

**UNIVERSITI TEKNOLOGI MARA**

**FORECASTING ELECTRICITY CONSUMPTION  
IN PERLIS USING UNIVARIATE AND BOX-  
JENKINS MODEL**

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**Report submitted in fulfilment of the requirements for  
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## **STUDENT'S DECLARATION**

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.



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## ABSTRACT

Electrical energy was an important part of the industrialization and socio-economic growth of a country. The generation of electricity in Malaysia is heavily dependent on three major sources of fossil fuel, which are coal, natural gas, and oil. The generation of fossil fuel-dependent on the power causes adverse environmental impacts and depletion of fuel supplies. The main objective of this study is to forecast electricity consumption in 2020 by focusing on one of the states in Malaysia, which is Perlis. The other three sub-objectives are to investigate the seasonal effects of electricity consumption, to compare the result of the two methods used, and lastly, to determine the best model in forecasting the electricity consumption in Perlis. The secondary data were collected from the Tenaga Nasional Berhad (TNB) Perlis and they were in the form of monthly data from 2010 until 2019, which have been used to forecast by using two models of forecasting techniques, which were the Univariate model and the Box-Jenkins model. The best model was selected by looking at the lowest Mean Square Error between the Univariate and Box-Jenkins model. The Univariate model has several methods which are the Naïve method, Naïve with Trend method, Average Forecast, Average Change Model, and the Holt-Winter's Trend and Seasonality. From these five methods, the result of MSE on the evaluation part showed that the lowest MSE value was the Average Change Model and the value was 50960004.410. Box-Jenkins model MSE output is 2481532598001.61. The comparison of MSE value had been done and the last result showed that the Average Change Model was the best forecasting technique in the forecasting of the electricity consumption in Perlis.

**Keywords:** Univariate Model, Box-Jenkins Method, Electricity Consumption

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