

ABSTRACT

In the international trade system, each country has its currency respectively as a medium of the exchange or a legal tender in payment for items traded. Therefore, we need a foreign exchange transaction for the exchange currency among countries. Foreign currency exchange is strongly influenced by movements in the exchange rate of a country's currency. The needs of exchange rate information, making forecasting as a way to help business people to determine the exchange rate movement of a currency. Forecasting is a way to predict what will happen in the future based on existing data in the past.

In forecasting the foreign exchange rates, there are many methods that can be used. One of them is using an Autoregressive Integrated Moving Average (ARIMA) model. ARIMA model is a model that is intensively developed by George Box and Gwilym Jenkins. Basic approach of this model consists of three stages, that is the identification stage, assessment and testing stage, and the implementation stage. In addition using the ARIMA models, forecasting can also be done by using Neural Network with Backpropagation algorithm. Neural networks can be trained to analyze a data pattern from the past and find a function, that connects the data pattern from the past with the desired output.

In this study, 2 system was made which is a system of Neural Network with Backpropagation Algorithm and an ARIMA systems, that is used for forecasting price of Indonesian Rupiah exchange rate against the Euro and U.S. Dollar exchange rate against the Euro. After doing testing with the Neural Network Systems, the best model that obtained is the model with the number of inputs by 4 inputs, the number of neurons in hidden layer by 20 neurons, and the learning rate of 0.1 for the EUR-IDR exchange data and the model with the number of inputs by 8 inputs, the number of neurons in hidden layer by 16 neurons, and the learning rate of 0.1 for the EUR-USD exchange data. While the testing with the ARIMA systems, the best model that obtained is ARIMA (2, 1, 2) model for the EUR-IDR exchange data and ARIMA (1, 1, 1) model for the EUR-USD exchange data.

Keywords: ARIMA models, Backpropagation Algorithm, Euro Exchange Rate, Forecasting, Foreign Exchange, Neural Network.