ABSTRACT

One of the most interesting topic in finance is stock. Stocks are investment instruments with two advantages, of dividends and capital gains. People who invest in stocks are called investors. Investors prior analysis in the decision to buy or sell stocks. Predictive analysis technique will produce thereby helping investors to take appropriate action.

Data mining is the process of discovering interesting patterns from large amounts of data. In data mining technique, commonly used is the prediction techniques that estimate the value of variable numerical targets in the future using a set of numerical and / or predictor variables. Artificial Neural Network prediction method is the prediction techniques are popular because they have a high degree of accuracy.

Input variable in this study is the highest price, lowest price, opening price, closing price and transaction volume of stock. Data mining technique used is Artificial Neural Network (ANN). The purpose of this study is to determine the stock price prediction model scenarios using artificial neural network method, the accuracy of the prediction, the forming of a stock portfolio using prediction data and stock portfolio prediction's performance.

This study was based by theoretical framework and definitions with the two grand theory of financial management and Big Data. Financial management theoretical framework comprises five things, namely Investment, Stocks, Diversification, Portfolio and Portfolio Optimization. The theory of Big Data framework consists in five cases also, the Big Data, Data mining, Prediction, Artificial Neural Network and Backpropagation Algorithm.

Based on this research, artificial neural network models are used as a predictive model consists of 10 input layers, one hidden layer consists of 17 neurons and 1 output layers. The accuracy of prediction measured by rate of error using a MAPE is 1.743%. Eight Portfolio already formed using prediction data. Portfolio A has the best performance is measured by the Sharpe ratio of 4.68%.

Keywords: Artificial Neural Network; Back Propagation; Stock; Stock Portfolio.