

Time Series Analysis of Colombo Tea Auction Price Data

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Tea is a Market Commodity which has an Economic value. Manufactured Tea is sold through three main Marketing Channels in Sri Lanka; Public Auction, Direct Sales, Private Sales. More than 95% of Made Tea in Sri Lanka is marketed through Public Auction. The Colombo Tea Auction is considered to be the most influential Price decider of Made Teas in Sri Lanka. It is a Market driven Auction and Price fluctuations of the Auction is decided according to the bids placed by Buyers. The issue involved with Price changes over a period of time affects the Manufacturers and the Tea Industry as a whole. According to Price Data, Tea Auction Prices have been on the rise throughout the past decade (2005-2014). This study focuses on using Univariate (Price is considered the only variable whilst effect of other variables are considered null) Time Series Analysis techniques to determine the Trends of Price Data changes in Colombo Tea Auction related to its Locations of Origin; High grown, Medium grown, Low grown and All Island. The study is used to determine the best fit Auto Regressive Integrated Moving Average (ARIMA) models related to each Price category and use the models to Forecast Price Data. The ARIMA models with the Seasonal factor (SARIMA) were found to be the most appropriate models. The Best Fit Models were; High Grown: ARIMA (1, 0, 0) (1, 0, 0)^o, Mid Grown: ARIMA (1, 0, 0) (1, 0, 0)", Low Grown: ARIMA (1, 0, 0) (1, 0, 1)" and All Island: ARIMA (1, 0, 0) (1, 0, 1)⁵⁰. S Curve method was used to compare Forecasts of ARIMA model Forecasting. ARIMA forecasts were similar to the S Curve values. Seasonal factor in ARIMA is a result of 50 weekly sales dates and its effects on the Price Fluctuation. High Grown and Low Grown Price Fluctuation were the most influential on All Island Price Fluctuations. Due to the Forecast results with positive values the Colombo TcaAuction rising Price in the future is expected to be unchanged.

Keywords: Price, Location of origin, Time series analysis, ARIMA, Forecasting