

Analisis Peramalan Harga Minyak Sawit Menggunakan Pendekatan Pembelajaran Mesin = Palm Oil Price Forecasting Analysis Using Machine Learning Approach

Destohalgia Amaanullah, author

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Abstrak

Analisis harga Crude Palm Oil (CPO) merupakan langkah krusial dalam perencanaan strategis industri minyak kelapa sawit untuk mengantisipasi fluktuasi harga. Metode analisis harga awalnya berbasis statistik, namun seiring perkembangan teknologi dan kompleksitas data, metode machine learning mulai diterapkan untuk hasil lebih akurat. Harga CPO dipengaruhi oleh faktor eksternal seperti curah hujan dan nilai tukar mata uang, yang membuat prediksi harga menjadi tantangan tersendiri. Penelitian ini menganalisis harga CPO menggunakan metode deret waktu, Autoregressive Integrated Moving Average with Exogenous Variables (SARIMAX), dan metode Machine Learning, Random Forest. Data yang digunakan meliputi harga CPO, nilai tukar rupiah terhadap dollar, dan inflasi di Indonesia dari Januari 2010 hingga Januari 2024. Evaluasi performa model menggunakan Mean Absolute Percentage Error (MAPE) menunjukkan bahwa Random Forest memiliki performa lebih baik dengan nilai MAPE 18,92%, dibandingkan SARIMAX dengan nilai MAPE 19,07%. Hasil penelitian ini diharapkan dapat membantu pelaku industri CPO dalam pengambilan keputusan strategis dan perencanaan bisnis yang lebih baik.

.....Crude Palm Oil (CPO) price analysis is a crucial step in the strategic planning of the palm oil industry to anticipate price fluctuations. Price analysis methods were originally based on statistics, but with the development of technology and data complexity, machine learning methods began to be applied for more accurate results. CPO prices are affected by external factors such as rainfall and currency exchange rates, which makes price prediction a challenge. This research analyzes CPO prices using the time series method, Autoregressive Integrated Moving Average with Exogenous Variables (SARIMAX), and the machine learning method, Random Forest. The data used includes CPO prices, rupiah exchange rate against the dollar, and inflation in Indonesia from January 2010 to January 2024. Evaluation of model performance using Mean Absolute Percentage Error (MAPE) shows that Random Forest has better performance with a MAPE value of 18.92%, compared to SARIMAX with a MAPE value of 19.07%. The results of this study are expected to help CPO industry players in making strategic decisions and better business planning.