ABSTRAK

Terminal peti kemas menghadapi permasalahan ketidakoptimalan jumlah tenaga kerja yang berdampak pada kinerja operasional. Dengan 250 tenaga kerja dan rasio 0,5 orang/kontainer, throughput hanya mencapai 92% dari target 500 kontainer per hari. Penelitian ini bertujuan menentukan jumlah tenaga kerja optimal menggunakan integrasi Time and Motion Study dan Ranked Positional Weight. Time and Motion Study digunakan untuk menghitung waktu standar 8 aktivitas operasional dengan mempertimbangkan rating factor 1,10 dan allowance 17%. Ranked Positional Weight digunakan untuk distribusi beban kerja optimal dengan mempertimbangkan precedence constraint dan aktivitas paralel. Hasil penelitian menunjukkan waktu standar total 15,35 menit per kontainer, distribusi ke 3 stasiun kerja dengan efisiensi lini 59,22%, dan jumlah tenaga kerja optimal 105 orang (35 orang per shift) dengan rasio 0,21 orang/kontainer. Implementasi menghasilkan potensi efisiensi 58%, cycle time turun menjadi 8,64 menit, dan throughput mencapai 100%.

Kata kunci: tenaga kerja optimal, terminal peti kemas, Time and Motion Study, Ranked Positional Weight, efisiensi operasional

ABSTRACT

Container terminals face challenges with suboptimal workforce allocation that impacts operational performance. With 250 workers and a ratio of 0.5 workers/container, throughput only reaches 92% of the 500 containers per day target. This study aims to determine optimal workforce levels using integrated Time and Motion Study and Ranked Positional Weight methods. Time and Motion Study calculates standard time for 8 operational activities with rating factor 1.10 and 17% allowance. Ranked Positional Weight optimizes workload distribution considering precedence constraints and parallel activities. Results show total standard time of 15.35 minutes per container, distribution across 3 workstations with 59.22% line efficiency, and optimal workforce of 105 workers (35 per shift) with 0.21 workers/container ratio. Implementation yields 58% efficiency potential, cycle time reduced to 8.64 minutes, and 100% throughput achievement.

Keywords: optimal workforce, container terminal, Time and Motion Study, Ranked Positional Weight, operational efficiency