

## ABSTRAK

*PT. XYZ merupakan perusahaan yang bergerak pada bidang pembuatan akrilik. Akrilik yang ditawarkan oleh PT. XYZ terdiri dari tiga jenis warna, yaitu bening, putih susu, dan hitam. Permintaan dan lead time bahan baku akrilik di PT. XYZ yang bersifat probabilistik menyebabkan perusahaan kesulitan untuk mengendalikan persediaan bahan bakunya. Penelitian ini dilaksanakan dengan tujuan untuk menentukan ukuran pemesanan bahan baku akrilik yang ekonomis di PT XYZ. Tahapan penelitian dimulai dari proses pengumpulan data, yaitu data permintaan, data lead time dan data biaya persediaan periode Agustus 2020 – Juli 2021. Selanjutnya, dilakukan perhitungan order quantity, reorder point, safety stock, dan total biaya persediaan dengan metode EOQ Probabilistik. Setelah itu, dilanjutkan dengan simulasi permintaan dan lead time dengan simulasi Monte Carlo untuk memprediksi data permintaan periode selanjutnya serta menghitung total biaya persediaan hasil simulasi tersebut. Terakhir, dilakukan perbandingan total biaya persediaan antara metode perusahaan dan metode usulan. Berdasarkan hasil perhitungan dengan metode EOQ Probabilistik, diperoleh nilai order quantity masing-masing sebesar 34 ton, 5.4 ton, dan 7.3 ton untuk bahan baku ARC Bening, ARC Putih Susu, dan ARC Hitam dengan nilai reorder point masing-masing 21 ton, 0.9 ton, dan 1.5 ton. Dari hasil simulasi, diperoleh total biaya persediaan periode selanjutnya sebesar Rp 19.400.673.130. Berdasarkan hasil perbandingan dengan metode perusahaan, diperoleh biaya penghematan persediaan bahan baku sebesar Rp 310.941.861 atau sebesar 1.6%.*

**Kata kunci:** *Pengendalian Persediaan, Quantity Order, Reorder Point, EOQ Probabilistik, Simulasi Monte Carlo*

## **ABSTRACT**

*PT. XYZ is a company that engages in acrylic manufacturing. The acrylic offered by PT. XYZ consists of three types of color. The demand and lead time of acrylic raw materials in PT. XYZ which is probabilistic causes the company to have difficulty controlling its supply of raw materials. This study was carried out with the aim of determining the size of the economical acrylic raw material ordering in PT XYZ. The research phase starts from the data collection process, i.e., demand data, lead time data, and supply cost data for the period August 2020 – July 2021. Further, calculation of order quantity, reorder point, safety stock, and total supply cost is performed by Probabilistic EOQ method. Thereafter, it proceeds with simulated demand and lead time with Monte Carlo simulation to predict subsequent period demand data as well as calculate the total cost of supply of such simulation results. Lastly, a comparison of total supply costs between the company method and the proposal method was made. Based on the calculation results by the Probabilistic EOQ method, obtained order quantity values of 34 tons, 5.4 tons, and 7.3 tons respectively for raw materials of ARC Clear, ARC Milk White, and ARC Black with reorder point values of 21 tons, 0.9 tons, and 1.5 tons respectively. From the simulation results, a total subsequent period supply cost of Rp 19.400.673.130. Based on the results of the comparison with the company's method, a cost saving of raw material supplies amounted to Rp 310.941.861 or 1.6%.*

**Keywords:***Inventory Control, Order Quantity, Reorder Point, Safety Stock, EOQ Probabilistic, Monte Carlo Simulation*