

ABSTRACT

Transportation is one part of the supply chain that has an important role, because this part ensures that the goods that have been produced can reach consumers. In addition, transportation can contribute up to 40% of the total logistics cost. Therefore, a company needs to have a good transportation system. PT Pos Logistik is a company under the auspices of the government that is appointed as a vaccine warehouse storage and distribution within the province of West Java. PT Pos Logistics has a problem in its transportation section, namely inappropriate route configuration. And for route determination from PT Pos Logistics there is no precise route determination. The following problems can result in additional transportation costs that must be borne by PT Pos Logistics with an excess cost of more than 50% of the daily budget cost set by the company.. The problem at PT Pos Logistics is often called the Vehicle Routing problem (VRP), which is the problem of determining vehicle routes with various restrictions. The VRP restrictions in this study are that shipments are only made in West Java, the vehicles used consist of various types and capacities (heterogeneous fleet). The e-TOL fee changes every year and there are opening and closing hours at each customer (time window), the vehicle is considered constant for each type. In the completion of this VRP, the algorithm is used as the formation of the intestine. This research aims to produce a proposed product distribution route from the depot to the agent that has the shortest total distance traveled with the Genetic Algorithm (GA) method. The results of the application of the algorithm can be used to solve the decline in total transportation costs at PT Pos Logistics up to 12%. So that the budget reduction can meet the company's normal limit to reach 50% of 62%.

Key Words: *Transportation, VRP, Time Window, Heterogeneous Fleet, Genetic Algorithm*