
Time series modelling and forecasting of electricity generation and consumption in Sri Lanka

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Electricity is the most versatile energy carrier in modern economics. There is a growing tendency in the demand for electricity over the past two decades in Sri Lanka. Ceylon Electricity Board is the only major utility in Sri Lanka where electricity is generated for the whole nation. None of the literatures have used the Auto-Regressive Integrated Moving Average (ARIMA) approach to model the electricity generation and consumption of Sri Lanka. This motivated us to study the monthly electricity generation and consumption of Sri Lanka using ARIMA approach. In this study, monthly data on electricity generation and consumption (Giga Watt hour) in Sri Lanka was obtained from the Data Library of Central bank Sri Lanka, during the period of 2000-2019, where the demand for electricity was dramatically increased in Sri Lanka. The Objectives of the study were to fit a suitable ARIMA model for monthly electricity generation and consumption in Sri Lanka and forecast the electricity demand in Sri Lanka for the near future. Further, three statistical criteria Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC) and Mean Squared Error (MSE)) were considered in order to select the best fitting ARIMA model. Results revealed that $ARIMA(1,0,1) \times (2,1,1)_{12}$, and $ARIMA(1,1,1) \times (2,0,0)_{12}$ are the best fitting models for the monthly electricity generation and consumption respectively. Further, these chosen ARIMA models can be used to forecast the electricity generation and consumption in Sri Lanka in the near future.

Keywords: Auto Regressive Integrated Moving Average, Electricity consumption, MSE, Time series approach.

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