ABSTRAK

Pengelolaan stok obat esensial di Klinik Pratama Fitria masih menggunakan pencatatan manual sehingga memicu risiko *stockout* atau *overstock*. Penelitian ini bertujuan membangun model prediksi kebutuhan obat berbasis *time series forecasting* yang diintegrasikan ke dashboard *Early Warning System* (EWS). Metodologi mengombinasikan CRISP-DM dan Waterfall. Data historis penggunaan obat periode 2022–2025 disaring menghasilkan 71 komoditas obat *fast moving*. Evaluasi simultan menggunakan algoritma ARIMA (optimasi *Grid Search*) dan Facebook Prophet berdasarkan metrik MAPE. Hasil eksperimen menunjukkan ARIMA unggul pada 67 jenis obat, sedangkan Prophet unggul pada 4 jenis obat. Mekanisme seleksi otomatis multi-model berhasil menekan rata-rata galat sistem hingga 16,89% (*Good Forecasting*). Aplikasi web dibangun menggunakan Streamlit dan SQLite dengan batas *safety stock* 20% untuk memandu pengadaan obat.

Kata Kunci: Time Series Forecasting, ARIMA, Prophet, Early Warning System, Stok Obat Esensial, MAPE.

ABSTRACT

Essential medicine stock management at Fitria Primary Clinic relies on manual records, risking stockouts or overstocking. This study aims to develop a time-series forecasting model integrated into an Early Warning System (EWS) dashboard. The methodology combines CRISP-DM and Waterfall. Historical usage data from 2022 to 2025 was filtered to 71 fast-moving essential medicines. ARIMA with Grid Search and Facebook Prophet were evaluated using the MAPE metric. Results show ARIMA outperformed on 67 medicine types, while Prophet excelled on 4 types. An automated multi-model selection reduced the average system error to 16.89% (Good Forecasting). The web application was built using Streamlit and SQLite with a 20% safety stock threshold to assist procurement.

Keywords: *Time series forecasting, ARIMA, Prophet, Early warning system, Essential medicine stock, MAPE.*