

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

THE COMPARISON BETWEEN THE  
EXPONENTIAL GROWTH MODEL AND  
HYPERBOLIC GROWTH MODEL BY USING  
INDONESIA POPULATION

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## **ABSTRACT**

This study focused on the comparison between Exponential Growth Model and Hyperbolic Growth Model by using Indonesia population. The objectives of this project are to find the best model that can estimate the population of Indonesia in particular time, to apply the actual number of population in Indonesia by using Exponential Growth and Hyperbolic Growth models and also to compare the actual and approximate values using Exponential Growth and Hyperbolic Growth models. The secondary data are collected from the World Development Indicators (WDI) on April 2016. The estimated data are calculated with the help of Maple Software. The case study of this project is concentrated on the comparison between 2 years interval. The percentage of errors between actual data and the estimated data are also calculated. The results showed, the Hyperbolic Growth Model is better compared to Exponential Growth Model as the accuracy of the data is closer to the actual data. The results also showed, the data calculated by using Hyperbolic Growth Model have a less error compared to the Exponential Growth Model.

# **1 INTRODUCTION**

## **1.1 Introduction**

Study of population seeks to discover the causes and consequences of population changes. The changes in population happen fundamentally due to changes in births, deaths and migration which are alluded to as the three components of population change. As an interplay of these three components one looks at the number of total persons which is usually referred to as size, the characteristics of population called composition, and where are these people located labeled as distribution of population.

The number of human population in this world comprises of 6 billion people these days. This condition indicates vast population of people live compared with the total number of population in early 1990 when the number was only 1.6 billion. This numbers demonstrate that population around the world is developing. High rate of growth population today is the results of contrasts between birth rate and death rate. A simple logic about this difference is when the death rate less than birth rate lead to the rapid increment of population around the world.

In this study, the population of growth in Indonesia is examined. Indonesia is chosed because of it's excessively enormous population growth and their economic status is still developing and moving forward. Thus, it is a perfect condition to conduct a research about their population growth over the years. Indonesia is the fourth largest country in the world in terms of population; according to Indonesia Central Statistics agency in 2010, the population is 237,641,326. The factors that contributing to the large population in Indonesia is food production distribution, improvement in public health and the invasion of disease. Beside that, their birth rate exceeds the death rate. It is proved based on the data from The World birth rate of Indonesia at 2008 is 18.6% while death rate at 2008 is 6.3%.