

ABSTRACT

PT. KAI is a transportation services company that operates in the field of land transport and is the only rail transport company in Indonesia. This study aims to determine the number of train passengers Argo Parahyangan (Bandung - Gambir) based on the results of forecasting, knowing the proposed number of the railway carriage Argo Parahyangan (Bandung - Gambir) based on the results of the forecast and know the results of the simulation Promodel for determining the proposed number of the railway carriage Argo Parahyangan (Bandung - Gambir).

To forecast the number of train passengers Argo Parahyangan in 2016 and 2017 using the Winter's Exponential Smoothing method. This method is used to treat seasonal patterns in the data. This method is divided into two models, namely the additive and multiplicative models. Calculation with additive model performed if the plot of the original data showed seasonal fluctuations are relatively stable, while the multiplicative models are used if the plot of the original data showed seasonal fluctuations vary. Daily data the number of train passengers Argo Parahyangan (Bandung - Gambir) 2015 is the data containing seasonal pattern with seasonal fluctuations vary so Winter's Exponential Smoothing method multiplicative models can be used.

Forecasting with Exponential Smoothing method of Winter's multiplicative models generating constant smoothing to the original data $\alpha = 0.5$, the smoothing constant for trend pattern $\beta = 0.2$, and the constant smoothing to seasonal patterns $\gamma = 0.2$. From the results of forecasting can be seen that the average number of railway passengers 19 on Monday, the highest average train 23 on Sunday highest, train 25 on Sunday highest average, rail 29 on Sunday highest average and trains 33 Monday's highest average. So then performed simulations using Promodel to propose a number of wagons for the train Argo Parahyangan (Bandung - Gambir) according to the average number of railway passengers in a busy day and improve the order fulfilment for Argo Parahyangan train.

Steps taken for the simulation is the collection of data requirements, test randomness passenger arrival, passenger arrival distribution test, data documentation, build simulation models, the simulation model verification, replication and comparative calculations simulation system. From the simulation results for the proposed number of carriages to each train is simulated 6 carriages for 2016 and 2017.

Keywords: Argo Parahyangan, Occupancy, Winter's Exponential Smoothing, Simulation, Promodel

