Universiti Teknologi Mara

Fuzzy Time Series (FTS) And Artificial Neural Network (ANN): Forecasting Malaysia's Palm Oil Exportation

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STUDENT'S DECLARATION

I certify that this report and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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ABSTRACT

Forecasting is an estimate of the value of a variable or group of variables and saying what will potentially happen at a future time. Malaysia is the second-largest palm oil producer in the world after Indonesia. Although Indonesia is the world's largest palm oil producer, Malaysia is the largest exporter of palm oil in the world. In 2018, lower palm prices were traded. However, it caused the gross export volume to decrease drastically (Kushairi et al., 2019). There is a need to forecast the export quantity of palm oil in Malaysia in order to aid those relevant to the industry to make assumptions or appropriate decisions regarding crop production and export matters. The study has two objectives which is to find forecasted value of the actual data of the quantity of palm oil exports in Malaysia by using Fuzzy Time Series and Artificial Neural Network and to determine the best model by comparing Fuzzy Time Series model and Artificial Neural Network model. From the results, the model that gives the smallest value of MSE, RMSE and MAPE is Fuzzy Time Series (FTS). The value of MSE for Fuzzy Time Series (FTS) is 13107002289 while the Artificial Neural Network (ANN) value is 17778810689. The value of RMSE for Fuzzy Time Series (FTS) is 114485.817 while the Artificial Neural Network (ANN) value is 133337.2067. The value of MAPE for Fuzzy Time Series (FTS) is 5.1063 while the Artificial Neural Network (ANN) value is 7.5328.

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