

ABSTRAK

CV Isabella Yogyakarta merupakan perusahaan yang mendistribusikan produk *frozen food* ke daerah Yogyakarta maupun luar Yogyakarta. Terdapat 18 agen yang bekerjasama dengan pihak CV Isabella Yogyakarta. Dalam proses distribusi, terdapat 2 unit mobil *Box L300* dan 1 unit mobil *Box Grand Max*. Perusahaan memiliki tiga rute distribusi untuk mendistribusikan produknya. Dalam pendistribusian sering terdapat agen yang belum sempat dikunjungi akibat keterbatasan waktu pelayanan. Oleh karena itu diperlukan penentuan rute distribusi untuk meminimalkan jarak tempuh sehingga proses distribusi dapat selesai sebelum melewati batasan waktu pelayanan.

Penelitian ini mengusulkan penentuan rute distribusi dengan menggunakan metode *nearest neighbour* dan algoritma *tabu search*. Kedua metode ini menghasilkan rute optimal yang memiliki jarak terpendek sehingga dapat meminimalkan waktu distribusi dan biaya yang dikeluarkan lebih sedikit. Kemudian usulan rute optimal tersebut akan dibandingkan dengan rute aktual perusahaan dari segi jarak, waktu dan biaya yang dikeluarkan.

Penentuan rute ini menghasilkan rute usulan dengan total jarak 399,2 Km, total waktu selama 804,60 menit dan total biaya sebesar Rp.658.519,35. Sedangkan rute aktual menghasilkan total jarak 479,8 Km, total waktu selama 901,32 menit dan total biaya sebesar Rp.754.682,26. Dari hasil tersebut dapat disimpulkan bahwa metode *nearest neighbour* dan algoritma *tabu search* dapat menekan jarak tempuh 80,6 Km, total waktu selama 96,72 menit dari rute aktual serta menghemat biaya sebanyak Rp.96.162,91.

Kata kunci: algoritma *tabu search*, algoritma *nearest neighbour*, *vehicle routing problem*, rute distribusi

ABSTRACT

CV Isabella Yogyakarta is a company that distributes frozen food products to Yogyakarta and outside Yogyakarta. There are 18 agents who collaborate with CV Isabella Yogyakarta. In the distribution process, there were 2 Box L300 cars and 1 Box Grand Max car. The company has three distribution routes to distribute its products. In distribution, there are often agents who have not been visited due to limited service time. Therefore it is necessary to determine the distribution route to minimize the mileage so that the distribution process can be completed before passing the service time limit.

This study proposes to determine the distribution route using the nearest neighbor method and the tabu search algorithm. Both of these methods produce the optimal route that has the shortest distance so that it can minimize distribution time and costs less. Then the optimal route proposal will be compared with the company's actual route in terms of distance, time and costs incurred.

Determination of this route resulted in a proposed route with a total distance of 399.2 km, a total time of 804.60 minutes and a total cost of Rp. 658,519.35. While the actual route produces a total distance of 479.8 km, a total time of 901.32 minutes and a total cost of Rp. 754,682.26. From these results it can be concluded that the nearest neighbor method and the taboo search algorithm can reduce the distance of 80.6 km, a total time of 96.72 minutes from the actual route and save costs as much as Rp. 96.162.91.

Keyword: tabu search algorithm, nearest neighbour algorithm, vehicle routing problem, distribution route