FORECAST ON ELECTRICITY CONSUMPTION IN MALAYSIA BY USING ARTIFICIAL NEURAL NETWORK (ANN)

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ABSTRACT

Forecast of electricity consumption is very important for both suppliers and large consumers. However, the electricity consumption of a large enterprise is quite different with regional consumption, and has not been studied sufficiently, especially for an energy intensive corporation. An essential element of electric utility resource planning is forecasting the electricity consumption for the long term. This study presents an approach to forecast the annual electricity consumption based on historical data for Malaysia by using artificial neural network (ANN). The project involves developing several ANN designs to develop network and testing that network appropriately. ANN with its best performance was selected as the best design. After obtaining the most reliable model, forecasting the electricity consumption by using ANN is performed. The network is developed by means of economical conditions and how the variables are going to be changed in the following years. The model of network yields gives a very satisfactory results and the range of electricity consumption is obtained. Consequently, forecasting the electricity consumption in Malaysia can be successfully done.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Forecast on electricity consumption plays a significant role in strategic planning of an electric utility company since a lot of ideas are to be planned. Due to increased industrialization and commercialization, the demand for electricity is continuously increased [1]. The utility company may take at least five years to complete and commission a complex distribution and transmission network, or it may take seven to ten years to construct a power generation plant. In order to effectively plan these activities, the management must consider the forecast of electricity consumption not only for the immediate future but also in the periods of two to five or even ten years coming. By using these forecasts, utility companies can consider several strategic options such as those mentioned above; by effectively planning the construction activities to satisfy customer's needs [2]. Besides that it can also increase the company profit.

Nowadays, a problem that is encountered repeatedly in business, government, and scientific communities is that of predicting future sample values of a time series. Given some knowledge about a system and its past behavior, predictions can be made for its future evolution. Generally, most of the techniques used in forecasting today were developed in the nineteenth century. Forecasting procedures maybe classified by: how far into the future one is trying to predict, whether the prediction is an actual value or a range of values, and whether the method used is qualitative or quantitative.

Qualitative method, which are sometimes referred to as subjective or judgmental methods, are used when historical data concerning the events to predicted