# CRM Analysis

## **PART\_1 (HYPOTHESIS TESTING )**

**MAGIC NO. BACKGROUND**

Data is gold , if we are able to create a dataset which has information Regarding geography,

economic status ,no. Of orders , price range of orders etc ,We can use this information to better

understand the sale and procedure of goods and services.

Information Regarding last orders , Voucher used , multiple purchases give us a definitive idea

of the needs of the customer . Discounts and vouchers play an important role in determining the

style and order for a customer to buy goods .

One hypothesis is that if a customer gets used to buying products or services on a regular basis

then they have a low likelihood of churning. To increase the number of orders a customer places.

in a time period , different strategies like campaigns , demonstrations , vouchers , flash sales

are organised and Customers are introduced to discounts , offers and Market . This increases

the revenue and is a rewarding experience for the customer.

For Our Hypothesis implementation , the data of Orders placed , Incentive given for the orders and new CRM campaigns introduced will be used to gather the instances where a customer , has placed orders due to the Discounts or Vouchers provided , which would tell us the appropriate tools to be used for a customer to increase there orders upto a set minimum limit and check for the increased revenue Relating to the customer.

If it is definitive and our statistical analysis shows that after increasing a set amount of minimum orders the customer is more likely to make a purchase Again and the Margin is increased which would confirm our Hypothesis .

Additionally then this would be implemented for the customers in churn\_segment and if Results indicate an increase in Margin , then our Hypothesis is Confirmed.

## **Q1. Best voucher to be used.**

The Best voucher to be used to increase margin and growth , is calculated by looking for the most used voucher within a clustered group of customers which has the highest margin and growth ratio.

We have used k-means clustering for customer segmentation to find out that the Best margin is offered by the voucher id =6 , which is voucher code = lv-3 .

For best growth , we have considered the most used voucher among the best avg margin given ,

Which is Given as voucher id =0 , which is voucher code = lv-1 .

Thus the best overall voucher is voucher id = 0 which would increase the growth , and would increase revenue and orders.

**Voucher code = lv-1 ,** is the best voucher found through Data analysis.

## **Q2 . Best Single dimensional Segmentation.**

The Best single dimension segmentation to be used is a Simple linear regression model.

This is best suited for single dimensional analysis of a feature and gives the best results.

The workings of Single dimensional linear Regression model are given below -

Simple linear regression is an approach for predicting a response using a single feature.

It is assumed that the two variables are related to each other.Therefore, we try to find a specific function that predicts the amount of response (y) as accurately as possible as feature function or independent variable (x).

This segmentation will be used to increase our margin , revenue . whereas a feature scaling can be done on the value collected for the segmentation of customers based on discounts .

WE will Use margin as our X\_train and X\_test

WE will Use Voucher\_group as our Y\_train and Y\_test

Finally , we will use a margin value from our data\_split test set or our a new instance to Predict

The value for Y , which would be our Voucher Code for that unique customer Based on Simple linear regression.

## **Q3 . Ml - model for Classification.**

**KMeans** is a clustering algorithm which divides observations into **k** clusters. Since we can dictate the amount of clusters, it can be easily used in **classification** where we divide data into clusters which can be equal to or more than the number of classes.

K means clustering can be Used to define the cluster which a customer belongs to and use the best voucher for that cluster based on the margin or growth factor taken into consideration.

In our Dataset , while Training

We train the model for k means clustering.

Clustered group is calculated for the best offerings and growth for a voucher .

A best voucher for the group is assigned .

In classification .

We receive the customer details

We use k means clustering to define the best cluster of customers for our new instance ,

We use the already existing best voucher for that cluster and group our customers .

We group our customers based on margin , growth or both which is based on Customer level.