

ABSTRAK

Jagung merupakan salah satu komoditas penting di Jawa Timur yang berperan dalam mendukung ketahanan pangan. Namun, penurunan luas panen dan jumlah rumah tangga usaha tani di Kabupaten Sampang menyebabkan fluktuasi harga konsumen yang perlu diantisipasi dengan model prediksi yang andal. Penelitian ini bertujuan untuk membandingkan kinerja metode *Twin Support Vector Regression* (TSVR), *Support Vector Regression* (SVR), dan *Random Forest* dalam memprediksi harga jagung di Kabupaten Sampang. Data penelitian berupa harga harian jagung periode 2022–2024 yang diperoleh dari Dinas Pertanian dan Ketahanan Pangan Jawa Timur. Proses penelitian mengikuti tahapan CRISP-DM meliputi *business understanding*, *data understanding*, *data preparation*, *modeling*, *evaluation*, dan *deployment*. Evaluasi dilakukan menggunakan lima metrik, yaitu MAPE, SSE, MSE, R^2 , dan *Error Variance*. Berdasarkan hasil pengujian, diperoleh bahwa dalam periode prediksi 1 minggu, harga jagung yang diperkirakan adalah sebesar Rp 8,550 dari harga aktual Rp 8,500. Hasil penelitian menunjukkan bahwa metode TSVR memiliki performa terbaik dengan nilai MAPE sebesar 1,85%, SSE 417.129,29, MSE 59.589,90, dan R^2 -0,168, disusul oleh SVR dengan MAPE 1,96%, serta Random Forest dengan MAPE jauh lebih tinggi yaitu 27,58%. Temuan ini ditampilkan melalui *dashboard* perbandingan hasil penelitian yang berfungsi untuk memperlihatkan performa masing-masing metode secara visual. Dengan demikian, penelitian ini memberikan kontribusi akademis dalam memperluas literatur penerapan TSVR pada prediksi harga komoditas pertanian.

Kata kunci: *Twin Support Vector Regression*, *Prediksi Harga*, *Jagung*, *Kabupaten Sampang*.

ABSTRACT

Corn is one of the major agricultural commodities in East Java that plays an important role in supporting food security. However, the decline in harvested area and the number of farming households in Sampang Regency has caused fluctuations in consumer prices, which need to be anticipated through a reliable predictive model. This study aims to compare the performance of Twin Support Vector Regression (TSVR), Support Vector Regression (SVR), and Random Forest in forecasting corn prices in Sampang Regency. The dataset consists of daily corn prices from 2022 to 2024, obtained from the East Java Department of Agriculture and Food Security. The research process follows the CRISP-DM framework, which includes business understanding, data understanding, data preparation, modeling, evaluation, and deployment. Model evaluation was conducted using five metrics: MAPE, SSE, MSE, R^2 , and Error Variance. Based on the testing results, the predicted corn price for a one-week period was Rp 8,550, compared to the actual price of Rp 8,500. The results indicate that the TSVR method achieved the best performance with a MAPE of 1.85%, SSE of 417,129.29, MSE of 59,589.90, and R^2 of -0.168, followed by SVR with a MAPE of 1.96%, while Random Forest showed a significantly higher MAPE of 27.58%. These findings are presented through a comparative research dashboard, which visually displays the performance of each method. Thus, this study provides an academic contribution by expanding the literature on the application of TSVR in predicting agricultural commodity prices.

Keywords: Twin Support Vector Regression, Price Prediction, Corn, Sampang Regency.