

# Special Event Item Prediction System for Retail - Using Machine Learning Approach

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In the modern era, marketing, which can be defined as selling and buying, has expanded in a number of technological fields. Marketing becomes fruitful when it achieves its key points, which are called sales and profits. A most common place to see this selling and buying process is retailing. Information technology involves in various marketing fields such as in prediction processes, data analysis, item designing and profit calculations. In this study, a prediction process is primarily developed using machine learning approaches. Sales item data is analyzed to predict which items give maximum or expected profit margins and those which satisfy the customer the most. There are various machine learning approaches for aspects such as sales item prediction, prediction for item features and item price prediction. The novelty of this research is that it mainly focuses on special event items, such as those available in the Christmas season, items specialized for mothers' day, lovers' day and Vesak festival. The research process is divided into two main sub-parts; item classification and item prediction, while both processes are carried out using several machine learning approaches. Item classification is done using four supervised learning classifiers: linear support vector machine (svc), logistic regression, multinomial Naïve Bayes, and random forest classifier. Results prove SVC has maximum accuracy for classification section, accomplished using SVC machine learning approach. The prediction process has been done using the linear regression approach and according to the preferred data set, its results prove that database attribute directly affects the prediction accuracy and precisions.

**Keywords:** *item classification, item prediction, special event items, retail, machine learning.*