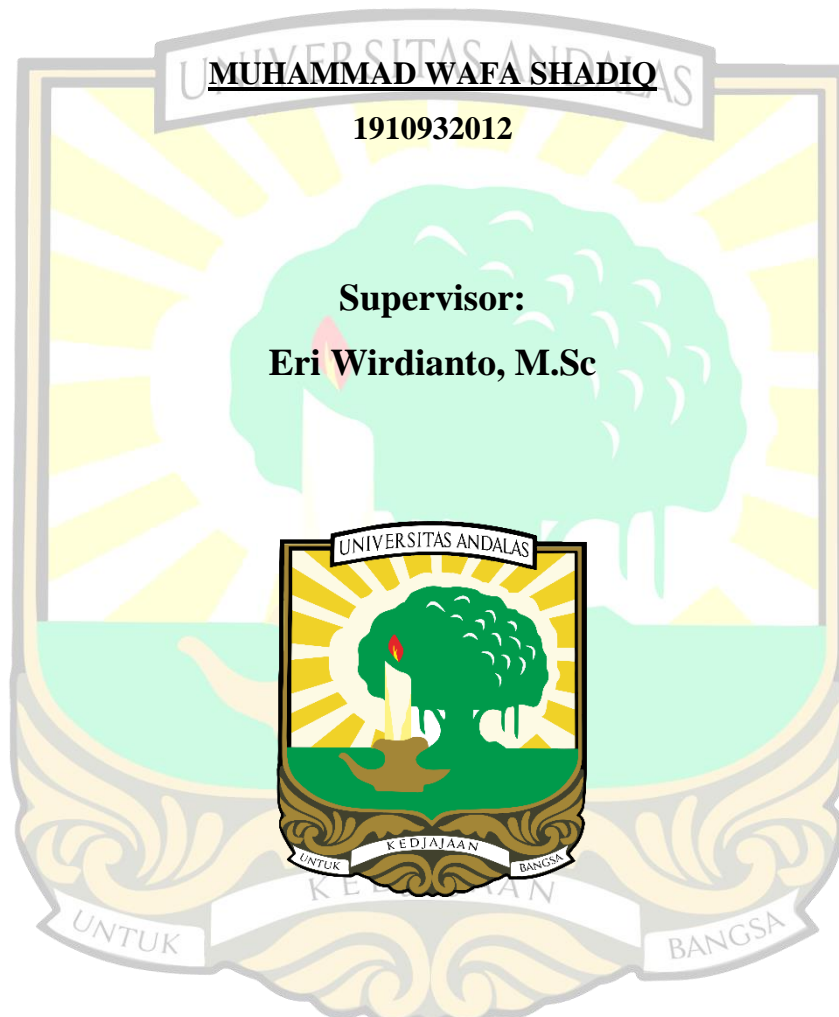


**DETERMINATION OF THE AQUA GALLON DELIVERY
ROUTE AT PT TINA DIMANS RAYA TO MINIMIZE FUEL
COST CONSIDERING VEHICLE LOAD**

FINAL PROJECT



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ABSTRACT

Determining a good route is very important for the industry. Routing needs to consider the total distance, travel time, vehicle capacity, and fuel cost. One factor that affects fuel consumption is the weight of the load, as fuel consumption increases by 2% for every additional 100 pounds of capacity. PT Tina Dimans Raya is a distributor of products made by Danone. The formulation of the problem in this study is how to determine the Aqua gallon delivery route in minimizing fuel costs.

This study used the FCVRP model from Xiao et al. (2012) to solve the problem. The search for optimal solutions in this study uses an exact approach to the Lingo software. If the exact approach is not in accordance with the system, then a metaheuristic approach is used with a sweep algorithm and a Taboo Search algorithm. It is hoped that this final project can minimize transportation costs and produce software to accommodate dynamic routes.

The research's solution was implemented for the supply of Aqua gallons between May 20 and May 26, 2023. The solution found in the Lingo program was able to save Rp388,555 (36% of the real route cost) in gasoline expenses. The company's one-hour route determination time is longer than the calculation time utilizing Lingo. The corporation cannot employ this precise strategy. Additionally, the Taboo Search algorithm is employed, which may reduce the total distance traveled by the route by 203,58 km, or 20.75%, and the total cost of gasoline consumed by the route by Rp272,903.19, or 25.32%. The research's conclusion is that the FCVRP model can address this issue by reducing the overall fuel costs incurred throughout the Aqua gallon delivery route at PT Tina Dimands Raya.

Keywords: FCVRP, fuel consumption, fuel cost, Lingo, Taboo Search.

