# QUEUING THEORY FOR DETERMINING NUMBER OF X-RAY MACHINES : A CASE STUDY AT GAMBIR TRAIN STATION

By

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## STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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# ABSTRACT

QUEUING MODEL AND SIMULATION TO OPTIMIZING THE FLOW OF PASSENGER DUE TO THE IMPLEMENTATION OF X-RAY MACHINES AT GAMBIR TRAIN STATION

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Nowadays, the development of railway transportation has become one of the Indonesian government's main focus. The construction of LRT and MRT is an example of the plan realization. Besides the development process, the security aspect is also become a main concern of Indonesian government's. Because of that, a state enterprise company that manage the railway transportation in Indonesia plans to use x-ray machines at the train stations. This research will help the company to determine the number of x-ray machines needed at the train station. In order to provide the most optimal solution, the author use Queuing Theory as a method to analyze and determine the number of x-ray machines needed at the train station. The solutions will be tested in simulation softwares to check it's validity and suitability based on the Discrete Event Simulation Analysis. The results of the simulation will be compared and analyzed to determine the most optimal number of x-ray machines needed. The results of this thesis research are simulations that represents the situation and condition of the train station after the implementation of the x-ray machines that has been proven to be advance and suitable to be applied in the actual situation.

*Keywords: Number of X-Ray machines, Discrete Event Simulation, Queuing Theory, Simulation.*

## DEDICATION

I dedicate this thesis research

To God for all His grace and blessings.

To my family that always inspirit and support me.

To all lecturers that have guide, advise and motivate me during the writing process of this thesis project.

To Mr. Adhiguna Mahendra, Mr. Iqbal Chalid, and Mr. Asyraf Nur Adianto from PT. Aero Systems Indonesia that have give their guidance about this thesis project.

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