Pencarian Rute Distribusi Optimal Air Minum Isi Ulang Di Gerai Afsheena Dengan Menerapkan Metode *Saving Matrix* dan *Nearest Insert*

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ABSTRAK

Gerai Afsheena merupakan usaha yang bergerak di bidang distribusi barang berupa air minum galon isi ulang. Saat ini, usaha masih menggunakan metode manual dalam menentukan rute distribusi barang. Hal ini yang menyebabkan rute yang tidak efektif dan berdampak juga terhadap pengeluaran biaya distribusi. Penelitian ini bertujuan untuk menerapkan metode *saving matrix* dan algoritma *nearest insert* untuk optimasi rute distribusi barang pada Gerai Afsheena. Metode *Saving matrix* suatu teknik penghematan untuk menghitung jarak dan rute dengan memperhatikan kapasitas daya angkut kendaraan sedangkan *algoritma nearest insert* dapat menentukan urutan kunjungan konsumen pada saat distribusi dengan berdasarkan jarak minimum total. Hasil penelitian menunjukkan bahwa metode *saving matrix* dan algoritma *nearest insert* dapat mengoptimalkan rute distribusi barang pada Gerai Afsheena. Hal ini terbukti dengan penurunan total jarak tempuh dengan pengelompokkan 6 rute distribusi dari rute jarak awal 79.1 km dan rute akhir yaitu 70 km atau penurunan sebesar 11.5%. Hasil distribusi rute awal sebesar Rp. 3.284.931/ bulan dan biaya rute akhir sebesar Rp. 3.182.665/ bulan atau penghematan sebesar 3.11%.

Kata Kunci: Distribusi Barang, Metode *Saving Matrix,* Algoritma *Nearest Insert,* Optimasi Rute

FINDING THE OPTIMAL DISTRIBUTION ROUTE OF REFILLABLE DRINKING WATER AT AFSHEENA OUTLET BY APPLYING SAVING MATRIX AND NEAREST INSERT METHOD

ABSTRACT

Afsheena Outlet is a business that distributes refillable gallon drinking water. Currently, the company continues to rely on manual methods to determine the distribution route of goods. This results in inefficient routes and also affects distribution costs. The purpose of this study is to utilize the saving matrix method and the nearest insert algorithm to improve the distribution route of goods at Afsheena Outlet. The Saving Matrix method is used to calculate distance and route by taking into account the vehicle's carrying capacity. Meanwhile, the nearest insert algorithm determines the order of consumer visits during distribution based on the total minimum distance. The study's findings indicate that implementing the saving matrix method and the nearest insert algorithm effectively optimizes the distribution route of goods at Afsheena Outlet. The reduction in the total distance supports this traveled, achieved by consolidating 6 distribution routes from the initial distance of 79.1 km to the final distance of 70 km, marking an 11.5% decrease. The cost of the initial route distribution was Rp. 3,284,931/month, while the final route cost was Rp. 3,182,665/month, it is resulting in a 3.11% saving.

Keywords: Distribution of Goods, Saving Matrix Method, Nearest Insert Algorithm, Route Optimization

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