Sri Lanka Tea Auction Price Forecast By Using Data Mining Techniques

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Dissertation submitted to the Faculty of Information Technology, University of Moratuwa, Sri Lanka for the partial fulfilment of the Requirements of the Degree of Master of Science in Information Technology.

2019

Declaration

I declare that this is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of reference is given.

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Acknowledgement

I would take this as an opportunity to express my gratitude for my supervisor Mr S.C. Premaratne, Senior Lecture, Faculty of Information Technology, University of Moratuwa, who spent his valuable time throughout the project for giving me the proper guidance and maximum supervision for make this research success. Also would like to thanks for the all lectures taught us in the Masters programme who gave their best to encourage us sharpen our knowledge throughout these two years as they were the illumination which lit up our path ways to the success.

Moreover, I wish to grace to the Director General, Top Management and others of the NERD Centre who gave me valuable concession to the Master's Program. Also praise for the class mates of Batch 10, who gave me wonderful hands every time whenever necessary.

Finally I would like to thank for my wife and parents who gave me enamours support during the period by taking all the duties and responsibilities from me and make the freedom to carry out the studies.

Abstract

This report presents the results and analysis of the research carried out to predict the auction price of tea in Sri Lanka. Sri Lanka Tea Board statistics say the price of tea often vary significantly with time of the year. The key factors that influence the price of tea are weather, climate change, plucking season, production capacity, export tonnage, US dollar exchange rate and crude oil price, as a result of that stakeholders in this industry are affected seriously and it also badly affects to the GDP of the country. Further, Sri Lanka Tea Board has no proper mechanism to evaluate these changes and predict tea auction price. There were a few research carried out to analyse and predict the price of tea based on the environmental and economic factors, hence this study may be beneficial for those who are involved in this industry. The factors related to tea price variations in the auction are overcome from investigating the correlation between the price of tea and the above key factors. This study used weekly tea auction price in the past seven years and prices & quantities of the above factors during that period. These past data were used to evaluate and identify the strength of correlation between the key factors and its variation pattern to predict the price of tea. The classification methods in data mining process were used for the predictions and was based on the analysis of correlation of key factors over the time period. Then regression models were used to forecast auction price. This analysis used several regression algorithm methods, but Regression by Discretization algorithm was identified as the best method among them to build an accurate prediction model. Mean Squared Error (MSE), Mean Absolute Percentage Error (MAPE), Relative, Absolute Error (RAE) and Root Relative Squared Error (RRSE) were used to test and evaluate the accuracy of the results. These methods are not hundred percent correct to check the price variations due to fundamental drives such as human errors, natural disasters etc. However, this prediction model offer eighty five percent accurate, which is reasonable to forecast tea auction price.

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