

**FORECASTING THE PRICE OF IMPORTED BIG  
ONIONS USING PREDICTIVE MODELS FOR  
WHOLESALE MARKETS IN SRI LANKA**

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## **Abstract**

Hyndman (2018) defined forecasting as “forecasting is about predicting the future as accurately as possible, given all of the information available, including historical data and knowledge of any future events that might impact the forecasts”. Today, forecasts are the foundation upon which critical decisions are made. Predictive analytics is a mechanism through which patterns and trends in historical data is used to predict what could happen in the future. This technique is increasingly used to forecast prices of important agricultural commodities. Wholesale prices are used as a tool by retailers to determine what variety of onions to source, during which periods to source it from those locations and at what prices to source it. Governments use these forecasts to determine policy and farmers use it to ascertain their production calendar. This study explored the predictive time-series models which can be used in forecasting prices of imported big onions in wholesale markets in Sri Lanka to assist the above decision makers. Using data from 2012 to 2019, the study explored Simple Exponential Smoothing, Holt’s Smoothing, Holt-Winters’ model, ARIMA and SARIMA methods of forecasting to develop predictive models. Though the Holt-Winters’ model had the lowest RMSE, the SARIMA model performed better on the MAE, MPE, MAPE and MASE parameters in comparison to all models tested and therefore is considered the most accurate model of those tested. However, there is a gap between forecast model and actual observations in certain periods caused by external factors which require further consideration in model building in future work.

**Key words – Forecasting, Big onions, Prices, Predictive analytics, Time series, ARIMA, SARIMA, Sri Lanka**