

시뮬레이션 기법을 이용한 컨테이너 터미널의
자원배정 전략에 관한 연구
(A Study on the Resource Allocation Strategies
of the Container Terminals Using Simulation
Techniques)

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Abstract

This paper presents the estimation method of container handling capacity and other performance indices of container terminals using the computer simulation models. Simulation models are developed for the model container terminal consisting of 4 berths by the berth allocation strategies, crane allocation strategies and the total number of container cranes using Arena simulation packages.

The proposed models do not consider the yard operations and gate operations. All the input parameters for the models are estimated on the basis of the existing container terminal operation data and the planning data for the automated container terminal planned by the government. Four berth allocation strategies and three crane allocation strategies are considered. The considered total number of container cranes ranges from 12 to 15.

Non-terminating simulation techniques are utilized for the performance comparison among alternatives. The performance measures such as average ship turnaround time, average ship waiting time, average ship service time, the number of containers handled per year, and the number of ships processed per year are used.

The result shows that the berth allocation strategy minimizing the sum of the number of ships waiting, the number of busy container cranes and number of containers handled already

performs better than any other berth allocation strategies, and the crane allocation strategy allocating up to 5 container cranes per berth performs better than any other crane allocation strategies, and there are no significant performance differences among the alternatives consisting of different total number of container cranes allocated.

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