ABSTRACT

Transportation is one of the important part in the supply chain, because transportation has the responsibility to make sure that the product arrive in consumers. Besides that, transportation has 40% contribution in making total logistic cost. Therefore, a company needs to have a good transportation system. PT XYZ *is one of the pharmaceutical company that distribute the products to some regions such as Bandung and Jabodetabek.* PT XYZ *has a problem with their transportation system that is the delay in sending the products to consomers caused by no configuration route yet. It caused there were the products that were not sent on time and extra cost that should be imposed to* PT XYZ.

The problem that happened in PT XYZ *is called Vehicle Routing Problem* (VRP). VRP *is a problem how to determine distribution route with some constraints. The constraints that are used in this research are time window of each consumer, heterogeneous fleet, and multiple products. For solving it, this research uses nearest neighbor algorithm for getting initial solution and then improved using genetic algorithm.*

The implementation of these algorithms can be used for solving the delay and decrease the average of total transportation cost of PT XYZ *up to 5.83%*

Key Words: *Transportation, VRP, Time Window, Heterogeneous Fleet, Multiple Products, Nearest Neighbor Algorithm, Genetic Algorithm.*