ABSTRAK

PT Kamila Surya Gas Sejahtera merupakan distributor Gas LPG NPSO yang bekerja sama dengan PT Pertamina Persero Tbk dalam pendistribusian Gas LPG NPSO (Non-Subsidi) yang terletak di Yogyakarta Namun pelaksanaan proses distribusi tersebut masih belum optimal karena *driver* dalam melakukan proses pendistribusian belum mempertimbangkan jarak titik pengiriman, sehingga terdapat titik konsumen yang terlewatkan dan jarak tempuh menjadi lebih panjang dan biaya distribusi lebih besar karena harus putar balik ke konsumen yang terlewatkan. Sehingga penelitian ini bertujuan untuk menentukan usulan rute pendistribusian LPG untuk meminimasi biaya distribusi menggunakan Algoritma *Tabu Search.*

Penyelesaian masalah penentuan rute distribusi produk pada penelitian ini menggunakan metode Algoritma *Nearest Neighbour* dan Algoritma *Tabu Search.* Algoritma *Nearest Neighbour* akan mencari titik terdekat ke titik akses terakhir. Selanjutnya Algoritma *Tabu Search* akan memilih solusi terbaik menggunakan struktur memori yang mencatat sebagian jejak proses pencarian untuk mencegah proses pencarian lokal agar tidak melakukan pencarian ulang pada ruang solusi yang sudah pernah ditelusuri. Proses perhitungan dilakukan dengan bantuan *software Python Google Collab* dengan iterasi sebanyak 10.000.

Hasil penelitian ini yaitu berhasil mendapatkan usulan rute distribusi yang optimal dengan penurunan jarak tempuh sebesar 92,5 Km per hari, dan biaya distribusi mengalami penurunan sebesar Rp86.954perhari, sehingga usulan rute lebih baik dari rute aktual perusahaan.

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

ABSTRACT

PT Kamila Surya Gas Sejahtera is a distributor of NPSO LPG Gas that collaborates with PT Pertamina Persero Tbk in distributing NPSO LPG Gas (Non-Subsidized) located in Yogyakarta. However, the implementation of the distribution process is still not optimal because the driver in carrying out the distribution process has not considered the distance of the delivery point, so that there are missed consumer points and the distance becomes longer and the distribution costs are greater because they have to turn back to missed consumers. So this study aims to determine the proposed LPG distribution route to minimize distribution costs using the Tabu Search Algorithm.

The solution to the problem of determining the product distribution route in this study uses the Nearest Neighbor Algorithm and the Tabu Search Algorithm. The Nearest Neighbor Algorithm will search for the closest point to the last access point. Furthermore, the Tabu Search Algorithm will select the best solution using a memory structure that records part of the search process trace to prevent the local search process from re-searching the solution space that has been explored. The calculation process is carried out with the help of Google Collab Python software with 10,000 iterations.

The results of this study are successful in obtaining the optimal distribution route proposal with a decrease in travel distance of 92.5 Km per day, and distribution costs decreased by Rp86,954 per day, so that the proposed route is better than the company's actual route.

Keywords: distribution, vehicle routing problem, nearest neighbor algorithm, tabu search algorithm