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TRANSPORTATION ROUTING FOR COST REDUCTION CASE STUDY OF WAREE THEP NAN ICE PLANT

Abstract

Since, there are high temperatures in Thailand, an ice maker factory normally has deriver service to small retail stores. However, those retail stores are located far away from each other. In a case study of the ice maker factory, a diver has no plan for routing to serve the ice. So, the factory has to pay more logistic costs. This paper presents a cost reduction based on ice logistic management for an ice company in Nan province in the north of Thailand. A vehicle routing problem (VRP) has been applied to identify a problem, then a VRP spreadsheet solver was employed to calculate a shorted path for ice logistics based on a saving algorithm. The result has shown that an optimized route saves 17.11% of the logistic cost while logistic productivity is increased by 17.17%.

Introduction

Nowadays, transportation is another important element. Because transportation and distribution activities are expensive activities due to inefficient management. From inaccurate routing, and lack of appropriateness, such as routing that causes a route that is too far or choosing a car more than necessary if an organization can effectively manage these problems, it will help reduce costs.

Waree Thep Nakhon Nan Ice Factory operates a business by selling and distributing ice such as small ice tubes large tubes of ice and crushed ice, etc., which produce different types of ice it is fully automated and has a maximum production capacity of 80 tones/day and is distributed daily. There are a total of 52 employees, 34 of which are ice delivery drivers and rear truck drivers. There are 17 delivery routes, 10 routes in the Muang district, and 7 routes in the Wiang Sa district. Cold storage diesel is used as fuel with a usage rate of up to 6,000 liters/month, which is a high cost in business operations. by Waree Thep Nakhon Nan Ice Factory Facing the problem of higher transportation costs

In this study, the researchers have foreseen the problem of inefficient ice transport routing. Because there is a route that runs back and forth, resulting in an unnecessarily increased distance this is largely due to the customer's desire to pick up the goods at different times.

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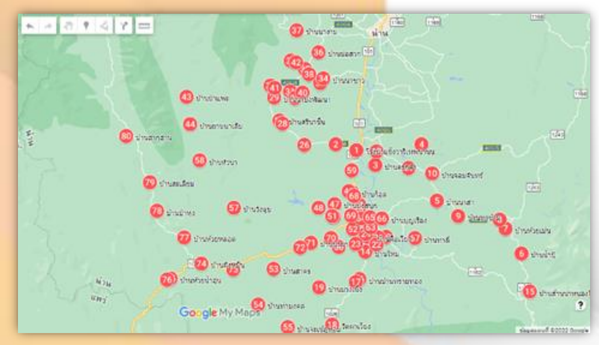
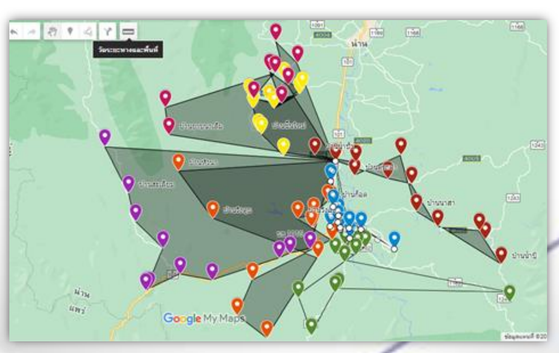




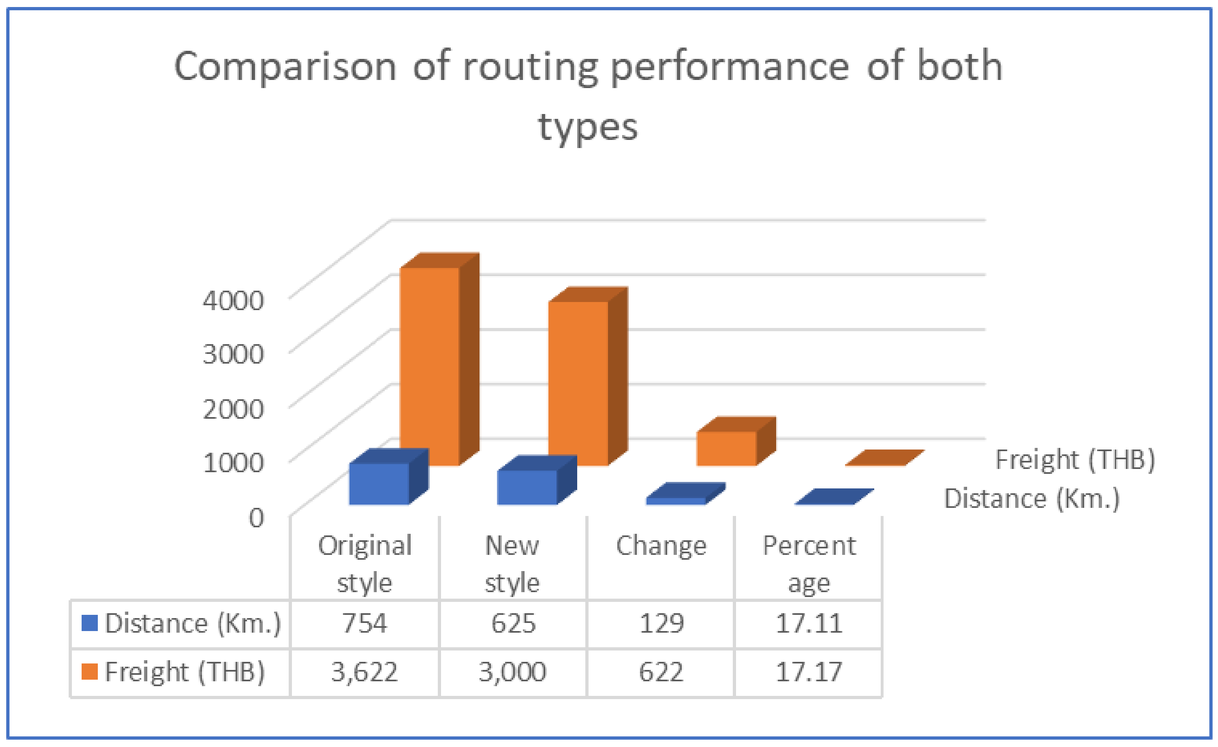
Methods and Materials

Vehicle routing (VRP) issues are a management problem. Logistics in deciding to choose the best route for moving objects, people, animals, or goods, will plan to find ways to route the goods to customers in the most efficient way. Considering various conditions and limitations such as time, distance, number of vehicles and vehicle capacity, etc., consisting of vehicles (Vehicle), transportation routes (Routing), distribution centers (Depot), and customers (Customers) Zoom out to 100% to preview what this will look like on your printed poster.

Find the result of the total distance by using the program VRP Spreadsheet Solver to calculate, then select the result. Which gives the shortest total distance to present the method used to improve.

Results

From the research objectives to reduce the distance and transportation costs for the case study. The researcher used the VRP Spreadsheet Solver program and used the 1-day routing data of the case study. Used in the research by rerouting the obtained data using the VRP Spreadsheet Solver program, which results and Make a comparison as shown in Table 4, comparing the performance of the 2 routing methods.



	Original style	New style	Change	Percentage
Distance (Km.)	754	625	129	17.11
Freight (THB)	3,622	3,000	622	17.17

Discussion

From the comparison of data from Table 4.10, it can be seen that after the program has been used in routing That allows the distance to run from the original 754 kilometers to 625 kilometers, representing 17.11%, and the cost of transportation is reduced from the original 3,622 baht to 3,000 baht, representing 17.17%, with the result increasing or decreasing accordingly. Factors in daily transportation, which may be more or less according to various factors that occur.

Conclusions

The researcher has used the routing data of the case study and compared the results of the original routing with the VRP Spreadsheet Solver program. The result is that the VRP Spreadsheet Solver program can reduce the total distance from the original. 754 kilometers, reduced to 625 kilometers, reduced by 129 kilometers, and reduced transportation costs from the original 3,622 baht, reduced to 3,000 baht, reduced by 622 baht.

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