ABSTRACT

Transportation and distribution is one of activity that has important role in supply chain and logistic. Transportation and distribution activity is delivering goods from the origin destination to another. In Transportation dan distribution activity almost have any problems that apprear by its own characteristics such as time boundaries, number and vehicle capacity, and variety of demand. Vehicle routing problem is an impact that appreared by specific characteristic and boundaries. PT.XYZ is a logistic services company who has responsibillity to fullfiling demand from its customer that called PT.ABC in DKI Jakarta. PT.XYZ use a number of vehicle who has two different type and capacity. On its transportation activity must be ajusted with time window open and close at each customers location. The problem is delay on delivering the goods. Because of that delay, sometimes PT.XYZ can not fullfill the all of demand on a horizon planning in one day influenced by the each boundaries. This Problem is categorized in vehicle routing problem with several boundaries. The boundaries are heterogenous fixed fleet, Time window, and Multi Trip.

Vehicle routing problem in this case is belong to NP-Hard category. Based on that category, this research use two algorithm for determining solution. Heuristically by using the Sweep Method and Metaheuristic using Tabu Search Algorithm.

Goal from these Algorithm is to minimizing transportation operational cost by optimizing vehicle with time and other delivery boundaries. Output of the calculation from these algorithm is can avoid from delayed delivery and reduce total travel time up to 7% from existing routes and saving cost up to 2% which is can fullfilled demad on one horizon planning.

Keyword : *Transportation and distribution, Vehicle Routing Problem, Heterogenous fixed fleet, Time window, Multi trip, Sweep Method, Tabu Search.*