

ABSTRACT

PT.ABC is a food industry that produces chocolate and cocoa products that have been established for 175 years and located in Bandung. In a distribution process PT ABC have 29 local customer around West Java, with delivery confirmation done one day before loading date to customer. Delay in delivery to customer is the main problem of PT ABC that need to solve, they reach 21% delay in distribution customer order for 6 month. It will affect increase in transportation cost because PT ABC should pay penalty cost. There are 4 factors impact delay of distribution process, but delay in departure of fleet has the biggest rate , about 61%. It caused by there is no schedule in fleet departure and there is no right designing route for each customer.

In this research, this case will be done by create scheduling and vehicle routing problem with characteristic contained Multi-Trip Vehicle Routing Problem and Vehicle Routing Problem with Time Window using Branch and Bound Algorithm to minimize travel distance.

In the end, the travel distance can be minimized 17,1% and the departure time schedule for each fleet is explain that each kind of fleet should be depart form depot/distribution center at 07:30.

In this research does not considering penalty cost and transportation cost, so researcher suggest for further research can considering transportation cost component and can also used other algorithm. The traffict jam and use horizon planning more than one day can also considered.

Keywords : Multiple-Trip Vehicle Routing Problem, Vehicle Routing Problem with Time Window, Branch and Bound Algorithm.