

ABSTRACT

This research discusses the optimization of inbound and outbound cross-docking queues of 3PL Company in Osowilangun. The main problem is that the cross-docking warehouse faces challenges in queuing system efficiency, with Customers waiting times exceeding the company's tolerance limits. Data from February 2024 showed an average waiting time of 53 minutes for inbound and 70 minutes for outbound, indicating an imbalance in service capacity due to material handling limitations and operational congestion. This research applies Discrete Event Simulation (DES) to optimize the queuing system. The simulation results show that the addition of forklifts and dock doors can reduce waiting time and increase the number of Customers served. The best scenario is the addition of three forklifts which increases the number of Customers to 767 per month and reduces the waiting time to 179 minutes. This scenario is also the most cost-efficient with a total of IDR 81,900,000 and a Benefit-Cost Ratio (B/C) value of 18.86.

Keywords: *queue optimization, cross-docking, logistics, discrete event simulation, flexsim.*