Analisis Metode N-BEATS untuk Memprediksi Harga Beras Medium Pasar Tradisional di Kabupaten Banyuwangi

Aji Seto Arifianto, S.ST., M.T. *as Supervisor*

Agung Bima Wahyu Abadi

Study Program of Informatics Engineering Kab. Jember

Majoring of Information Technology

ABSTRACT

Rice is a staple commodity vital to food security. Although Banyuwangi Regency is a surplus rice-producing area, medium rice prices in traditional markets still fluctuate, creating uncertainty for consumers and business actors. This study applies the Neural Basis Expansion Analysis for Interpretable Time series Forecasting (N-BEATS) method within the Cross-Industry Standard Process for Data Mining (CRISP-DM) framework to predict medium rice prices in Banyuwangi Regency. Data were obtained from the Strategic Food Price Information Center (PIHPS) for January 2020 to December 2024, totaling 1,305 working days. Data preparation included handling missing values and outliers, an 80:20 sequential split, MinMaxScaler normalization, and sliding windows with seven historical observations as input and one as output. The best configuration used 3 trend stacks and 4 seasonal stacks (3 blocks each), a hidden size of 512, GELU activation, the AdamW optimizer, a learning rate of 0.0001, a batch size of 32, and 300 epochs. On the test data, the model achieved an RMSE of IDR 52.77, a MAPE of 0.2192%, and an sMAPE of 0.2196% (highly accurate category), although some prediction lag remained during sudden price changes. The model was deployed through a FastAPI service and a React-based dashboard.

Keywords: N-BEATS, CRISP-DM, price forecasting, medium rice, time series, Banyuwangi Regency.