

CHAPTER VI

CONCLUSION

This chapter contains the conclusion of the research and the recommendation for further research.

6.1 Conclusion

This study concluded that the Fuel Consumption Rate with the Capacitated Vehicle Routing Problem (FCVRP) model in this study is appropriate and can solve the problem of determining the Aqua Gallon delivery route at PT Tina Dimans Raya. The problem solved in this study on May 20, 2023 to May 26, 2023. The solution of this problem is solved with an exact approach using Lingo software. The exact solution obtained from this model results in vehicle fuel costs of Rp698.236,3. The results of this exact approach in Lingo can save vehicle fuel costs borne by the company by Rp388.555 or 36% of the actual cost. In computing, Lingo software takes a long time to produce a solution, so the use of this approach is not in accordance with the system. This is because the company has time to determine the route for 1 hour, while Lingo requires a maximum time of 90 hours 57 minutes on 20 May 2023. As a result, the exact approach cannot be applied to companies where the running process exceeds 1 hour. If the time required to produce an exact solution is less than 1 hour, then this method is preferred. Furthermore, route determination is carried out using the Taboo Search algorithm in the python programming language. Finding a solution using taboo search can save a total distance of 203,58 km or 20,75% of the actual distance. The fuel cost generated when using Taboo Search can save the total fuel cost of the actual route by Rp272.903,19 or 25,32% with an average per day of Rp45.483,87. The running time of this program only takes one second to produce a solution. It can be concluded that the use of a proposed route based on the FCVRP model with a solution search using the Taboo Search algorithm results in a smaller total distance and total fuel cost compared to the company's actual route.

6.2 Suggestion

Suggestions that can be given for future research are as follows:

1. Researchers use other metaheuristic methods to compare the results of each method, computation time, and the effectiveness and efficiency of the method with the model used by the author.
2. Adding any cost variables that affect the transportation costs borne by the company.
3. Advise companies and developers to make the implementation of the model easy to use.

