

# Optimasi distribusi material multi-produk dengan sistem transportasi vehicle routing problem with simultaneous pickup and delivery = Optimization of vehicle routing problem with simultaneous pickup and delivery in multi-produk distribution

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## Abstrak

Pada penelitian ini mengusulkan sebuah model matematik untuk menyelesaikan permasalahan Vehicle Routing Problem with Simultaneous Pickup and Delivery yang dikombinasikan dengan distribusi barang multiple product. Dalam hal ini kendaraan membawa mengangkut berbagai macam produk yang menggunakan kompartemen untuk tiap jenis produk. Berbeda dengan penelitian VRPPD, keunikan karakteristik pada penelitian ini adalah dalam penentuan rute kunjungan kendaraan tidak hanya dibatasi oleh kapasitas kendaraan namun juga dibatasi oleh kapasitas kompartemen dari tiap jenis produk. Dalam penelitian ini, perhitungan data set menggunakan metode pengelompokan berdasarkan net demand yaitu Smallest Maximum Load (SML) dan Largest Maximum Load (LML). Penentuan solusi terbaik didapat dengan menggunakan perhitungan algoritma Tabu Search.

.....This study addresses a method to solve Vehicle Routing Problem with Simultaneous Pickup and Delivery (VRPSPD) which combines a variety of products carried in a vehicle (multiple product). It examines the carriage with multiple compartment where each compartment is dedicated to a single type of product. Different from another widely studied pick up and delivery problems, the unique characteristics of this study is the route determination of the vehicle from the depot to customers because not only does it consider the vehicle's capacity but also the compartment capacity of each product as a limitation We calculate the set of instances using the customer grouping method (Smallest Maximum Load and Largest Maximum Load). The Solution obtained by the cheapest insertion method can be improved by Tabu Search algorithm. Finally, computational result are reported from test instance.