

Abstract

The prices of Irish potatoes fluctuate with the seasons due to the influence of demand, supply, and macroeconomic variables such as inflation and interest rates. To effectively handle these variations, incorporating all the significant factors is crucial for Irish potato price forecasting. This study analyzed and forecasted weekly average Irish potato retail prices in major markets within Kitui County, Kenya via a seasonal autoregressive integrated moving average model incorporating inflation rates and interest rates as the exogenous variables. The study used time series data from the Kenya National Bureau of Statistics for weekly Irish potato prices, inflation rates, and interest rates from January 2014 to December 2022. We established that the SARIMAX model $(1, 1, 2)(2, 1, 0)[52]$, with lagged inflation rates and lagged interest rates as the exogenous variable, provided the best fit for Irish potato prices. The reduced MAE, MSE, and RMSE proved that including external factors improved the forecasting accuracy of the SARIMAX model. The SARIMAX model in-sample predicted Irish potato prices were off the actual Irish potato prices by a mean price of Ksh.10.59, and better than the SARIMA model $(1, 1, 2)(2, 1, 0)[52]$ predicted Irish potato prices by a mean price of Ksh.0.92. The SARIMAX model $(1, 1, 1)(2, 1, 0)[52]$ was used to forecast future mean Irish potato retail prices for the next year. The insights drawn from this study would help farmers, consumers, and policymakers in this subsector make data-driven decisions in production investment and marketing, consumption and policymaking, respectively.