

## **ABSTRACT**

*One of the established brands among Bottled Drinking Water (AMDK) products is produced by PT. XYZ. PT. XYZ faces challenges, including the absence of a specific calculation technique in determining distribution routes to achieve low transportation costs. The Vehicle Routing Problem (VRP) is one optimization method that can be used to solve route determination problems. By using optimization results, users can address complex challenges and find optimal solutions to their problems. The main goal of this research is to design optimal distribution routes for gallon AMDK distribution problems using the VRPY python package. The research findings indicate that the existing delivery routes for gallon AMDK distribution at PT. XYZ can still be optimized. The initial condition shows that PT. XYZ has 24 delivery routes delivered by 11 vehicles. However, in the improvement condition, it is found that PT. XYZ's delivery routes can be reduced to 23 routes with 8 vehicles. This is known to result in a total route distance about 4% shorter than before. Additionally, this also impacts the transportation costs incurred, thus achieving the research goal of minimizing transportation costs.*

**Keywords :** AMDK, Optimization, Distribution Routes, Vehicle Routing Problem, PYTHON