

## ABSTRAK

Penelitian ini membahas penerapan *Vogel's Approximation Method* (VAM) dan metode *Stepping Stone* untuk meminimalisasi biaya distribusi susu segar di Koperasi Peternak Sapi Bandung Utara (KPSBU) Lembang. Penelitian dilakukan dengan menganalisis sistem distribusi aktual koperasi, kemudian membandingkannya dengan hasil perhitungan metode optimasi matematis. Data diperoleh melalui observasi lapangan, wawancara, dan dokumen internal perusahaan. Hasil perhitungan menunjukkan bahwa biaya distribusi aktual tahun 2024 sebesar Rp 3.815.638.144. Penerapan VAM menghasilkan solusi awal dengan biaya distribusi sebesar Rp 7.778.300 per hari, atau setara Rp 2.838.094.500 per tahun. Uji optimalitas menggunakan *Stepping Stone* menunjukkan hasil biaya yang sama, sehingga solusi awal VAM dinyatakan optimal. Perbandingan hasil memperlihatkan adanya potensi efisiensi sebesar Rp 977.543.644 per tahun apabila perusahaan mengadopsi metode ini. Penelitian ini menyimpulkan bahwa integrasi metode VAM dan *Stepping Stone* mampu meningkatkan efisiensi distribusi, memaksimalkan pemanfaatan kapasitas unit pendingin, serta memberikan dasar perencanaan logistik yang lebih sistematis dan terukur bagi KPSBU Lembang.

**Kata Kunci:** *Vogel's Approximation Method* (VAM), Metode *Stepping Stone*, Optimalisasi distribusi, Biaya distribusi, KPSBU Lembang, Riset operasi, Manajemen operasi, Efisiensi logistik.

## **ABSTRACT**

*This study explores the application of Vogel's Approximation Method (VAM) and the Stepping Stone method to minimize fresh milk distribution costs at the North Bandung Dairy Farmers Cooperative (KPSBU) Lembang. The research analyzes the cooperative's actual distribution system and compares it with results derived from mathematical optimization techniques. Data were obtained through field observation, interviews, and company documentation. The findings reveal that the actual distribution cost in 2024 amounted to Rp 3,815,638,144. Using VAM, the initial solution generated a daily distribution cost of Rp 7,778,300, equivalent to Rp 2,838,094,500 annually. Optimality testing through the Stepping Stone method confirmed the same result, indicating that the VAM solution was already optimal. The comparison highlights an efficiency potential of Rp 977,543,644 annually if the cooperative implements this method. The study concludes that integrating VAM and Stepping Stone improves distribution efficiency, maximizes the utilization of cooling unit capacity, and provides a more systematic and measurable basis for logistics planning at KPSBU Lembang.*

**Keywords:** *Vogel's Approximation Method (VAM), Stepping Stone Method, Distribution optimization, Distribution cost, KPSBU Lembang, Operations research, Operations management, Logistics efficiency.*