
Modeling and Forecasting Coconut Oil Prices Using Time Series Data Analysis Based on Box-Jenkins Methodology

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Abstract

Coconut oil is a significant global commodity, ranking 4th most valuable after palm oil. Its rising demand and market volatility have heightened the need for accurate price forecasting to guide investment decisions. This study uses the Box-Jenkins methodology to develop a prediction model for coconut oil prices. Monthly secondary data from the World Bank, covering January 1960 to March 2024, was analysed using R software. A Box-Cox transformation was applied to stabilize variance and address issues such as non-normality and heteroscedasticity in the data. After testing various ARIMA models, the ARIMA (0,1,0) model was identified as the most suitable for forecasting, with a MAPE of 27%, suggesting reasonable accuracy. The model provides a reliable tool for predicting future price trends. These findings are critical for industry stakeholders, enabling more informed decision-making and strategic planning by offering a clearer understanding of price fluctuations in the coconut oil market. This analysis contributes to optimizing investments and managing risks in a dynamic market environment.

Keywords : *ARIMA; Box-Jenkins; Coconut Oil; Forecasting; Predictive Model*

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