SIMULATION MODELING OF SUPPORTING RAW MATERIAL TRANSPORTATION SYSTEM IN PT SEMEN PADANG

FINAL PROJECT

RAHMI AULIA SYAFITRI

1410932018

DEPARTMENT OF INDUSTRIAL ENGINEERING
FACULTY OF ENGINEERING
ANDALAS UNIVERSITY
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RAHMI AULIA SYAFITRI
1410932018

Advisers:
Dr. Eng. DICKY FATRIAS
Ir. NILDA TRI PUTRI, Ph.D, IPM

DEPARTMENT OF INDUSTRIAL ENGINEERING
FACULTY OF ENGINEERING
ANDALAS UNIVERSITY
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ABSTRACT

PT Semen Padang is the first cement producer in Indonesia. The process of supporting raw materials purchasing is carried out through two lines, which are inland and sea lane. On inland purchasing, suppliers will send supporting raw materials directly to PT Semen Padang using trucks. On sea lane purchasing, the supporting raw materials are sent using vessel until the seaport and further will be transported using trucks to PT Semen Padang. The problem that occurs in this transportation system is the presence of queues on the scale area and the vessel docking time exceeds the standard time i.e 6 days or 8640 minutes.

The purpose of this research is to construct a simulation model to reduce average queue time in scales and reduce time to transport gypsum from Teluk Bayur Seaport to Indarung to be less than 6 days. The method used is simulation modeling and the model is constructed with Arena Simulation Software. The experiment is to change the coal arrival input based on current requirement, prioritize the gypsum trucks to be served first, add the number of scales, and add the number of gypsum truck to transport gypsum from Teluk Bayur Seaport to Indarung.

Based on experiments conducted, it can be concluded that best recommendations are adding 2 pairs of scales, adding 10 trucks operating to transport gypsum, and prioritize gypsum trucks to be served first. The output of this recommendation reduces the queue time in the initial scale down to 0.2867 minutes, queue time in final scale down to 0.5941 minutes, and time required to transport gypsum from Teluk Bayur Seaport to Indarung is 8400 minutes that smaller than standard time i.e 8640 minutes. The cost required to add two pairs of scales is Rp. 5,050,000,000 and it is equivalent to 5 previous demurrage payments. So, PT Semen Padang only needs to allocate funds used for demurrage payments within the next one year for the cost of building scales. The increase in the number of trucks does not cause additional costs.

Keywords: queue, modeling, simulation modeling,