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# DETERMINATION OF ELECTRICITY DEMAND FOR SRI LANKA

Jaritri Dayaratne

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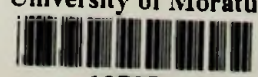
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Sri Lanka

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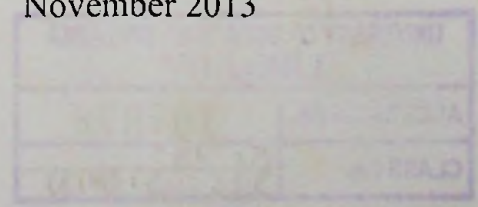
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## DECLARATION OF THE CANDIDATE

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 University or other 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 acknowledgment is made in the text.

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## DECLARATION OF THE SUPERVISOR

I have supervised and accepted thesis for the submission of the degree.

Signature of the supervisor

Date 23- Nov- 2013

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## **DEDICATION**

To my parents who were the pillars of my success at all time.

## ACKNOWLEDMENT

I take this opportunity to express my profound gratitude and deep regards to my supervisor Prof. T.S.G. Peiris, Head of the Department of Mathematics, University of Moratuwa for his exemplary guidance, monitoring and constant encouragement throughout the course of this thesis. The blessing, help and guidance given by him time to time shall carry me a long way in the journey of life on which I am about to embark.

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## ABSTRACT

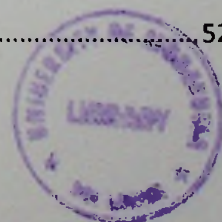
Electricity has become important component in today's life for everyone on earth. The demand for electricity has grown year by year with the growth of industrialization, population and urbanization. Hence, the importance to forecast electricity demand has become an inevitable need with great importance in order to plan country's power production well in advance to avoid any hindrance to its economy. Using annual electricity demand from 1969 to 2008 as a training data set, three models: multiple regression model, Autoregressive Integrated Moving Average [ARIMA (1, 1, 0)] and trend model were developed to forecast annual electricity demand. All models were statistically tested and also validated using data from 2009 to 2011 as a validation set. Further long term forecast (2012 to 2016) were done using all three models and compared the forecast values given by the Ceylon Electricity Board (CEB) for the same period. The explanatory variables used for the multiple regression model are annual Gross Domestic Product and population of the country. By comparing the results for training set, validation set and for long term period (2012 to 2016), it was found trend model is statistically sound, more practical, feasible and user friendly. Thus, it is recommended to use the trend model for the future prediction. This model can be easily used by any policy makers without any other external variables.

Keywords: Curve Fitting, Electricity Demand, Forecasting, Multiple Regression, Time series

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