Analisa Perbaikan Loading Time pada Finsihed Product Warehouse Menggunakan Lean Six sigma dan Discrete Event Simulation = Analysis of Loading Time Improvement on Finished Product Warehouse Using Lean Six sigma and Discrete Event Simulation

Hari Suciadi, author

Abstrak

Peningkatan kinerja harus terus dilakukan di semua lini proses di industri untuk meningkatkan daya saingnya, termasuk dalam proses pengoperasian gudang produk jadi. Perbaikan di gudang dapat dilakukan dengan mengurangi pemborosan dan cacat pada setiap proses (warehousing, storing, picking dan shipping). Pendekatan Lean Six sigma telah banyak digunakan di berbagai industri dan dapat meningkatkan produktivitas. Penelitian ini bertujuan untuk menyajikan analisis penerapan lean six sigma pada operasional gudang produk jadi dengan pendekatan discrete event simulation guna mendapatkan saran perbaikan untuk mengurangi pemborosan selama proses pemuatan. Lean Six sigma menyediakan pendekatan terstruktur melalui penerapan DMAIC (Define, Measure, Analyze, Improve dan Control) untuk menganalisis masalah operasi gudang, mendiagnosis penyebabnya, dan menghasilkan rencana perbaikan. Discrete event simulation digunakan dalam tahap "improve" untuk memberikan evaluasi perbaikan proses pemuatan di gudang produk. Simulasi dilakukan pada studi kasus produk gudang pelat baja yang terdapat beberapa waste selama proses pemuatan, antara lain lokasi penyimpanan yang tidak efisien dan reshuffling selama pengiriman. Skenario perbaikan berbasis lean six sigma disimulasikan agar dapat diimplementasikan, sehingga diperoleh desain perbaikan operasi gudang yang lebih sistematis.

.....Performance improvement must be carried out continuously at all process lines in industry in order to increase its competitiveness, including in the process of operating the finished product warehouse. Improvements in warehouse can be made by reducing waste and defects in every process (inbound, storage handling, picking and shipping). The Lean Six Sigma approach has been widely used in various industries and can increase productivity. This study aims to present an analysis of the application of lean six sigma in finished product warehouse operations with a discrete event simulation approach in order to obtain suggestions for improvements to reduce waste during loading process. Lean Six Sigma provides a structured approach through the implementation of DMAIC (Define, Measure, Analyze, Improve and Control) for analyze warehouse operation problem, diagnose its cause and generate improvement plan. The DES is used within the “Improve” phase in order to provide a prognosis for the expected performance under the proposed improvement scenarios and to evaluate their effects on the warehouse performance measures. Simulations are carried out in case studies of steel plate warehouse products where there are some waste during loading process, including inefficient storage location and reshuffling during delivery. Improvement scenarios based on lean six sigma are simulated so that they can be implemented, in order to obtain a more systematic warehouse operation improvement design.