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AI-BASED AGRI-HORTICULTURAL COMMODITY PRICE PREDICTION

Agricultural commodity price volatility presents major challenges for farmers, traders, and policymakers, with significant implications for economic stability and food security. Traditional forecasting models often fail to provide the necessary accuracy and flexibility required for timely and effective decisionmaking in the agricultural sector. Addressing this gap, the current study proposes a comprehensive, data-driven framework tailored to improve the reliability of agricultural price predictions. The proposed framework integrates diverse and relevant data sources, including historical price trends, real-time market updates, weather conditions, supply-demand fluctuations, and government policy changes. It employs advanced machine learning models such as ARIMA to capture both linear and non-linear patterns in price movements. These models are selected for their ability to process time-series data and handle complex, dynamic variables influencing agricultural markets. To enhance the interpretability of model outputs, the framework includes techniques that clarify the influence of individual variables on price forecasts. This allows stakeholders to better understand the factors driving predictions and make informed decisions. By combining accurate forecasting with actionable insights, the framework supports strategic planning in procurement, buffer stock management, and agricultural policy design, ultimately promoting a stable and resilient agricultural ecosystem.

Keywords: Agricultural price volatility, forecasting, ARIMA, machine learning, time-series, market data, weather, supply-demand, policy impact, interpretability, decision-making.

Signature of   Guide   **Signature of project coordinator**   **Signature of HOD**

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