TRIP DISTRIBUTION MODELING STUDY OF
EXPORT AND IMPORT COMMODITIES
IN TERMINAL PETIKEMAS SURABAYA

Name : Muh. Samsuri
Registration Number : 3103 100 086
Major : Civil Engineering, FTSP-ITS
Counsellor Lecturer : Ir. Wahyu Harijanto, MT
Cahya Buana, ST, MT

Abstract

Terminal Petikemas Surabaya (TPS) is a place for the movement, loading and unloading activities of export and import commodities. A number of goods and transport movement is large enough because of the position and the very important role as a transport gate for Eastern Indonesia. It causes consequences relating to the level of service and terminal capacity, the level of transportation service, and the investment policy adopted by the government and management.

To understand the movement patterns that occurred, the trip distribution modeling study was made based on secondary data obtained from TPS. The data was analyzed by using the method of gravity model with power and negative exponential constraints function.

This study produces modeling equation of the largest commodities both domestic and international in TEUs and Ton. For domestic (in TEUs), produced the best equation in the calibration of distance and distance intervals, in a series: empty container \( T_{id} = 0.0728 \ E_i.E_d.C_i \ -4.6, T_{id} = 0.0398 \ E_i.E_d.C_i \ -4.5 \),
general cargo \( T_{id} = 1.14x10^{-14} E_i.E_d.C_i \ -0.058, T_{id} = 7.66x10^{-15} E_i.E_d.C_i \ -0, T_{id} = 7.7x10^{-15} E_i.E_d.e^{0C_i} \),
drinking water \( T_{id}=1.52x10^{-14} E_i.E_d.e^{-0.0016C_i}, T_{id}=1.44x10^{-15} E_i.E_d.e^{-0.006C_i}, T_{id}=1.95x10^{-15} E_i.E_d.e^{-0.001C_i}, T_{id}=2.8x10^{-15} E_i.E_d.e^{-0.0017C_i} \),
cigarettes \( T_{id}=1.44x10^{-15} E_i.E_d.e^{-0.0006C_i}, T_{id}=1.95x10^{-15} E_i.E_d.e^{-0.001C_i}, T_{id}=2.8x10^{-15} E_i.E_d.e^{-0.0017C_i} \),
food \( T_{id}=1.44x10^{-15} E_i.E_d.e^{-0.0006C_i}, T_{id}=1.95x10^{-15} E_i.E_d.e^{-0.001C_i}, T_{id}=2.8x10^{-15} E_i.E_d.e^{-0.0017C_i} \),
wood \( T_{id}=544.71E_i.E_d.C_i \ -6.62, T_{id}=270.09E_i.E_d.C_i \ -6.5 \), paper \( T_{id}=1.8x10^{-1} \)
In the same way modeling equation was obtained for domestic commodities (in tons), international (in TEUs) and international (in tons).

Another result of this modeling is shown in a trip length distribution graphs to determine patterns of movement due to the distance factor.

**Keywords:** Terminal Petikemas Surabaya, trip distribution, gravity model