RINGKASAN

Penelitian ini berjudul "Analisis Data untuk Optimalisasi *Safety Stock* dan *Reorder Point* dalam Manajemen Rantai Pasok Berbasis Peramalan Permintaan Jangka Menengah". Penelitian ini merupakan kualitatif deskriptif dengan pendekatan studi kasus, yang bertujuan mengoptimalkan pengelolaan persediaan melalui metode peramalan permintaan.

Metode peramalan yang digunakan mencakup *moving average*, *exponential smoothing*, *linear regression*, dan ARIMA, dengan data penjualan harian tahun 2022–2024 yang diperoleh dari dokumentasi perusahaan. Hasil evaluasi akurasi menunjukkan bahwa ARIMA (1, 0, 0) merupakan metode terbaik dengan MAPE 6,38%, MAE 53,89, dan MSE 3.886.554.926.

Berdasarkan model ARIMA tersebut, perhitungan *safety stock* dan *reorder point* dilakukan untuk *lead time* 1 dan 2 hari. Hasilnya, kebutuhan *safety stock* adalah 438 pcs (ROP = 28.889 pcs) untuk *lead time* 1 hari, dan 620 pcs (ROP = 57.542 pcs) untuk *lead time* 2 hari.

Simulasi *service level* menunjukkan bahwa penggunaan ARIMA (1, 0, 0) menghasilkan *safety stock* sebesar 2.203 pcs dengan CSL 80,56% dan *fill rate* 99,47% untuk lead time 1 hari. Pada *lead time* 2 hari, *safety stock* sebesar 3.117 pcs, CSL 97,22%, dan *fill rate* 99,91%. Jika dibandingkan dengan *baseline* perusahaan (4.105 pcs dan 5.805 pcs), terdapat efisiensi *safety stock* sebesar 46% tanpa penurunan kualitas layanan yang signifikan.

Temuan ini menunjukkan bahwa penerapan metode peramalan berbasis data, khususnya ARIMA, mampu memberikan manfaat signifikan dalam mendukung keputusan manajemen rantai pasok, dengan menekan jumlah persediaan secara efisien namun tetap menjaga tingkat layanan kepada pelanggan.

Kata Kunci : Peramalan*, Safety Stock, Reorder Point, Service Level*

SUMMARY

This study is titled "Data Analysis for Optimizing Safety Stock and Reorder Point in Supply Chain Management Based on Medium-Term Demand Forecasting." This is a descriptive qualitative study using a case study approach, which aims to optimize inventory management through demand forecasting methods.

The forecasting methods used include moving average, exponential smoothing, linear regression, and ARIMA, with daily sales data from 2022–2024 obtained from company documentation. The accuracy evaluation results indicate that ARIMA (1, 0, 0) is the best method with a MAPE of 6.38%, MAE of 53.89, and MSE of 3,886,554,926.

Based on the ARIMA model, safety stock and reorder point calculations were performed for lead times of 1 and 2 days. The results show that the safety stock requirement is 438 units (ROP = 28,889 units) for a 1-day lead time and 620 units (ROP = 57,542 units) for a 2-day lead time.

The service level simulation shows that using ARIMA (1, 0, 0) results in a safety stock of 2,203 units with a CSL of 80.56% and a fill rate of 99.47% for a 1-day lead time. For a 2-day lead time, the safety stock is 3,117 pcs, CSL 97.22%, and fill rate 99.91%. Compared to the company's baseline (4,105 pcs and 5,805 pcs), there is a 46% efficiency in safety stock without a decrease in service quality.

These findings indicate that the application of data-based forecasting methods, particularly ARIMA, can provide significant benefits in supporting supply chain management decisions by efficiently reducing inventory levels while maintaining customer service levels.

Keywords : *Forecasting, Safety Stock, Reorder Point, Service Level*

DAFTAR LAMPIRAN