A Comparative Study on Stock Price Forecasting:

As Applied to the Consumer Services Industry Group Index of the Colombo Stock Exchange

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ABSTRACT

This study focuses on index-level price forecasting for the Consumer Services Industry Group Index of the Colombo Stock Exchange for a seven-day forecast period. The research stems from the argument that Sri Lanka′s stock market is not characterized by market efficiency attributes, and that its share prices do not necessarily assume a random walk movement. The author has selected five techniques, covering traditional regression models, time series models and machine learning models, to evaluate and learn the patterns of historical stock index price data, and use them to forecast a seven day period. The study uses three measures of accuracy, namely; Mean Absolute Percentage Error (MAPE), Root Mean Square Error (RMSE) & Coefficient of Determination (R^2) to evaluate the goodness of fit in the models and also to evaluate the relative accuracy of results across models.

The study splits the complete raw data set, spanning a window of 2 years and 7 months, into smaller testing datasets and has created 4 separate test instances. The objective of testing the models in differing lengths of historical trend is to understand if there is an effect on test data based on the length of the time series.

The results indicate that Artificial Neural Networks model shows consistently good accuracy and model fit, across all four test instances, beating other models.

Keywords: Stock Index Price Forecasting, Machine-learning models, Time Series Analysis