Penerapan metode Vehicle Routing Problem (VRP) untuk menentukan rute distribusi tabung LPG 3 Kg bersubsidi di PT Wanita Satria = Application of the Vehicle Routing Problem (VRP) method to determine distribution routes for Subsidized 3 Kg LPG Cylinders at PT Wanita Satria

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Abstrak

Vehicle routing problem (VRP) adalah jenis pendekatan yang bertujuan untuk memilih jalur rute pendistribusian ke beberapa area lokasi pelanggan menggunakan sejumlah armada transportasi. Pendekatan ini akan diapadukan dengan metode Mix Integer Linear Programming (MILP) dan bantuan Software LINGO 18.0 untuk menyelesaikan permasalahan rute pendistribusian tabung gas LPG 3 Kg di PT Wanita Satria. Saat ini, PT Wanita Satria diberi tanggung jawab untuk mendistribusikan tabung LPG 3 kg ke 19 titik lokasi Pangkalan yang berada di sekitaran kecamatan Jagakarsa, Pasar Minggu, dan Pancoran. Pengiriman saat ini dirasa masih belum optimal karena hanya berdasarkan pengalaman supir dan kernet, terbukti dengan teroptimalisasinya waktu pengiriman dari yang sebelumnya membutuhkan waktu sebesar 361,9 menit menjadi 276,9 menit atau berkurang sekitar 23,5% dengan kondisi jumlah tabung yang dikirimkan sama, yakni 514 tabung dengan melewati 3 rute. Selanjutnya juga dilakukan hasil analisis sensitivitas untuk mengetahui apakah ada dampak dari perubahan parameter permintaan. Dari perubahan tersebut didaptkan hasil adanya perubahan rute, jumlah rute, namun tidak diperlukan tambahan kendaraan bahkan ketika ada kenaikan permintaan sampai 50%.

.....Vehicle routing problem (VRP) is a type of approach that aims to choose distribution routes to several customer location areas using a number of transportation fleets. This approach will be combined with the Mix Integer Linear Programming (MILP) method and the help of LINGO 18.0 Software to solve the problem of the distribution route for 3 Kg LPG gas cylinders at PT Wanita Satria. Currently, PT Wanita Satria is responsible for distributing 3 kg LPG cylinders to 19 Pangkalan locations around Jagakarsa, Pasar Minggu, and Pancoran sub-districts. The current delivery is still not optimal because it is only based on the experience of the driver and the assistant, as evidenced by the optimization of the delivery time from what previously took 361.9 minutes to 276.9 minutes or decreased by about 23.5% with the same condition that the number of tubes sent was the same. namely 514 tubes by passing 3 routes. Furthermore, the results of sensitivity analysis were also carried out to find out whether there was an impact from changes in demand parameters. From these changes, the results obtained are changes in routes, the number of routes, but no additional vehicles are needed even when there is an increase in demand of up to 50%.