

Universiti Teknologi MARA

**Comparison Between Fuzzy Time Series
and Artificial Neural Network On
Modeling School Enrolment**

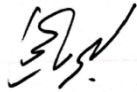
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STUDENT'S DECLARATION

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

School enrolment modeling provides information in decision making and planning for the Ministry of Education. In general, the education system in Malaysia is divided into pre-primary, primary, secondary and tertiary school. Due to that, this study has been conducted to find the most suitable mathematical model for fit the data based on school enrolment using Fuzzy Time series and Artificial Neural Network for each education stage in Malaysia. The dataset was collected from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) from the year 1981 to 2018. This study also aims to identify the best mathematical model between Fuzzy Time Series and ANN for each education stage by looking at the lowest mean squared error (MSE), Mean Absolute Percent Error (MAPE) and Mean Absolute Deviation (MAD) value of each model. The result shows that the best mathematical model for pre-primary and primary school is ANN by using Quasi-Network algorithm, which has the MSE value 4.2696 and 0.476988, MAPE value 3.23817 and 0.382992 and MAD value 1.464474 and 0.37005 respectively. However, fuzzy time series is the best mathematical model for secondary and tertiary school as the MSE value 1.39 and 1.28, MAPE value 1.19 and 3.35 and MAD value 1.68 and 0.72 respectively.

Keywords: Artificial Neural Network, Fuzzy time series, School Enrolment.

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