

PERANCANGAN MODEL OPTIMASI PEMILIHAN LOKASI PENJUALAN KOPI KELILING BERDASARKAN JARAK PERPINDAHAN DAN BOBOT LOKASI DI KORIDOR DEPOK BARU-UI

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Abstrak

Operasional kopi keliling pada koridor Depok Baru–UI memerlukan keputusan pemilihan lokasi dan rute karena setiap lokasi memiliki potensi *output* berbeda, sedangkan perpindahan antar lokasi membutuhkan jarak dan waktu. Penelitian ini bertujuan memvisualisasikan jaringan operasional, merancang model optimasi pemilihan lokasi dan rute, serta mengevaluasi hasil usulan terhadap kondisi baseline. Data penelitian terdiri atas satu depot, 33 lokasi penjualan, rute aktual, nilai lokasi berbasis *turn rate* dan durasi berhenti, serta matriks jarak antar lokasi. Model dirancang berbasis kandidat rute dan diformulasikan sebagai *Mixed Integer Linear Programming* dengan tujuan memaksimalkan total *output*, disertai batas jumlah kendaraan, jumlah maksimum lokasi, jarak per rute, larangan pengulangan lokasi, dan batas total jarak sistem. *Baseline* menghasilkan 315 gelas, jarak 74,74 km, dan produktivitas 4,21 gelas/km. Model utama menghasilkan 744 gelas, jarak 73,89 km, dan produktivitas 10,07 gelas/km, sehingga *output* meningkat 429 gelas tanpa menambah jarak total. Hasil penelitian dapat digunakan sebagai acuan awal penentuan rute harian yang lebih produktif dan efisien.

Kata Kunci : Kopi Keliling, Optimasi Rute, *Selective Routing*, VRP, MILP

OPTIMIZATION MODEL DEVELOPMENT FOR MOBILE COFFEE VENDOR LOCATIONS SELECTION BASED ON TRAVEL DISTANCE AND LOCATION VALUE IN THE DEPOK BARU-UI CORRIDOR

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Abstract

Mobile coffee vendor operations in the Depok Baru–UI corridor required location and route decisions because each selling point has different output potential, while movement between locations consumes distance and time. This study aims to visualize the operational network, develop an optimization model for location and route selection, and evaluate the proposed routes against the baseline operation. The data consist of one depot, 33 selling locations, actual routes, location values based on turn rate and stopping duration, and an inter-location distance matrix. The model uses a candidate-route approach and is formulated as Mixed Integer Linear Programming to maximize total output under constraints on the number of vehicles, maximum locations, route distance, non-overlapping location selection, and total system distance. The baseline produced 315 cups, 74.74 km of distance, and 4.21 cups/km of productivity. The main model produced 744 cups, 73.89 km of distance, and 10.07 cups/km of productivity, increasing output by 429 cups without increasing total distance. The results can support more productive and efficient daily route planning.

Keywords : *Mobile Coffee Vendor, Route Optimization, Selective Routing, VRP, MILP*