ABSTRACT

Transportation and distribution is an important factor in the logistics and supply chain. Transportation and distribution activities are activities of moving goods from one point to another using a particular mode . Increased transportation costs in the logistics activities of many companies must determine a more efficient distribution policy . One of them can be done by determining the needs of the fleet and the determination of the optimal route . This problem is known as the vehicle routing problem (VRP). PT . XYZ is a distribution company to distribute goods to customers or outlets in Bandung and West Java area . PT . XYZ has a land transport modes with the types of trucks , cars , and motorcycles . Existing problems are PT . XYZ can not distribute all existing customer demand. This problem is the problem of determining the vehicle with respect to the restriction that the heterogeneous fleet (heterogeneous fleet), multi- time window (time window) and the storage capacity of a heterogeneous (multi compartement).

This study discusses about the basic VRP with heterogeneous fleet characteristics, multiple products and multiple compartments in order to minimize the total routing cost. VRP including hard combinatorial problems with characteristics that are generally VRP NPhard solved by metaheuristic approaches such as Genetic Algorithms (GA) are used in this stud . GA techniques were developed beginning with the formation of the initial population. Each individual in the initial population be raised to the nearest neighbour technique. Reproduction process using genetic operators include: elitism , mutation and crossover .

The results of this algorithm is able to solve problems that are not provided due to customer delays and can optimize the use of the vehicle and the destination sequence . The use of genetic algorithms can reduce transportation costs by 17.3 % and reduce the amount of vehicle usage .

***Kata Kunci**: Transportation and Distribution, VRP, Nearest Neighbour, Genetic Algortihm, Heterogeneous Fleet, Multi Compartement, Time Window.*