

OPTIMASI PENERAPAN WAREHOUSE MANAGEMENT SYSTEM DAN TATA LETAK PENYIMPANAN TERHADAP EFEKTIVITAS OPERASIONAL GUDANG PADA PT XYZ

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ABSTRAK

Keterlambatan pengiriman di Gudang PT XYZ disebabkan oleh ketidaksesuaian pencatatan stok serta penempatan barang yang tidak sesuai dengan klasifikasi yang tepat, sehingga menghambat proses pengambilan dan pengiriman barang secara efisien. Penelitian ini membahas perbaikan Warehouse Management System (WMS) yang masih bersifat semi-manual menjadi sistem terintegrasi berbasis real-time dengan integrasi API ke sistem ERP, serta penambahan dashboard monitoring dan fitur alert otomatis guna meningkatkan akurasi dan efisiensi pencatatan stok. Selain itu, tata letak gudang dirancang ulang menggunakan metode Class Based Storage dan Computerized Relationship Layout Planning (CORELAP), yang memperhitungkan kedekatan aktivitas melalui Activity Relationship Chart (ARC) dan Total Closeness Rating (TCR). Hasilnya, metode Class Based Storage memberikan penurunan jarak tempuh barang sebesar 6,90%, sedangkan CORELAP memberikan penurunan sebesar 5,92%. Penerapan layout optimal menempatkan barang dengan frekuensi keluar-masuk tertinggi dekat area inbound-outbound untuk mempercepat pengambilan barang dan mendukung ketepatan waktu pengiriman. Studi ini menyimpulkan bahwa pengembangan WMS yang terintegrasi dan perancangan layout berbasis klasifikasi memberikan peningkatan signifikan pada akurasi stok dan efisiensi operasional gudang PT XYZ.

Kata Kunci: Tata Letak Penyimpanan, Klasifikasi Barang, *Computerized Relationship Layout Planning*, Efektivitas Operasional Gudang, Tata Letak Gudang

**OPTIMIZATION OF WAREHOUSE MANAGEMENT SYSTEM
IMPLEMENTATION AND STORAGE LAYOUT ON
WAREHOUSE OPERATIONAL EFFECTIVENESS AT PT XYZ**

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ABSTRACT

Delays in deliveries at PT XYZ's warehouse are caused by inconsistencies in stock recording and incorrect placement of goods according to the correct classification, thus hampering the efficient process of picking and shipping goods. This study discusses the improvement of the Warehouse Management System (WMS) which is still semi-manual into an integrated real-time system with API integration to the ERP system, as well as the addition of a monitoring dashboard and automatic alert features to improve the accuracy and efficiency of stock recording. In addition, the warehouse layout was redesigned using the Class Based Storage and Computerized Relationship Layout Planning (CORELAP) method, which takes into account the proximity of activities through the Activity Relationship Chart (ARC) and Total Closeness Rating (TCR). As a result, the Class Based Storage method provides a reduction in the distance traveled by goods by 6.90%, while CORELAP provides a reduction of 5.92%. The application of the optimal layout places goods with the highest frequency of entry and exit near the inbound-outbound area to accelerate goods picking and support timely delivery. This study concludes that the development of an integrated WMS and the design of a classification-based layout provide significant improvements in stock accuracy and operational effectivity of PT XYZ's warehouse.

Keywords: *Storage Layout, Goods Classification, Computerized Relationship Layout Planning, Warehouse Operational Effectiveness, Warehouse Layout*