ABSTRACT

The livestock sector, particularly the production of broiler eggs, plays a significant role in Indonesia's economy, as broiler eggs are an essential commodity widely consumed by the public. However, price fluctuations influenced by seasonal factors often create uncertainty for farmers, complicating sales planning and potentially harming their welfare. Therefore, long-term reference price information that can capture price fluctuation patterns at specific times is needed to ensure egg price stability.This study proposes a solution in the form of a broiler egg price prediction model using a hybrid STL-GRU approach. The STL method decomposes time series data into trend, seasonal, and residual components, which are individually predicted using GRU before being combined into the final forecast. The model was trained using daily price data from April 2017 to October 2024 obtained from the National Strategic Food Price Information Center (PIHPSN), focusing on Pasar Wage in Banyumas Regency.The results show that the STL-GRU model performs very well in predicting egg prices, with an RMSE of 0.0466, MSE of 0.00217, MAE of 0.0281, MAPE of 0.754%, and R^2 of 0.971. These findings indicate that the model effectively captures seasonal fluctuations and provides reliable price predictions, which can help farmers reduce the risk of loss and improve income stability.

Keywords: STL-GRU, Broiler Egg, Prediction, Price.