1. Aim

A department store company wants to gain insights into customer behaviour and preferences to improve marketing strategies and customer experience. The dataset contains demographic information, purchasing behaviour, and customer activity for different groups and classes of customers.

The objective is to develop a system that can analyse the data and provide recommendations on how to improve customer retention, increase sales, strategize for better market capitalization, and target specific customer segments. The system should be able to identify trends, patterns, and correlations between the different variables and create visualizations that can aid in decision-making. It must show which groups of customers are buying what and how and it must give us insights into how we can improve sales by targeting the right customer segments with the right products.

Additionally, the system should provide insights on which customers are most valuable, which products are most popular, and how customer behaviour changes over various variables.

The ultimate goal is to improve company’s market strategy while enhance customer acquisition and retention levels by increasing customer satisfaction and loyalty while maximizing revenue.

1. Development

**Customer Personality Analysis** is a detailed analysis of a company’s ideal customers. It helps a business to better understand its customers and makes it easier for them to modify products according to the specific needs, behaviors, and concerns of different types of customers.

This dataset was thoroughly cleaned before being explored to create more useful columns and variables. The final data points were as follows:

ID, Year\_Birth, Age, Education, Marital\_Status, Income, Income\_bracket, Kidhome, Teenhome, Total\_children, Dt\_Customer, Recency, Activity, Complain, MntWines, MntFruits, MntMeatProducts, MntFishProducts, MntSweetProducts, MntGoldProds, Total, NumDealsPurchases, NumWebPurchases, NumCatalogPurchases, NumStorePurchases, TotalPurchases, NumWebVisitsMonth, Customer\_type.

A brief on these datapoints are as follows:

Personal: Provide a basic overview of the customer’s personality, personal information, and relationship with the company.

* ID: Customer's unique identifier
* Year\_Birth: Customer's birth year
* Age: Age category, found using Year\_Birth
* Education: Customer's education level
* Marital\_Status: Customer's marital status
* Income: Customer's yearly household income
* Income Bracket: Income level based on quartiles, found using Income. It depicts financial status, purchasing habits and potential buying power.
* Kidhome: Number of children in customer's household
* Teenhome: Number of teenagers in customer's household
* Totalchildren: Total number of children and teenagers in customer's household
* Dt\_Customer: Date of customer's enrollment with the company, which can provide insights into their length of time as a customer and potential buying habits.
* Recency: Number of days since customer's last purchase, it can be a useful predictor of their likelihood to make another purchase.
* Activity: Is customer Active or Inactive based on Recency, provides insights into their engagement and potential purchasing habits.
* Complain: 1 if the customer complained in the last 2 years, 0 otherwise. It is a useful predictor of their satisfaction and potential loyalty.

Products: These columns can be used to determine the amount spent by the customer on different types of products, which can provide insights into their preferences and potential buying habits.

* MntWines: Amount spent on wine in last 2 years
* MntFruits: Amount spent on fruits in last 2 years
* MntMeatProducts: Amount spent on meat in last 2 years
* MntFishProducts: Amount spent on fish in last 2 years
* MntSweetProducts: Amount spent on sweets in last 2 years
* MntGoldProds: Amount spent on gold in last 2 years
* Total: Total amount spent on products

Purchasing behaviour: These columns can be used to determine the number of purchases made by the customer and the channels through which they made those purchases, provides insights into customer engagement and potential purchasing habits.

* NumDealsPurchases: Number of purchases made with a discount
* NumWebPurchases: Number of purchases made through the company’s website
* NumCatalogPurchases: Number of purchases made using a catalogue
* NumStorePurchases: Number of purchases made directly in stores
* TotalPurchases: Total number of purchases made
* NumWebVisitsMonth: Number of visits to company’s website in the last month

Customer Behaviour

* Customer type: Is customer behaviour below or above average w.r.t purchases, expenditure, complaints, activity, and income, acts like a final verdict on a customer’s importance to the company.

1. Insights

Following is a brief on how insights can be gathered from the data labels in this customer personality analysis dataset:

1. Income and income bracket data can be used to identify high-value customers and inform pricing strategies. By analyzing income data, businesses can adjust their pricing and promotions to appeal to different income groups, potentially increasing customer retention and revenue.
2. Customer demographics data, such as age, education, and marital status, can be used to segment customers and personalize marketing efforts. By understanding the demographics of their customers, businesses can tailor their messaging and promotions to specific groups, improving engagement and driving sales.
3. Customer behavior data, such as purchasing habits and web activity, can be used to inform product development and improve the customer experience. By analyzing customer behavior data, businesses can identify trends and pain points in the customer journey, optimizing their products and services to better meet customer needs.
4. Complaint data can be used to identify areas for improvement in customer service and product quality. By analyzing customer complaints, businesses can identify recurring issues and take steps to address them, potentially reducing churn and improving customer satisfaction.

Following are the insights from the dashboards prepared:

**A. CUSTOMER PERSONALITY ANANLYSIS DASHBOARD**

1. Gives us an overview into customer groups and segments: Depiction of the different kinds and classes of customers associated with the company and their characteristics.
2. We see customer count by education level, age, importance to company as consumers (above or below average) and number of kids.
3. We can use slicers to change data according to marital status or income bracket.
4. Also a timeline can be used to choose what customers we want to look at- old or new?
5. We find that high income customers are better for the company, meanwhile marital status does not affect customer value much.
6. We also see that most of the customers are graduates, have one children and are from the 40-60 year old category. However, we cannot classify all results to be associated with these customers.

**B. INCOME SALES ANALYSIS DASHBOARD**

1. We see how income and expenditure are proportional and how their linear forecast suggests that as income increases for more educated customers, expenditure increases more sharply, and at one point it may be equal.
2. We also find that most deals/discount methods are used by middle economic class people, while high income level customers use the minimum deals.
3. However, high income individuals have the considerably higher average expenditure level. High income and Mid-high income category customers account for more than 80% of expenditure on an average basis.
4. We notice that above average active customers only used deals in almost 800 purchases while below average importance customers, who are inactive, take up almost three times as many deals and active ones took up twice as many.
5. This shows a distorted market strategy when it comes to providing deals and discounts as the wrong category of customers are getting maximum of those.

**C. PRODUCT SALE ANALYSIS**

1. This dashboard has information pertaining to the purchasing habits of different classes of customers and their method of purchasing as well as how other factors influence purchasing products from the company.
2. In the first graph we itself notice that 70+ people make a lot of purchases and spend a lot, the general trend is that younger people buy less and save more while older people are outspending youngsters.
3. We also see that younger people (below 70) make more purchases but spend less, in comparision 70+ customers purchase more in number but spend also proportionately higher.
4. Graphs on the bottom show that if there are children in a household then the number of catalogue purchhases go down but realtively the web visits and purchases increase exponentially. This is in line with the thinking that having children will require more products and parents would find it easier to order through online channels. Also teens may themselves shop through online portals as most of them are more comfortable with it as compared to older parents.
5. In this dashboard again we see the use of slicers for income levels and marital status. As income increases we see expenditure and purchases also go up. Another fact is that income is also directly proportional to more number of children in the household since as income is higher, parents are able to support more family members.
6. Marital status shows different trends in all cases. However, it can be concluded that people who are married or together have slightly higher expectancy of spending more.