
Comparison of ARIMA and Neural Network Models for S&P SL(20) Index

E.J.K.P. Nandani^{1*}, M.K. Mahinda¹ and J.R. Wedagedara²

¹*Department of Mathematics, University of Ruhuna, Matara, Sri Lanka*

²*Sim CYP-CETARA Limited, United Kingdom.*

In the current financial world, prediction of stock prices has become a vital task. Predicting the future is important for the organizations to plan or adopt the necessary policies. Forecasting can assist them to make a better development and decision making for the country in the academic literature. The main aim of this study is to compare the forecasting performance for future values of Standard and Poor Sri Lanka 20 (S&P SL 20) between Auto Regressive Integrated Moving Average (ARIMA) models and Artificial Neural Networks (ANN) which are based on statistical and artificial intelligence based techniques by fitting the data and calculating computational errors. We used daily S&P SL 20 index value of Colombo Stock Exchange from the period 27th July 2012 to 28th December 2013 to forecast the future values of S&P SL 20. The best architectures for forecasting n th future day of S&P SL 20 were 30-10-1 feed-forward ANN model and ARIMA (1, 1, 1) model. The suitable parameters of each model are selected by using training data set together with trial and error technique. The forecasting performance of each model was compared by using Absolute error, Absolute fraction of variance (R²), Mean Absolute Deviation (MAD), Mean Square Error (MSE) and Root Mean Square Error (RMSE). The results show that ANN forecasting is more accurate in forecasting for an increased number of days than ARIMA model.

Key words: Forecasting, S&P SL 20 index, ARIMA model, ANN model

*nandani@maths.ruh.ac.lk