

ABSTRACT

PT XYZ is a plastic packaging manufacturing company facing overcapacity issues in its Finished Goods Warehouse Building 2 due to increased domestic production volume in 2025. The warehouse occupancy rate even exceeded 100%, with an occupancy rate of 107.8% in January, 125.9% in February (the highest), and 100% in March. This situation has led to disorganized storage, accumulation beyond company standards, and the use of the loading dock area as temporary storage. This study aims to design a warehouse layout using the Blocplan method and address the overcapacity issue. Data was collected through observations and interviews, then analyzed using an Activity Relationship Chart (ARC) as the basis for input into the Blocplan software. Out of 20 alternative layouts generated, the best layout was selected with an r-score of 0.813 and the lowest rel-dist score of 44. This alternative layout improved staff travel efficiency by 36.49% and storage capacity from 270 to 398 pallets (an increase of 47.4%). After implementing the alternative layout, the occupancy rate decreased to 72.6% in January, 84.8% in February, and 67.6% in March. Thus, the alternative layout is superior due to more efficient material flow, shorter travel distances, and more optimal storage capacity.

Keywords — [warehouse layout, over capacity, Blocplan, activity relationship chart, occupancy rate]