

Prediction of Bursa Malaysia Stock Index using Autoregressive Integrated Moving Average and Artificial Neural Network

Angie Tan Sze Yiing

Faculty of Management, Multimedia University, Cyberjaya, Selangor, Malaysia

Chan Kok Thim*

Faculty of Management, Multimedia University, Cyberjaya, Selangor, Malaysia
ktchan@mmu.edu.my (*Corresponding author)

Abstract

The FTSE Bursa Malaysia Kuala Lumpur Composite Index (KLCI) comprises the 30 largest listed companies is often used as the benchmark for the overall market performance of Malaysian stocks. Despite claims that the stock market is in fact an efficient market that follows a random walk process and therefore, is not predictable, there are evidences from previous empirical studies that argued that the stock market can be predictable. This study basically examines the ability of time series analysis and artificial intelligence system to predict the movement of stock prices. We use daily historical data from 3 January 2012 to 31 March 2014 as the base, whereas the daily forecasts will be generated for the period starting from 1 April 2014 to 31 March 2015 using Eviews 7 and MATLAB 8.5 with Neural Network Toolbox version 8.3. The predictability of the stock market is conducted using two different approaches of stochastic time series analysis and artificial intelligence system, namely the Autoregressive Integrated Moving Average (ARIMA) and Artificial Neural Network (ANN) methods, respectively. The findings revealed that the ANN (5-6-1) model outperformed the ARIMA (1,1,0) model with the lowest error recorded. Thus, it is concluded that the ANN model is indeed a more superior forecasting model as compared to the ARIMA model in forecasting the stock price index. Investors and financial analysts would be able to adopt the best technique to forecast accurately and gain insights to the Malaysian stock market. The knowledge and skill gained in performing forecasts using the right technique would definitely give the users an added advantage, as they would be able to get more accurate forecasts, thus, making better decisions in terms of risk and investment management.

Key Words: Forecast, ANN, ARIMA, Modeling, Stock, KLCI.