ABSTRACT

The Main purpose of this research is to create a transportation system with optimizing route based on travel time, vechicle's pickup capacities, time window, dan available TBS in PTPN I using Genetic Algorithm approach. This research is using time window data, service time in afdeling and PKS, travel distance, vechicle's velocity, vechicle's capacity, transportation cost, available TBS, and existing route in May 2010.

Initialization is begun with generating all nodes that have demand using sequential insertion mechanism. All the solution are evaluated by fitness function with objective function is minimize number of vechicles, total duration time, and range of duration time. 50% chromosomes with the smallest fitness function become next generation while 30% from crossover by roullette wheel method, and 20% from mutation. the population will keep get iteration until step to the maximum generation. This process will keep working until 5 repetition for the same demand data. and one the best solution is choosed with criteria the most minimum transportation cost, total duration time, and range of duration time.

the output of Genetic Algorithm is a spesific route with minimum number of vechicles, total duration time, and range of duration time. Based on calculation using Genetic algorithm in a month, Genetic Algorithm results a saving for transportation cost is equal to Rp5.513.125,00, total duration time is equal to 32 hours 48 minutes, range of duration time is equal to 21 hours 19 minutes, and all the route is on time.

Keyword : Transportation, Vechicle Routing Problem, Genetic Algorithm