



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

SALE PREDICTION USING LINEAR REGRESSION MODEL

¹NIYA N J, ²JASMINE JOSE

¹Msc.SCHOLAR, ²ASSISTANT PROFESSOR

¹DEPARTMENT OF COMPUTER SCIENCE ,

¹ST.JOSEPH COLLEGE(AUTONOMOUS),IRINJALAKUDA,KERALA,INDIA

Abstract: Regression analysis is an machine learning model for sale prediction. For this kind of prediction a company needs time series of data based on that it also predict the future sales. In this project we will analyze the sale data of the company based on that we predict the sales for a specific product.

For this project we apply multi-variable linear regression using a straight-lined equation.

Index Terms - prediction, straight-lined equation, modules.

I. INTRODUCTION

The process of using companies sales record over the past years to predict the sale performance for companies future. This process is known as sale forecasting. Day by day competition among different shopping malls as well as big marts is getting more serious and aggressive only due to the rapid growth of the global malls and on-line shopping. Every mall or mart is trying to provide personalized and short-time offers for attracting more customers depending upon the day, such that the volume of sales for each item can be predicted for inventory management of the organization, logistics and transport service, etc. The present machine learning algorithm are very complex and it also provides some techniques to predict or forecast the future demand of sales for an organization, which also helps in overcoming the cheap availability of computing and storage systems. In this paper, we are addressing the problem of alike a shopping malls sales prediction or forecasting of an item on customer's future demand in different stores across various locations. Machine learning algorithms like linear regression analysis are used for the sale prediction or to forecasting the sales volume. As good sales are the life of every organization so the forecasting of sales plays an important role in any shopping complex. Always a better prediction is helpful. In this project, we use multi-variable linear regression model with a straight-lined equation $MX+C$. The multiple parameters used are the quantity and price.

II. RELATED WORKS

A company's sales analysis report shows the trend that occur in sales volume over time. A sales analysis report shows whether the sales are increasing or declining. At any time, sales managers may analyze the trends in the report to determine the best course of action. Managers use sales analysis reports to identify market opportunities and areas that they could increase sales volume. A sales analysis report of a company shows its actual sales for a specified period like a quarter, a year, or any time frame that the manager feel if it is significant. In larger corporations, sales analysis reports may only contain data for a subsidiary and division or region. A small-business manager is more interested in breaking sales down. The specialized businesses with a single location were compact enough to use general sales data. The sales analysis report compares the actual sales to projected sales.

Linear regression and logistic regression are the two best machine learning models for this kind of problem which can easily fit a line of high sale and low sale product, quarters and zone for a product. Also we need huge amount of data for the training of the model which can collect from the sales data of any product of last 1 or 2 years for any live project. For this project, the description of the dataset which we are going to use for this project is provided in the dataset portion of experimental setup section.

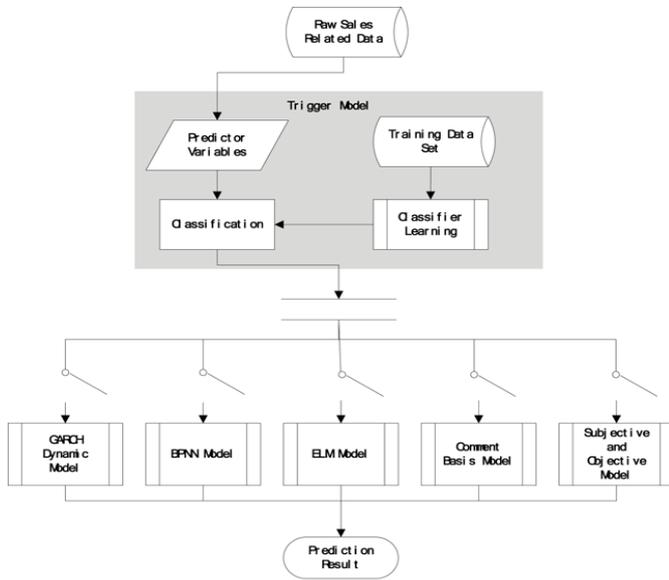


Fig-1 The Framework of trigger model system [Huang, Wenjie, et al. "A Novel Trigger Model for Sales Prediction with Data Mining Techniques." Data Science Journal 14 (2015).]

III. METHOD

3.1 Data Set

We are using the superstore sales data for sales prediction. Sample data that appears in the December Tableau User Group presentation. Note: Geographic locations have been altered to include Canadian locations (provinces / regions).

3.2 Evaluation Measures

Measures such as Classification error, Computational cost, Accuracy can be used for calculating the accuracy of drug discovery using neural network.

3.3 Methodology

In this research, linear regression and logistic regression model will be trained and tested for our dataset. For this we will download the sample dataset from the given link in dataset section. Those data is then undergoes for the feature selection and for the feature extraction. After that we will apply machine learning regression models for the training dataset to train the model. This train model will then be tested based on test dataset and validation dataset for checking the accuracy of the model.

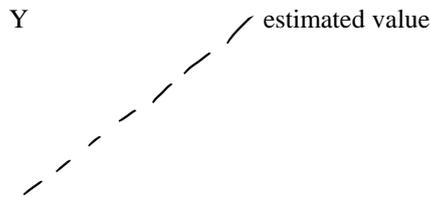


Fig-2 Methodology for fitting machine learning model

Fig-2 explains the method of experiment where we are taking the raw data from our source and will apply some data cleaning methods to make our data smooth. While Fig-1 explains the trigger model system framework with some classifiers. Then the most important step in this is the feature extraction and selection and it will be applied to select the best features out of the available which are influencing the result more. Then we will apply some machine learning model and compare the results.

IV. ALGORITHM

In this project we use linear regression model. Linear regression is used for evaluating trends and sales estimate, analyzing the impact of price changes, assessment of risk in financial services and insurance domain .

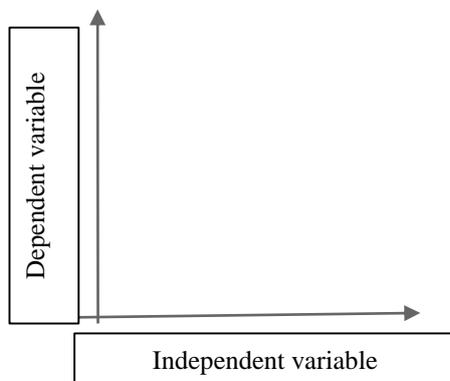


Linear regression is a statistical model used to predict the relationship between independent and dependent variables. Here, we use a straight line equation :

$$Y=MX+C$$

- Where Y= dependent variable
- X= independent variable (sale of a particular product)
- M= mean of th total sales
- C= booster/random value.

V. CLASSIFICATION OF MODULES



Admin: Admin can have the full control on the entire background processes. Supervise constant analysis of ongoing development sales trends in comparison to forecasts. Maintain and utilize all tools for creation, analysis and deliver forecasts efficiently. Analyze and recommend enhancement for dissemination of forecast information and provide support to organizations and product management program.

Shops: In this module a shop can register and can upload their products after registration in this application. They can view who all are buy their products and also they can view the sale prediction of a particular product according to their sales through this application. They can make offers of their products for customers. They provide services to their customers and read feedbacks from their customers etc. They provide payment options as through Google payment using OTP verification with registered mobile number and through cash on delivery.

User : In this module a user can register and login to this application. User can view all the shops who registered in this application and can also view their products uploaded by those shops. User can buy those products and can make feedback and can track their orders.

VI.CONCLUSION

In the present world of digitally connected world every shopping mall desires to know the customer demands in advance to avoid the shortfall of sale items in all seasons. Day to day the companies or the malls are predicting more accurately the demand of product sales . Extensive research in this area at enterprise level is happening for accurate sales prediction. As the profit of a company is directly proportional to the accurate predictions of sales

VII.ACKNOWLEDGMENT

I would like to take this opportunity to acknowledge the contribution of certain people without which it would not have been possible to complete this paper work. I am thankful to the principal Dr. Sr. Asha. Theres, Guides and Coordinators for their support, encouragement and suggestions. I would like to express my special appreciation and thanks to my guide Mrs.Jasmine Jose,you have been a tremendous mentor for me.

REFERENCES

[1] <https://community.tableau.com/docs/DOC-1236>

[2] IntelligentSalesPredictionUsingMachineLearningTechniques. <https://ieeexplore.ieee.org/document/8659115/authors>

[3] Sales-forecastingofRetailStoresusingMachineLearning Techniques. <https://ieeexplore.ieee.org/document/8768765>.

[4] Predicting and Defining B2B Sales Success with Machine Learning. <https://ieeexplore.ieee.org/document/8735638>.

[5] A Comparative Study of Big Mart Sales Prediction Gopal Behera¹ and Neeta Nain Malaviya National Institute of Technology Jaipur, India^{1,2}

