

Universiti Teknologi MARA

**Fuzzy Time Series and Artificial Neural
Network: Forecasting Exportation of
Natural Rubber in Malaysia**

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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

Natural rubber is one of the most important crops in Malaysia alongside palm oil, cocoa, paddy, and pineapple. Being a tropical country, Malaysia is one of the top five exporters and producers of rubber in the world. The purpose of this study is to find the forecasted value of the actual data of the number of exportations of natural rubber by using Fuzzy Time Series and Artificial Neural Network. This study is also conducted to determine the best model by making comparison between Fuzzy Time Series and Artificial Neural Network. Fuzzy Time Series has allowed to overcome a downside where the classical time series method cannot deal with forecasting problem in which values of time series are linguistic terms represented by fuzzy sets. Artificial Neural Network was introduced as one of the systematic tools of modelling which has been forecasting for about 20 years ago. The error measure that was used in this study to make comparisons were Mean Square Error, Root Mean Square Error and Mean Absolute Percentage Error. The results of this study showed that the fuzzy time series method has the smallest error value compared to artificial neural network which means it was more accurate compared to artificial neural network.

Keywords: Fuzzy Time Series, Artificial Neural Network, exportations of natural rubber, Mean Square Error, Root Mean Square Error, Mean Absolute Percentage Error

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