Project Synopsis

Customer Classification Prediction Model For Online Store

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Abstract

This paper deals with classification of the customers as a part of the marketing strategy in order to expand the business profit by recommending customers the relevant products depending upon the category. Classification of the customer proves to be helpful since it targets the specific customer for the specific product. This will help the company heighten the level of information to the appropriate customers. On the basis of what customers are buying,adding to cart or viewing,we will cluster the customers depending upon the similar parameters. Customers belonging to a particular cluster only will get recommendations about a specific product they would likely be interested in. While launching new products, services or releasing new versions of existing products / services we will reach potential customers only. To address which customers to give the recommendation, details of existing customers will be maintained at all levels and will be analysed henceforth. This model will serve the purpose of identifying the customers who will most likely respond to the recommendations by the company based on their past purchasing history. This system would be useful for the companies in putting a marketing tactic for promotion of their new products. In this manner the business will stay focused and targeted.

1. **Introduction**
    Identifying the potential customers of certain products and promoting the products accordingly is an important concept of almost all businesses nowadays. There are two methods for advertisements and promotions, namely mass marketing and direct marketing. Mass marketing is a procedure wherein the promotion of the products is carried out by targeting the general public through media such as newspapers, radios and televisions. This results in high wastage and low response rate from the customers who will actually buy the product. Hence this is not an effective method to be applied in today's competitive market. Therefore rather than going forward with such an unreliable method, the marketers are now shifting their focus from traditional Mass Marketing to Direct Marketing.

2. **Literature Review**
    A. <u>Title</u>: A Comparison of Different Classification Techniques for Bank Direct Marketing
        <u>Author</u>: K Wisaeng
        <u>About The Paper</u>: In this paper, the comparison of different classification techniques in open source data mining software which consists of a decision tree methods and machine learning for a set of bank direct marketing dataset are presented. All decision tree methods tested are J48-graft and LAD tree

while machine learning tested are radial basis function network and support vector machine. The experiment results show are a bout classification sensitivity, specificity,accuracy,mean absolute error and root mean squared error.

B. Title: Bank Direct Marketing Based on Neural Network
Author: Hancy.A.Elsalamony, Alaa.M.Elsayad
About The Paper: This paper introduces applications of recent and important models of data mining; Multilayer perceptron neural network (MLPNN) and Ross Quinlan new decision tree model (C5.0). The objective is to examine the performance of MLPNN and C5.0 models on a real-world data of bank deposit subscription. The experimental results demonstrate, with higher accuracies, the success of these models in predicting the best campaign contact with the clients for subscribing deposit. The performances are measured by three statistical measures; classification accuracy, sensitivity, and specificity.

C. Title: Data Mining Framework for Direct Marketing
Author: Lilian Sing'oei, Jiayang Wang
About The Paper: The objective of this paper is to provide a comprehensive framework to guide research efforts focusing on direct marketing strategy and aid practitioners in their quest to achieve direct marketing success using data mining methods like the Decision Tree Algorithm. The framework builds on the literature from direct marketing concepts and data mining methods that provides a systematic approach to users who have little knowledge in data mining in order to carry out effective marketing campaigns. A case study on bank marketing campaigns was used for evaluating the feasibility of the framework.

D. Title: A Data Mining Based Response Model for Targeting Selection in Directing Marketing
Author: Eniafe Festus Ayetrian, Adesesan Barnabas Adeyemo
About The Paper: In this paper, using historical purchase data, a predictive response model with data mining techniques was developed to predict the probability that a customer in Ebedi Microfinance bank will respond to a promotion or an offer. To achieve this purpose, a predictive response model using customers' historical purchase data was built with data mining techniques. The data were stored in a data warehouse to serve as management decision support system. The response model was built from customers' historic purchases and demographic dataset. Bayesian algorithm precisely Naive Bayes algorithm was employed in constructing the classifier system. Both filter and wrapper feature selection techniques were employed in determining inputs to the model.

3. **Problem Statement**
To generate a model that will classify customers on some constraints and make clusters of customers to give appropriate recommendations to particular clusters. Every cluster will be having different customers on the basis of their past purchases and items they select in cart. All customers in a cluster will be given the same recommendations which will be relevant to their selection of clothes. This process of

classification is an integral part of the direct marketing scheme which is trending globally nowadays.

4. **Objectives**

The objective of this project is to build a model that will classify customers based on the basis of their purchase history, gender, cart history, age, etc. and give them recommendations accordingly. After customers are classified they will not get irrelevant recommendations for new products that will be launched on the website. The company will be benefited because it will send recommendation only to customers who are likely to revert to the recommended product.

5. **Scope**

Direct marketing deals with an important issue of identifying customers who are more likely to respond to the new offers. Data mining is an extensively used method to carry out the process of target selection i.e identifying the potential customers. This project develops predictive analysis using data mining techniques in order to predict the probability that a customer will respond to a promotion or an offer depending on his purchase/selection/ viewing history. All of the data mining steps will be carried out and out of several standard techniques the best classification technique will be selected. The objective of this project is to provide a comprehensive framework for the efforts taking place in direct marketing strategy. The results obtained will help the store/organization/company to plan effective marketing of their products and services by obtaining a guiding report on the status of their customers which will go a long way in assisting management in saving significant amount of money that could have been spent on wasteful promotional campaigns.

6. **Benefits for environment**

Website creation, being a part of this project, is an important area which will help to lessen the environmental issues. Opting for a darker background for the website can surely be valued. Darker backgrounds are known to save as much as 4% of the total electrical energy as compared to lighter or white background. It also supports visual hierarchy thus reducing eye strain if browsed for hours. It offers depth in the reflection of the presented content. Using cool dark backgrounds for a website instantly transforms it into a night-mode one. Nowadays most of the devices feature an option which is called night-mode and turns the lighter colours on the device to black. Because of this particular technique the device produces less light due to which energy is saved which also prevents the end-user's eyes from getting sore quickly. Since this project is typically based on software and analysis, the probability of producing e-waste or the hardware waste has been brought down.

7. **Benefits for society (If applicable)**

NA

8. **Applications**

The classification of customers will help to convey specific, helpful information about clothes to customers by giving them recommendations so that they get to know about new and trending products and our sale increases by attracting them towards such products. An online presence helps in terms of building and fostering a rapport among your customers. Providing special offers to particular group of customers on the website lets them know we appreciate them for visiting and shopping from our website. Customers will get recommendations, different recommendations to different people, which will give customers products they might like resulting in increasing sales and thereby giving profit. This technique of direct marketing will prove to be helpful for not only online stores but also the ground shops. It can be applied to a variety of stores, industries, banks, etc.

9. **Technology stack**

Frontend :

HTML 5- HTML is the standard markup language for creating websites. HTML allows users to create and structure sections, headings, links, paragraphs, and more, on a website using various tags and elements.

CSS 3- CSS is the language that describes the style of an HTML document. We will combine HTML and CSS to create a basic web page. CSS is a language used to detail the presentation of HTML such as colors, fonts and layouts.

JAVA SCRIPT- JavaScript is the programming language of HTML and the Web.

Backend :

GOOGLE COLAB - used to create a machine learning model. Colaboratory is a free Jupyter notebook environment provided by Google.With Colaboratory you can write and execute code, save and share your analyses, and access powerful computing resources, all for free from your browser.

MySQL WORKBENCH - MySQL Workbench is a visual database design tool that integrates SQL development, administration, database design, creation and maintenance into a single integrated development environment for the MySQL database system

References

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