

ABSTRACT

Predicting Staple Food Material Prices using Multivariable Factors Based on Regression Models and Autoregressive Integrated Moving Average (ARIMA) Models

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Staple food material prices can be a trending topic in the market. The fluctuation of the price is influenced by many factors. For instance, the weather, oil price, and etc. are the external influence factors of the staple food price. Indeed, the prediction of staple food fluctuation price is important for the farmers, consumers, even government. In this paper, the Linear Regression and Fourier models with ARIMA (Autoregressive Integrated Moving Average) is used to predict the staple food prices which consider the external influence factors. The study applies two methods and the results show that the prices are matched well with the results of price observation at the market. However, in predicting the prices using Fourier regression with ARIMA, the staple food of green cayenne pepper achieved the highest accuracy of 94.75%. Meanwhile, using multiple linear regression with ARIMA, staple food onion obtained of 97.89%. Overall, in this research, Fourier regression with ARIMA is better than multiple linear regression with ARIMA method on 5 (five) of 6 (six) staple food material prices, since the accuracy of Fourier regression with ARIMA is quite stable without disturbance of fluctuation existing data.

Keywords: Staple food materials, External price fluctuation influence factors, ARIMA, multiple linear regression, Fourier regression