

Moving holidays' effects on the Malaysian peak daily load

ABSTRACT

Malaysia's yearly steady growth in electricity consumption as a result of fast development in various sectors of the Malaysian economy have increased the need to have a more robust, reliable and accurate load forecasting for short-, medium-, or long-term. A reliable method for short term load forecasting is crucial to any decision maker in a power utility company. Many studies have been made to improve the forecasting accuracy using various methods. The forecasting errors for the holiday seasons are known to be higher than those for weekends. This paper aims to determine which model would be a better model to estimate the holiday effects and therefore give a better forecasting accuracy for the peak daily load in Malaysia. Some of the holiday effects in Malaysia are from Eid ul-Fitr, Christmas, Independence Day and Chinese New Year. The seasonal ARIMA (SARIMA) and Dynamic Regression (DR) or Transfer function modelling are considered. Furthermore, the final selection of the models depends on the Mean Absolute Percentage Error (MAPE) and others such as the sample autocorrelation function (ACF), the sample partial autocorrelation function (PACF) and a bias-corrected version of the Akaike's information criterion (AICC) statistic. The Dynamic Regression (DR) model recorded 2.22% as the lowest MAPE value for the 2004 New Year's Eve and 2.39% for the seven days ahead forecasting. And therefore, DR model is the most appropriate model to be considered for forecasting any public holidays in Malaysia.

Keyword: ARMA; SARIMA; Transfer function; Dynamic regression; MAPE