ABSTRACT

PT XYZ is a company engaged in FMCG Products. PT. XYZ has various facilities, one of which is the Finished Goods Warehouse. To help meet the demand, there are three picking teams in the Finished Goods Warehouse. Demand at PT. XYZ is very fluctuating, on some days demand exceeds the daily capacity of the picking team, causing the utilization of the picking team to exceed capacity, while on other days demand is below the daily capacity of the picking team, causing the picking team to be underutilized. Excessive utilization of the picking team has a direct impact on overtime at the facility. As a countermeasure, PT. XYZ will implement the Auto Picking Project by changing the picking team that was previously operated by humans to be operated by machines (Auto Guided Vehicles). However, PT. XYZ does not have a similar project, so PT. XYZ does not know how much investment is needed to get the same productivity rate as the current system. Therefore, the assistance of discrete event simulation is needed, to assist PT. XYZ in simulating the proposed system with the help of AGV. Based on the results of the discrete event simulation, PT. XYZ requires at least 7 AGV investment units. The next thing to consider is the financial side of implementing the auto picking project, based on calculations carried out with several parameters such as NPV, IPP and PBP, the project is said to be feasible to run. Apart from the financial and operational side, major changes to the facility can have an impact on the facility, therefore a proper mitigation plan is needed. Based on the ISO 31000:2018 framework, it was found that there are 15 internal company risks. Where of the 15 risks there is 1 risk categorized as extreme risk where the risk will be mitigated by reduction. In addition, there are 3 risks with a substantial category where 2 risks will be mitigated by reduction and 1 risk by transfer.

Keywords: Discrete Event Simulation, Warehouse Management System, Risk Management System, Financial Analysis, and Automation