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## **Time Series Model to Forecast Monthly Average White Raw Rice Prices in Colombo, Sri Lanka**

Fernando W.H.H.<sup>1\*</sup>, Jayalath P.M.S.C.<sup>1</sup>, Premarathne R.M.S.M.<sup>1</sup>,  
Chandrasekara N.V.<sup>1</sup>

<sup>1</sup>*Department of Statistics & Computer Science, University of Kelaniya, Sri Lanka*

Rice is the staple food of Sri Lanka consumed vastly by a great portion of the population almost every day. White rice is consumed directly as well as converted to rice flour to make sweets and some other food items. Due to government policies, trade agreements, and weather conditions, paddy harvest subject to considerable variations. Ultimately the retail price of raw rice fluctuates drastically. Early researchers did not take much effort to forecast Colombo district prices. But in this study, we mainly focus on Colombo because as it is the main commercial city in Sri Lanka. One common and powerful tool to overcome the above problems is the development of a future forecasting model to forecast the prices of rice. The data consists of open market monthly average retail prices of white raw rice in main markets in Colombo district in the period from January 2007 to October 2019 which are captured from the official website of the Central Bank of Sri Lanka. Auto-Regressive Integrated Moving Average (ARIMA) models were employed to achieve the aforementioned objective and the best model was selected based on Akaike Information Criterion (AIC) and the Bayes Information Criterion (BIC). It was observed that ARIMA (2, 1, 3) model is better than all competing models for the average white rice prices. Then, the testing data set is used to evaluate the performance of the fitted model. As the performance measurements of the selected model observed that the Root Mean Squared Error (RMSE) is 2.3071 and Mean Absolute Percent Error (MAPE) is 2.319. The findings of this study would be more beneficial for policymakers, researchers as well as farmers. Artificial Neural Network methods will be studied for further improvements in the study.

**Key words:** *Akaike information criterion, Auto-Regressive Integrated Moving Average, Bayes Information Criterion, Mean Absolute Percent Error, Root Mean Squared Error*

\*Corresponding author: himashaharshani635@gmail.com