

ABSTRAK

Distribusi Komoditas Hortikultura, Khususnya Cabe Merah, Memiliki Peranan Penting Dalam Mendukung Kelancaran Rantai Pasok Serta Menjaga Stabilitas Harga Di Pasar. Pajak Roga Berastagi Sebagai Salah Satu Pusat Perdagangan Hasil Pertanian Di Kabupaten Karo Masih Menghadapi Permasalahan Distribusi, Seperti Rute Pengiriman Yang Belum Optimal Dan Tingginya Biaya Transportasi. Penelitian Ini Bertujuan Untuk Mengoptimalkan Rute Distribusi Cabe Merah Dari Daerah Penghasil Menuju Pajak Roga Berastagi Dengan Menerapkan Metode Saving Matrix Dan Algoritma Nearest Neighbor Guna Meminimalkan Biaya Transportasi. Penelitian Ini Menggunakan Pendekatan Kuantitatif Dengan Metode Deskriptif-Analitis. Data Yang Digunakan Meliputi Jarak Antar Lokasi Distribusi, Volume Produksi Cabe Merah, Kapasitas Kendaraan, Serta Biaya Transportasi. Metode Saving Matrix Digunakan Untuk Menentukan Kombinasi Rute Distribusi Yang Paling Efisien, Sedangkan Algoritma Nearest Neighbor Digunakan Untuk Menentukan Urutan Kunjungan Lokasi Berdasarkan Jarak Terdekat. Hasil Penelitian Menunjukkan Bahwa Penerapan Kedua Metode Tersebut Mampu Mengurangi Total Jarak Tempuh Dan Biaya Distribusi Dibandingkan Dengan Sistem Distribusi Sebelumnya. Dengan Rute Distribusi Yang Lebih Optimal, Efisiensi Biaya Transportasi Dapat Ditingkatkan Dan Waktu Pengiriman Menjadi Lebih Efektif. Penelitian Ini Diharapkan Dapat Menjadi Bahan Pertimbangan Bagi Pelaku Distribusi Hasil Pertanian Dalam Merancang Sistem Distribusi Yang Lebih Efisien Dan Berkelanjutan.

Kata kunci: optimasi distribusi, cabe merah, *Saving Matrix*, *Nearest Neighbor*, biaya transportasi.

ABSTRACT

The Distribution Of Horticultural Commodities, Particularly Red Chili, Plays An Important Role In Ensuring Supply Chain Efficiency And Maintaining Price Stability In The Market. Pajak Roga Berastagi, As One Of The Main Agricultural Trading Centers In Karo Regency, Still Faces Distribution-Related Problems, Such As Suboptimal Delivery Routes And High Transportation Costs. This Study Aims To Optimize The Distribution Routes Of Red Chili From Production Areas To Pajak Roga Berastagi By Applying The Saving Matrix Method And The Nearest Neighbor Algorithm In Order To Minimize Transportation Costs. This Research Employs A Quantitative Approach With Descriptive–Analytical Methods. The Data Used Include Distances Between Distribution Locations, Red Chili Production Volumes, Vehicle Capacities, And Transportation Costs. The Saving Matrix Method Is Applied To Determine The Most Efficient Combinations Of Distribution Routes, While The Nearest Neighbor Algorithm Is Used To Determine The Sequence Of Location Visits Based On The Shortest Distance. The Results Show That The Application Of These Two Methods Is Able To Reduce The Total Travel Distance And Distribution Costs Compared To The Existing Distribution System. With More Optimal Distribution Routes, Transportation Cost Efficiency Can Be Improved And Delivery Time Can Be Made More Effective. This Study Is Expected To Serve As A Reference For Agricultural Distribution Stakeholders In Designing A More Efficient And Sustainable Distribution System.

Keywords: distribution optimization, red chili, Saving Matrix, Nearest Neighbor, transportation cost.