

ABSTRACT

Lawasan Parakan Tobacco Warehouse stores thousands of tobacco baskets of various types and grades without considering their value or movement frequency. This disorganized layout leads to inefficient warehouse operations and quality degradation due to poor air circulation. In May 2024, a total of 3,370 baskets experienced quality deterioration, resulting in an economic loss of IDR 1,652,100,000.00. This issue is critical as it directly affects product value and warehouse efficiency. This study aims to redesign the warehouse layout using a classification-based approach that considers product value and movement frequency, combined with the implementation of a tiered pallet racking system to improve storage efficiency and air circulation. The proposed layout is designed by grouping product categories and optimizing flow based on handling and movement requirements. The results show that Layout Alternative I reduces travel distance by 92.34% and saves handling time by 670.14 hours. However, storage capacity decreased from 284 to 234 baskets, resulting in a lower economic storage value. Despite this, the proposed layout improves operational efficiency and reduces the risk of quality degradation due to suboptimal storage conditions.

Keywords: *layout, warehouse efficiency, class-based storage, pallet rack, tobacco*