PREDICTING WESTERN PROVINCE RETAIL SALES OF XYZ COMPANY USING THE EFFECT OF PROMOTIONS, EVENTS, PRODUCT INTRODUCTION, RANGE OF THE PRODUCTS AND RAINFALL

Thilina Udugoda

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Informatics Institute of Technology, Sri Lanka
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Abstract

Predicting sales has become a vital role in consumer durable retail industry with the increased competition. The importance of this has increased due to its direct and indirect affect to the company's profitability. Managing the right inventory would reduce inventory holding costs while overstocking brings repercussions such as increasing the inventory holding cost, occurring promotional costs to flush out the excess stock etc. In this study, several machine learning techniques were used to predict the sales using the factors affecting sales. The techniques namely; K-nearest neighbor (KNN), Artificial neural network (ANN), Decision tree, Random Forest, Linear Regression and Bayesian Applied Regression. This study was conducted on four main product categories namely; Air conditioners, Fans, Refrigerator and audios.

The algorithms were applied on the preprocessed sales data captured from the ERP system of the company, promotional data, event data and weather data. Once applied the algorithms, the best model was selected comparing RMSE and MAPE. KNN was identified to be the best fitting model of the seven models used for all the product lines. The analysis were done using R programming language and then the predicted values are then visualized through Power BI dashboards to present to the management. These predictions visualized through dashboards allows the retailer to take correct decisions at the right time while monitoring the progress of the actions. Moreover, the finalized data model allows the retailer to gain the cutting edge over the competitors while increasing the profits.