

ABSTRACT

PT. IPC Terminal Petikemas is a company engaged in the management of container terminals. This Company is located in Panjang, Bandar Lampung. This terminal is essential in product distribution to and from Sumatra Island. Container terminals are one of the supporting pillars of good logistics performance; therefore, container terminals must have optimal performance. Based on the results of observations at the container terminal, it show (1) there is an imbalance in gate-in and gate-out activities, (2) capacity use is not optimal, (3) use of the container yard, and (4) actual costs exceed the budget. The imbalance of gate-in and gate-out activities results in low container throughput; this is the impact of container stacking for too long. This imbalance can also disrupt customer delivery schedules. This condition shows a problem with the efficiency of container terminal operational activities. Several solutions to the problem of placing containers include (1) expanding the port area to facilitate gate-in/out activities and (2) increasing labor to optimize loading and unloading or gate-in activities. /gate out and (3) optimize the container structuring method. The first and second alternative solutions require high costs, so the container arrangement option is an alternative implemented by the Company. The genetic algorithm is a method for determining the order of container arrangement. Data processing in this research includes three sub-sections: (1) Development of mathematical models, (2) calculation of the GA method, and (3) implementation of results. The number of samples in this study was 300 containers. The process of verification, model validation, and sensitivity analysis is the stage after model development from genetic algorithm simulation. The GA simulation shows optimal results in the twenty-fifth tournament. The verification and validation process indicates that the GA simulation results can be applied in companies. After the data processing, verification, and validation processes, the Company will achieve cost savings of 50,79%.

Keyword- Genetic Algorithm, Container Terminal, Reshuffle.