, because single ratios do not provide comprehensive explanations about performance of water utilities.

Therefore, this study focused on the productive efficiency concept under parametric approach to estimate technical efficiency using Stochastic Production Frontier (SPF) technique as the best Industry Practice. First, SPF model was proposed for NWSDB. Then, selected regional manager's centres producing pipe-borne water were analysed using SPF model, to check its inefficiency. The test statistics found that SPF model was an inefficiency model. Finally, NWSDB was analysed using SPF model and overall mean technical inefficiency and technical efficiency were estimated for the period of 2010, 2011, 2012, 2013 and 2014. The SPF model was analysed using maximum likelihood iteration method to estimate the elasticity values of parameters, using the STATA software package, specially designed for stochastic frontier models.

Study confirmed NWSDB manages a similar technical efficiency level annually. Technical efficiency trend showed the increase occurring at a diminishing rate. Finally, the inefficiency model derived from the SPF model was proposed to NWSDB, which clarified the significance of variables affecting NWSDB's production, directly or indirectly, to managers etc. This SPF model allowed NWSDB to estimate mean technical efficiency for presenting performance reports as an alternative.

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List of Abbreviations

AIP	-	Annual Implementation Programme
CBO	-	Community Based Organization
DEA	-	Data Envelop Analysis
KPI	-	Key Performance Indicators
MDG	-	Millennium Development Goals
MI	-	Management Information
NWSDB	-	National Water Supply & Drainage Board
OPI	-	Overall Performance Indicator
RSC	-	Regional Support Centres
SCFA	-	Stochastic Cost Frontier Approach
SLNWP	-	Sri Lanka National Water Partnership
SPFA	-	Stochastic Production Frontier Approach
STATA	-	Statistic / Data analysis software
UN	-	United Nations
US	-	United States
WHO	-	World Health Organization

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