

E-Commerce Marketing Analytics

Overview

Understanding and knowing the customers well is the key to any successful business. It's a good practise to store their demographic information and their preferences and to provide customers with a personalized and an enjoyable experience on the platform.

To understand customers well we need to analyze their purchase history and behavior.

By collecting and analyzing data over the years we can predict what kind of offers would excite them and at the same time what would garner revenue to the business.

Goals

1. To analyze the large data of transaction history for this e-commerce giant and impute necessary values for any missing value, reducing noise, down-scaling, analyse trends and study the pattern and calculate metrics and KPIs that will help to make business decisions.
2. To analyse the demographic information/ preferences of each user and create relevant promotions and offers for each. Reaching out to the right set of people with relevant offers.
3. Predict the churn rate and assess the Customer Lifetime Value
4. Present a web application to create a real time analytics dashboard to understand the key performance metrics and customer segmentation.

Use Cases

1. Increase revenue by targeting groups of customers with promotions and improve the churn rate by retaining the customers:

1. Customer Segmentation based on customer demographics for eg: age, gender, income, membership details
2. Based on promotional offers for eg. channels, offer type, rewards
3. Based on transaction history- Offer received, Offer viewed ,offer redeemed

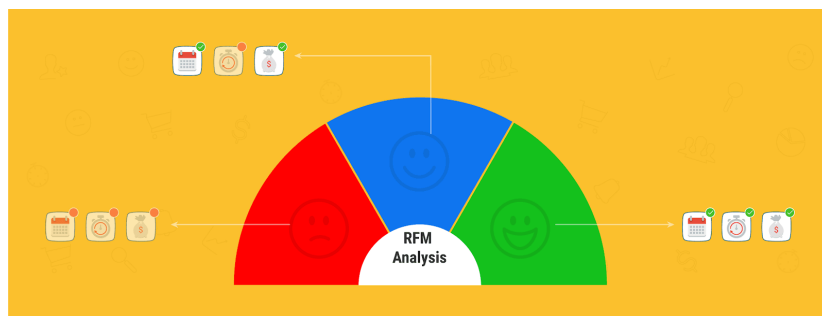
2. Marketing and Promotion Team: These teams can analyze the reports of each offer and make decisions accordingly.

3. What are the recommended offers to be sent to a new customer so that it would interest them and they would redeem it

4. Calculate the Funnel metrics and the percentage of leads that move forward. In this case- View → Basket → Purchasing

5. Calculating Average amount Spent by each customer

Models to be used



Classification Model- To help us understand who will probably make a purchase and give promotions to them according to funnel metrics and give another set of coupons to the people who don't purchase much

Clustering- K-means, Segmentation based on RFM principles

A/B testing for control group and treatment group

Classification Models-XGBoost, Logistic Regression, KNN

Data



Link to the data :

<https://www.kaggle.com/mkechinov/ecommerce-behavior-data-from-multi-category-store>

This file contains behavior data for two months (October and November 2019) from a large multi-category online store.

Each row in the file represents an event. All events are related to products and users. Each event is like many-to-many relation between products and users.

File structure

event_time: Time when the event happened at (in UTC).

event_type

Events can be:

- view - a user viewed a product
- cart - a user added a product to shopping cart
- removefromcart - a user removed a product from shopping cart
- purchase - a user purchased a product

Typical funnel: view => cart => purchase.

product_id: ID of a product

category_id: Product's category ID

category_code: Product's category taxonomy (code name) if it was possible to make it. Usually present for meaningful categories and skipped for different kinds of accessories.

brand: Brand of the product being bought

price : Float price of a product.

user_id: Permanent user ID.

user_session: Temporary user's session ID. Same for each user's session. It changes every time a user comes back to the online store from a long pause.

For customer demographics, fake data will be generated using Faker. The information that will be captured for customer demographics will be

age : Age of the customer

member_since : The date since when the customer became a member

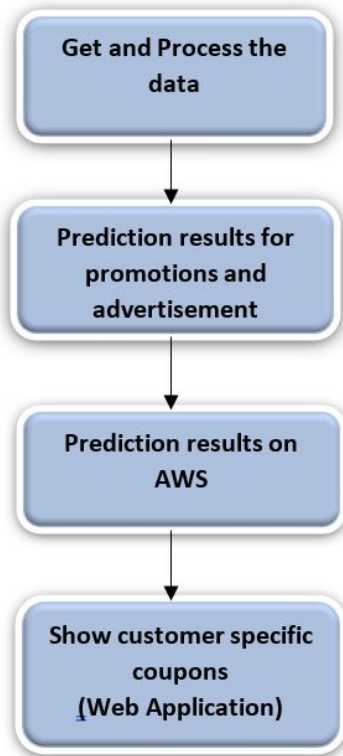
gender : Gender of the customer

income : Income of the customer

Process Outline

1. Data Preprocessing
2. Data Cleaning, imputing missing values
3. Exploratory Data Analysis
4. Study of Supervised approaches and select the best model for prediction
5. Study of Unsupervised approaches for customer segmentation
6. Deploy the data on AWS
7. Build a web application and give out relevant coupons to customers

Workflow:



Milestones

Timeframe	Delivery
Day 1-2	Data Preprocessing and Exploratory Data Analysis
Day 3-7	Model Building, Training, Selecting the appropriate one and more training
Day 8-11	Deployment of models on AWS and build a web application
Day 12-15	System integration and documentation

Deployment Details

1) Language: Python

2) Front End: Web Service with Flask

3) Cloud Tools/Platforms: AWS Services and Storage - S3 bucket

4) Tools for Analysis: Streamlit, Python libraries