

PERANCANGAN SISTEM PREDIKSI HARGA BAHAN POKOK DI PASAR ANTAR PROVINSI DI INDONESIA DENGAN MENGGUNAKAN PENDEKATAN MACHINE LEARNING

ABSTRAK

Penelitian ini bertujuan merancang sistem prediksi harga bahan pokok di pasar antar provinsi di Indonesia dengan menggunakan pendekatan *machine learning*. Algoritma Random Forest digunakan untuk memprediksi harga harian berdasarkan data historis dari SP2KP. Sistem dikembangkan dalam bentuk aplikasi web interaktif berbasis Streamlit, menampilkan prediksi harga dan arah perubahan (naik, turun, atau stabil) melalui dukungan elemen antarmuka. Model diuji dengan beberapa skenario pembagian data, di mana skenario 90:10 memberikan hasil terbaik ($R^2 = 97,58\%$, RMSE = 3062,54, MAE = 1295,34, MAPE = 2,84%). Hasil ini menunjukkan bahwa model memiliki tingkat akurasi yang cukup tinggi dan dapat diandalkan untuk memberikan gambaran terkait perkembangan tren harga bahan pokok. Meski masih memiliki keterbatasan, sistem ini diharapkan dapat membantu pengambilan keputusan dan penyusunan kebijakan distribusi serta stabilisasi harga pangan di Indonesia.

Kata kunci: perancangan sistem, prediksi bahan pokok, *machine learning*, Random Forest

DESIGNING A MACHINE LEARNING-BASED PRICE PREDICTION SYSTEM FOR ESSENTIAL FOOD COMMODITIES ACROSS INDONESIAN INTER- PROVINCIAL MARKETS

ABSTRACT

This study aims to design a price prediction system for essential food commodities across Indonesian inter-provincial markets using a machine learning approach. The Random Forest algorithm is used to predict daily prices based on historical data from SP2KP. The system is developed as an interactive web application using Streamlit, displaying price predictions and direction of change (increase, decrease, or stable) through interface elements. The model was tested with several data split scenarios, with the 90:10 split yielding the best results ($R^2 = 97.58\%$, RMSE = 3062.54, MAE = 1295.34, MAPE = 2.84%). These results indicate that the model has a high level of accuracy and can be relied upon to provide insights into trends in food commodity prices. Although the system still has limitations, it is expected to support decision-making and policy development for distribution planning and food price stabilization in Indonesia.

Keywords: system design, essential food price prediction, machine learning, Random Forest