

Konsolidasi Operasi Last-Mile Delivery untuk Mengurangi Biaya Distribusi = Consolidated Last-Mile Delivery Operation to Minimize Distribution Cost

Putri Ranna, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20526694&lokasi=lokal>

Abstrak

Pertumbuhan bisnis e-commerce meningkatkan jumlah pengiriman barang ke rumah pelanggan. Permasalahan peningkatan volume barang yang akan dikirim ke rumah pelanggan adalah sistem distribusi last-mile delivery yang tidak efisien menyebabkan peningkatan kendaraan pengiriman yang beroperasi di perkotaan, dimana dapat menambah eksternalitas negatif seperti kemacetan, kebisingan dan polusi. Permasalahan lain yang sering muncul dari kegiatan last-mile delivery adalah kegagalan pengiriman, dimana akan menambah biaya karena perlu dilakukan pengiriman kembali ke rumah pelanggan. Penerapan strategi konsolidasi dalam sistem distribusi last-mile delivery merupakan solusi yang efisien untuk meminimalisir biaya distribusi. Konsolidasi dilakukan dengan menambahkan hub ke sistem distribusi. Tujuan dari penelitian ini adalah untuk menganalisis efisiensi sistem distribusi last-mile delivery dengan strategi konsolidasi untuk meminimalisir total biaya distribusi dengan mempertimbangkan biaya internal, biaya eksternal dan biaya peluang akibat penambahan hub pada sistem distribusi last-mile. Perencanaan sistem distribusi dengan beberapa skenario yang diselesaikan oleh Vehicle Routing Problem (VRP) dengan mempertimbangkan jenis kendaraan dan jendela waktu yang berbeda atau dikenal sebagai HFVRPTW (Heterogeneous Fleet Vehicle Routing Problem with Time Windows). Masalah VRP dalam penelitian ini diselesaikan dengan menggunakan software VRP Spreadsheet Solver. Selain itu, kendaraan listrik juga dinilai dapat digunakan sebagai kendaraan pengiriman diharapkan dapat mengurangi polusi dan meningkatkan kualitas lingkungan. Hasil penelitian berhasil mengurangi biaya distribusi dalam hal penurunan total jarak yang ditempuh dan total biaya distribusi.

.....The growth of the e-commerce business increased the number of deliveries of goods to customers' homes. The problem of increasing the volume of goods to be delivered to customers' homes is the inefficient distribution system of last-mile delivery causes an increase in delivery vehicles operating in urban areas, which can add negative externalities such as congestion, noise and pollution. Another problem that often arises from last-mile delivery activities is a failure of delivery, where which will increase costs because it needs to be re-delivered to the customer's house. The implementation of a consolidation strategy in the last-mile delivery distribution system is an efficient solution to minimize distribution costs. Consolidation did by adding a hub to the distribution system. The purpose of this study is to analyze the efficiency of the last-mile delivery distribution system with a consolidation strategy to minimize the total distribution costs by considering internal cost, external cost and opportunity costs due to the addition of a hub in the last-mile distribution system. Distribution system planning with several scenarios solved by vehicle routing problems considering different vehicle modes and time windows are known as HFVRPTW (Heterogeneous Fleet Vehicle Routing Problem with Time Windows). The VRP problem in this study was solved using VRP Spreadsheet Solver software. In addition, electric vehicles are also considered to be used as delivery vehicles is expected to reduce pollution and improve environmental quality. The result of the study succeeded in reducing distribution costs in terms of the decrease in total distance travelled and total distribution costs.

