Optimalisasi Rute Distribusi Adonan Waffle Street Medan dengan Metode *Traveling Salesman Problem* (TSP)

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ABSTRAK

Kristina Ester Situmorang, NIM. 4193230021 (2026). Optimalisasi Rute Distribusi Adonan Waffle Street Medan dengan Metode Traveling Salesman Problem (TSP)

Penelitian ini dilakukan untuk mengoptimalkan rute distribusi adonan Waffle Street Medan dengan *Traveling Salesman Problem* (TSP) menggunakan algoritma *Branch and Bound*. Data mencakup satu depot dan sepuluh titik tujuan distribusi. Algoritma ini bekerja melalui reduksi matriks, pencabangan, dan pemangkasan jalur sehingga hanya jalur potensial yang ditelusuri. Hasil perhitungan menunjukkan rute optimal yaitu Jl. Bunga Ester (Depot) → Jl. Bunga Cempaka → Jl. Harmonika → Pajak USU Pasar Modern (Jl. Jamin Ginting) → Jl. Ayahanda → Jl. Merak → Jl. Setia Luhur → Jl. Helvetia (KFC BTC) → Jl. Tempuling → Jl. Bromo → UMSU (Jl. Gedung Arca) → Depot, dengan total jarak 40,5 km. Hasil ini membuktikan bahwa algoritma *Branch and Bound* mampu memberikan solusi optimal dan mendukung efisiensi distribusi.

Kata Kunci: *Traveling Salesman Problem, Branch and Bound*, Dstribusi, Optimasi rute.

Optimization of Waffle Street Medan Dough Distribution Routes Using the Traveling Salesman Problem (TSP) Method

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ABSTRACT

Kristina Ester Situmorang, NIM. 4193230021 (2026). Optimization of Waffle Street Medan Dough Distribution Routes Using the Traveling Salesman Problem (TSP) Method

This research aims to optimize the distribution route of Waffle Street Medan's batter using the Traveling Salesman Problem (TSP) with the Branch and Bound algorithm. The data consist of one depot and ten distribution destination points. The algorithm operates through matrix reduction, branching, and pruning processes, ensuring that only potential routes are explored. The calculation results show that the optimal route is: Jl. Bunga Ester (Depot) → Jl. Bunga Cempaka → Jl. Harmonika → Pajak USU Pasar Modern (Jl. Jamin Ginting) → Jl. Ayahanda → Jl. Merak → Jl. Setia Luhur → Jl. Helvetia (KFC BTC) → Jl. Tempuling → Jl. Bromo → UMSU (Jl. Gedung Arca) → Depot, with a total distance of 40.5 km. These results demonstrate that the Branch and Bound algorithm is capable of providing an optimal solution and supporting distribution efficiency.

Keywords: *Traveling Salesman Problem, Branch and Bound, distribution, route optimization.*