LEAN WAREHOUSING PADA OPERASIONAL GUDANG *CROSS-DOCKING* GUNA PENGURANGAN *WASTE* DAN PENINGKATAN EFISIENSI

Muhammad Rezi Fahlevi

ABSTRAK

PT. XYZ merupakan perusahaan penyedia layanan logistik 3PL yang menerapkan sistem *cross-docking* dalam operasional gudangnya. Namun, proses pergudangan menunjukkan adanya inefisiensi yang berdampak pada penurunan ketepatan waktu pengiriman. Penelitian ini bertujuan untuk mengidentifikasi jenis pemborosan yang terjadi dan memberikan usulan perbaikan guna meningkatkan efisiensi proses gudang. Pendekatan yang digunakan dalam penelitian yaitu *Lean Warehousing* dengan alat analisis *Value Stream Mapping* (VSM), *Waste Relationship Matrix* (WRM), *Process Activity Mapping* (PAM), dan *Fault Tree Analysis* (FTA). Hasil analisis menunjukkan bahwa pemborosan dominan adalah *Overprocessing*, *Waiting*, dan *Transportation*. Berdasarkan hasil identifikasi akar masalah dan analisis aktivitas, usulan perbaikan yang diberikan meliputi perubahan alur proses, digitalisasi input data, pemberian nomor antrian, pengaturan ulang area penyimpanan, dan pemasangan stiker penanda. Implementasi usulan perbaikan yang digambarkan melalui *Future State Map* menunjukkan peningkatan efisiensi operasional gudang *cross-docking* dan penurunan total waktu proses sebesar 1064,71 detik atau setara dengan 20,2% dari total waktu semula.

Kata Kunci: *Lean Warehousing, Cross-Docking, Value Stream Mapping, Waste Relationship Matrix, Fault Tree Analysis, Efisiensi Operasional,* Pemborosan

IMPLEMENTATION OF LEAN WAREHOUSING IN CROSS-DOCKING OPERATIONS TO REDUCE WASTE AND IMPROVE OPERATIONAL EFFICIENCY

Muhammad Rezi Fahlevi

ABSRACT

PT. XYZ is a third-party logistics (3PL) company that implements a cross-docking system in its warehouse operations. However, inefficiencies within the warehouse processes have negatively impacted delivery timeliness, particularly for goods belonging to customer A. This study aims to identify the types of waste occurring in the warehouse and propose improvement strategies to enhance operational efficiency. The research adopts a Lean Warehousing approach, utilizing analytical tools such as Value Stream Mapping (VSM), Waste Relationship Matrix (WRM), Process Activity Mapping (PAM), and Fault Tree Analysis (FTA). The analysis identified Overprocessing, Waiting, and Transportation as the most dominant types of waste. Root cause identification and activity analysis led to the development of improvement proposals, including process flow redesign, digitalization of data input, implementation of a queuing number system, rearrangement of storage layout, and the application of visual marker stickers. The proposed improvements, illustrated through the Future State Map, demonstrated a reduction in total process time by 1,064.71 seconds or 20.2% compared to the original state, indicating a significant enhancement in warehouse operational efficiency.

Keywords: *Lean Warehousing, Cross-Docking, Value Stream Mapping, Waste Relationship Matrix, Fault Tree Analysis, Operational Efficiency, Waste*