

ABSTRACT

PT Pramudita Pupuk Nusantara faces efficiency issues in the layout of its raw material warehouse, where suboptimal placement of goods requires operators to travel long distances and spend excessive time retrieving materials. Optimizing the warehouse layout is crucial to enhance operational efficiency and productivity, as the current arrangement leads to increased non-productive work time and a higher risk of distribution delays. This study proposes a solution by redesigning the warehouse layout using a flexible storage method (shared storage) and time travel analysis. The main steps include collecting and analyzing historical data on goods movement, calculating space requirements, determining movement intensity, and placing items based on access priority. Items with high movement frequency are positioned closer to the production area to minimize travel distance and time. The evaluation compares total travel distance and time between the existing and proposed layouts. The proposed layout successfully reduces the total operator travel distance from 2,182.5 meters to 1,242.5 meters and decreases travel time from 2,837.25 seconds to 1,615.25 seconds, achieving an efficiency improvement of 76%. The primary contribution of this research is providing a data-driven solution that demonstrably enhances workflow efficiency and warehouse space utilization without major changes to the physical structure.

Keywords: warehouse layout, shared storage, time travel analysis, operational efficiency, total distance