

**UNIVERSITI TEKNOLOGI MARA**

**TECHNICAL REPORT**

**A COMPARATIVE STUDY OF THE GAUSS-NEWTON  
METHOD OF LEAST SQUARES AND EXPONENTIAL  
SMOOTHING METHOD FOR THE RATE OF  
UNEMPLOYMENT IN MALAYSIA**

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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## **ABSTRACT**

For the past decade, unemployment has been a global phenomenon, with two types of unemployment: voluntary and involuntary. From 2010 to 2019, unemployment rates in Malaysia increased significantly. The Malaysian government should devise strategies to reduce unemployment, and forecasting is critical in predicting the number of unemployed people. Unemployment has a negative relationship with potential output, which has a negative impact on the economy and society. Therefore, this project aims to identify a function that fits the data of unemployment rates in Malaysia by using the Gauss-Newton method (GNM) of least squares and the Exponential Smoothing method (ESM). RMSE and MAPE were used to calculate the error for each function, and a function that gave a smaller error was the septic function. From this study, the septic function obtained from the GNM of least squares is the preferable method for fitting the data since the RMSE and MAPE are smaller compared with the other functions. This function was used to calculate the unemployment rate in Malaysia for the year 2023, and the result is 91.8714853. The rate obtained is not impractical. This is due to an increase of many factors such as wages, inflation, economic growth, and education are not taken into consideration. Thus, for the future study, the researchers need to consider the factors that influence the data of unemployment rates in Malaysia, which are wages, inflation, economic growth, and education.