ABSTRACT

PT. AAA is one of the companies that produce wall paint, wood paint, tile paint, polish, and thinner which has a service that is delivering the products to customers directly. That activity using its own fleet for customers in Java Island, especially for Surakarta Residency area using its own fleet for customer in Java Island especially for Surakarta Residency area. While deliver the products, the fleet often experience delays due to not good route planning. The order of the shipping route is based on the frequency of the route traveled by the operator, not with good planning, causing the fleet to arrive outside the customer's opening and closing hours.

This research was conducted to give proposal of product delivery route to customer especially for Surakarta Residency area using Vehicle Routing Problem with Heterogeneous Fleet and Time Windows method and Two-Phase Tabu Search Algorithm with initial solution using Nearest Neighbor Algorithm to reduce number of delays in delivery product by minimizing travel distance. The result of this study is the sequences of routes and vehicles used for product delivery.

The results of the calculation of this study is to propose a sequence of delivery routes for the shipping fleet with a distance of 22.51% smaller than the order of the routes in the initial conditions. The distance is reduced from 938.93 km to 727,516 km. As a result of reducing the travel distances, the delay in product delivery to customers is reduced to an average of four customer locations for each day.

Keywords*: Distribution Route, Heterogeneous Fleet, Minimize Travel Distance, Vehicle Routing Problem*