

ABSTRAK

Pengendalian persediaan bahan baku pada kondisi permintaan dan harga yang fluktuatif menjadi tantangan bagi perusahaan dalam menentukan jumlah pembelian yang efisien. PT Petronika menggunakan bahan baku PA (*Phthalic Anhydride*) dalam proses produksi DOP (*Diocetyl Phthalate*), dengan pasokan yang berasal dari pemasok lokal dan impor. Fluktuasi kebutuhan dan harga impor dapat memberikan peluang penghematan melalui penawaran harga khusus (*Special Order*), namun peningkatan jumlah pembelian berpotensi menyebabkan *overstock* dan biaya tambahan akibat keterbatasan kapasitas gudang. Penelitian ini bertujuan menentukan pola pengadaan bahan baku PA (*Phthalic Anhydride*) menggunakan metode EOQ probabilistik serta merancang alat bantu keputusan berbasis web untuk mengevaluasi penawaran harga jual khusus. Pengolahan data dilakukan menggunakan EOQ probabilistik, model *Special Order*, perbandingan TCN (*Total Cost Normal*) dan TCS (*Total Cost Special Order*), perhitungan biaya penalti *overstock*, serta analisis sensitivitas. Hasil penelitian menunjukkan EOQ sebesar 338.149 Kg/Order, *safety stock* sebesar 273.245 Kg, dan *reorder point* sebesar 676.303 Kg. Pada penawaran harga jual khusus September 2025 sebesar Rp15.599,07/Kg, diperoleh kuantitas optimal *Special Order* sebesar 2.069.018 Kg dan penghematan optimal sebesar Rp483.112.040. Setelah memperhitungkan biaya penalti *overstock* sebesar Rp325.017.541, diperoleh penghematan bersih sebesar Rp158.094.499. Analisis sensitivitas menunjukkan penghematan bersih positif pada penurunan harga 2-5%, sedangkan penurunan 0-2% menghasilkan penghematan bersih negatif. Aplikasi dashboard berbasis web mampu menyajikan informasi pendukung keputusan terkait *Special Order*, penghematan optimal, *overstock*, biaya penalti, dan penghematan bersih.

Kata kunci : Pengendalian Persediaan, EOQ Probabilistik, *Special Order*, Analisis Sensivitas, *Overstock*, Alat bantu Keputusan.

ABSTRACT

Raw material inventory control under fluctuating demand and prices presents a challenge for companies in determining an efficient purchasing quantity. PT Petronika uses PA (Phthalic Anhydride) as a raw material in the production process of DOP (Dioctyl Phthalate), with supplies sourced from local and import suppliers. Fluctuations in demand and import prices can provide cost-saving opportunities through special price offers (Special Orders); however, increasing the purchase quantity may potentially lead to overstock and additional costs due to limited warehouse capacity. This study aims to determine the procurement pattern of PA raw materials using the probabilistic EOQ method and to design a web-based decision support tool for evaluating special price offers. Data processing was conducted using probabilistic EOQ, the Special Order model, comparison of TCN (Total Cost Normal) and TCS (Total Cost Special Order), overstock penalty cost calculations, and sensitivity analysis. The results show an EOQ of 338,149 kg/order, safety stock of 273,245 kg, and reorder point of 676,303 kg. Under the special price offer in September 2025 of IDR 15,599.07/kg, the optimal Special Order quantity was 2,069,018 kg, with optimal savings of IDR 483,112,040. After accounting for an overstock penalty cost of IDR 325,017,541, the resulting net savings amounted to IDR 158,094,499. The sensitivity analysis shows positive net savings for price reductions of 2–5%, while price reductions of 0–2% resulted in negative net savings. The web-based dashboard application is capable of providing decision-support information related to Special Orders, optimal savings, overstock, penalty costs, and net savings.

Keywords : Inventory Control, Probabilistic EOQ, Special Order, Sensitivity Analysis, Overstock, Decision Support Tool.