ABSTRACT

This study aims to implement the ARIMA (Autoregressive Integrated Moving average) method to forecast medication stock requirements at the pharmacy of RSUD Dr. Sosodoro Bojonegoro. The main objective of this research is to develop a time series–based predictive model that can assist pharmacy management in planning drug procurement more efficiently and timely. The study utilizes weekly historical data from January 2023 to January 2025 for three commonly used medications: Paracetamol, Omeprazole, and Spironolactone. The data processing phase begins with preprocessing, which includes a stationarity test using the Augmented Dickey-Fuller (ADF) method and variance stabilization through the Box-Cox transformation. Subsequently, Differencing is applied to ensure the data meets the stationarity assumption. The ARIMA model is then constructed by determining the optimal parameters (p, d, q) through analysis of the Autocorrelation Function (ACF) and Partial Autocorrelation Function (PACF). Model evaluation is conducted by analyzing the Akaike Information Criterion (AIC), Root Mean Square Error (RMSE), and residual diagnostics using the Ljung-Box test to confirm that residuals behave as whitenoise. The dataset is divided into two subsets: 80% for training and 20% for testing. The forecasting results demonstrate that the ARIMA method provides reliable predictions of drug stock needs. The results are further visualized using Power BI to ensure that stakeholders can interactively interpret and utilize the forecasts. Overall, this research confirms that the ARIMA approach offers a practical solution for data-driven drug inventory management and supports strategic decision-making to improve the quality of healthcare services.

Keywords: ARIMA, Drug Inventory Management, Forecasting, Power BI Visualization, Pharmacy