

ABSTRACT

Timely and sufficient availability of drug stock is a key factor in ensuring optimal healthcare services. However, healthcare facilities struggle with stock imbalances, either surplus or shortage, this can lead to financial losses and the risk of expired drugs. This issue particularly critical in the treatment of chronic diseases like Hipertensi, where the unavailability of drugs can affect a patient's treatment. This problem can be addressed through prediction using algorithms capable of processing large-scale data.

This study uses the Long Short-Term Memory (LSTM) algorithm, which works well with time-based data, to predict drugs need at Yayasan Kesehatan Swasta Kota Bandung. The algorithm's performance is measured two methods: Mean Absolute Percentage Error (MAPE) and Root Mean Square Error (RMSE).

The prediction model involves processing historical data from January 2021 to December 2024, including filtering for the 50 drug brands related to Hipertensi. The LSTM trained for each drug brand and evaluated on test data. Evaluation results show that the model achieved an average MAPE of 48.82% (can be classified as fair) and a average RMSE of 73.43 (representing 0,0397% of the overall average actual value, indicating high absolute precision). These results suggest that the model is able to recognize historical patterns well and can help improve planning and decision-making for drug stock, leading to better and more efficient healthcare services.

Keywords: ***Drug Availability, Prediction, Knowledge Discovery in Database, KDD, Deep Learning, Long Short-Term Memory (LSTM)***