

# CHAPTER I

## INTRODUCTION

### 1.1 Background

Trains are the most popular mode of public transportation. Based on data obtained from the Badan Pusat Statistik, in 2019 the train users will use 246,676,000 passengers. Compared to airplanes and ships which have 20,225,984 passengers and 2,091,516 passengers in 2019, train mode has a percentage of 91.70% higher than the 2 other modes of public transportation. From this condition, the author realizes the great potential that trains have in serving the public to travel. Furthermore, the writer takes the train mode as the object of the theme in this study.

Yogyakarta, is one of the big cities that is clamped by other big cities in Java, Jakarta, Bandung and Surabaya. Yogyakarta is crossed by railroad tracks and has two train stop stations. Yogyakarta Tugu Station is a train station for executive and business classes, while Lempuyangan Station is a train station for economy class. Both have different passenger segments.

The economic development of late this year has a strong influence on the development of the city of Yogyakarta. Yogyakarta, known as the city of students, has a very rapid development. In terms of education, the growth of schools and universities in the city of Yogyakarta is able to attract people from the outside of Yogyakarta to attend this student city. In addition, the tourism sector in Yogyakarta is increasing along with economic development. The growth

of hotels and tourist objects which are increased rapidly is one of the signs of progress in Yogyakarta tourism. All of these things made the people outside of Yogyakarta decided to visit Yogyakarta.

Many modes of transportation are used by the public to be able to go to Yogyakarta, one of the modes of transportation is the train. Based on the conditions mentioned above, the authors conducted this study to find out and predict how much the number of train users using both arrivals and departures in Yogyakarta, especially at Yogyakarta Tugu Station.

## **1.2 Problem Statement**

Based on the background of the above research which related to the increasing of the railroad train passengers at Tugu Station in Yogyakarta, a standardized model is needed that can at least scientifically predict the number of train passengers in the future. Of course this study is used to conduct an analysis of the ability of Yogyakarta Tugu Station to accommodate and serve passengers who will travel to and from the Tugu Station in Yogyakarta.

In this study, all trains that travel both the initial and destination will be well studied. The number of passengers who will travel to and from Yogyakarta Tugu Station is used as an independent variable which will be tested of the correlation with some socioeconomic variables as the independent variable.

### 1.3 Research Objective

This study has the following objectives:

1. To know the train passenger demand model at Yogyakarta Tugu Station.

### 1.4 Research Limitation

Limitation or scope of the problem is needed so that this research is directed and not widened. Limitation problems in this study are as follows:

1. Train passenger demand modeling is carried out on train passengers arriving and alighting at Tugu Station in Yogyakarta.
2. Modeling analysis is done by using linear regression analysis method.
3. The dependent variable is the number of train passengers going up and down at Yogyakarta Tugu Station. While the independent variables tested are regional socioeconomic factors that are considered to affect the interests of train passengers such as population, education, tourism, transportation, economy, income and expenditure.
4. The selection of the best model is based on the All Possible Regression (APRE) method according to the  $R^2$  criteria and taking into account the statistical test value of the selected model, the F-test.
5. The prediction of train passenger demand is carried out for the next 10 years, namely in 2029.
6. Ability analysis of Yogyakarta Tugu Station to accommodate and serve train passengers.

## 1.5 Research Benefits

The results of this study can contribute to the transportation management literature on rail transport management in Indonesia. In addition, the results of this study can be used by PT KAI as one of the bases in evaluating the achievement of project successes and mitigation of project failures.

One of the benefits expected by the author in conducting this research is in the form of theoretical benefits in the context of knowledge application about the modeling of train passenger demand related to socioeconomic factors and also the analysis of train station service capabilities. In addition, this research may be useful for academics to enrich knowledge about modeling passenger train demand in particular, and modeling passenger transport demand in general. In practical terms, hopefully this research can be one of the considerations for the train station manager in developing Yogyakarta Tugu Station in the future.

## 1.6 Originality of Final Project

After conducting a literature review on previous studies that have relevance in the preparation of this research, there are several studies that the authors serve as a guide in conducting the preparation of this research. These studies are:

1. *Pemodelan Demand Penumpang Bandar Udara Domine Eduard Osok di Kota Sorong, Papua Barat.* (Fretes 2014)
2. *Pemodelan Demand Penumpang Kereta Api Parahyangan Jurusan Bandung – Jakarta.* (Lulie 1995)