

1. Overview A brief description about our project :-

Market Segmentation analysis is the process of dividing a market into distinct groups of customers based on their characteristics, needs, preferences and behaviours. It helps businesses to tailor their products, services and marketing strategies to different segments and increase their profitability and customer satisfaction.

Market Segmentation analysis and using ml is project that is similar to market segmentation analysis using AI, but it focuses more on the use of machine learning techniques to create customer segments.

Machine learning is a branch of artificial intelligence that involves creating and training algorithms that can learn from data and make predictions or decisions. There is a brief overview of the project.

- \* The project collects customer data from various sources such as surveys, online reviews, social media, purchase history etc.
- \* The project cleans, transforms, and integrates the data to make it suitable for analysis.
- \* The project applies machine learning algorithms such as clustering, classification, regression etc, to discover patterns and insights from the data.
- \* The project uses graphical tools such as charts, graphs, maps, etc to present the result of the analysis in a clear and understandable way.

\* The Project interprets the result of the analysis and draws conclusions and recommendations for marketing actions.

Prepare the us of this project, what can be achieved using this:-

- \* Market Segmentation is the process of dividing customers into groups based on their shared characteristics, such as spending habits, locations, or industry. This can be a valuable tool for wholesale businesses to better understand their customers and tailor their marketing and sales strategies accordingly.
- \* In this report, we are going through the steps of market segmentation and covering the basic idea of market segmentation. We will be covering all the instruction & procedure you have to keep in mind during the market segmentation.
- \* The purpose of marketing is to match the genuine needs and desires of consumers with the offers of suppliers particularly suited to satisfy those needs and desires. This matching process benefits consumers and suppliers and drives on organization marketing planning process.

## 2. Literature Survey:-

→ Existing problem:-

using unsupervised machine learning techniques, specifically clustering algorithms, the project seeks to group customers with similar spending patterns together. By identifying customer

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Segments with distinct spending behaviours. The project aims to provide insights to how we businesses can tailor their marketing strategies and product offering to better serve each customer segment. The project also aims to identify opportunities for growth, such as which product or product categories are underrepresented among customers. and which segments may be receptive to new product offerings.

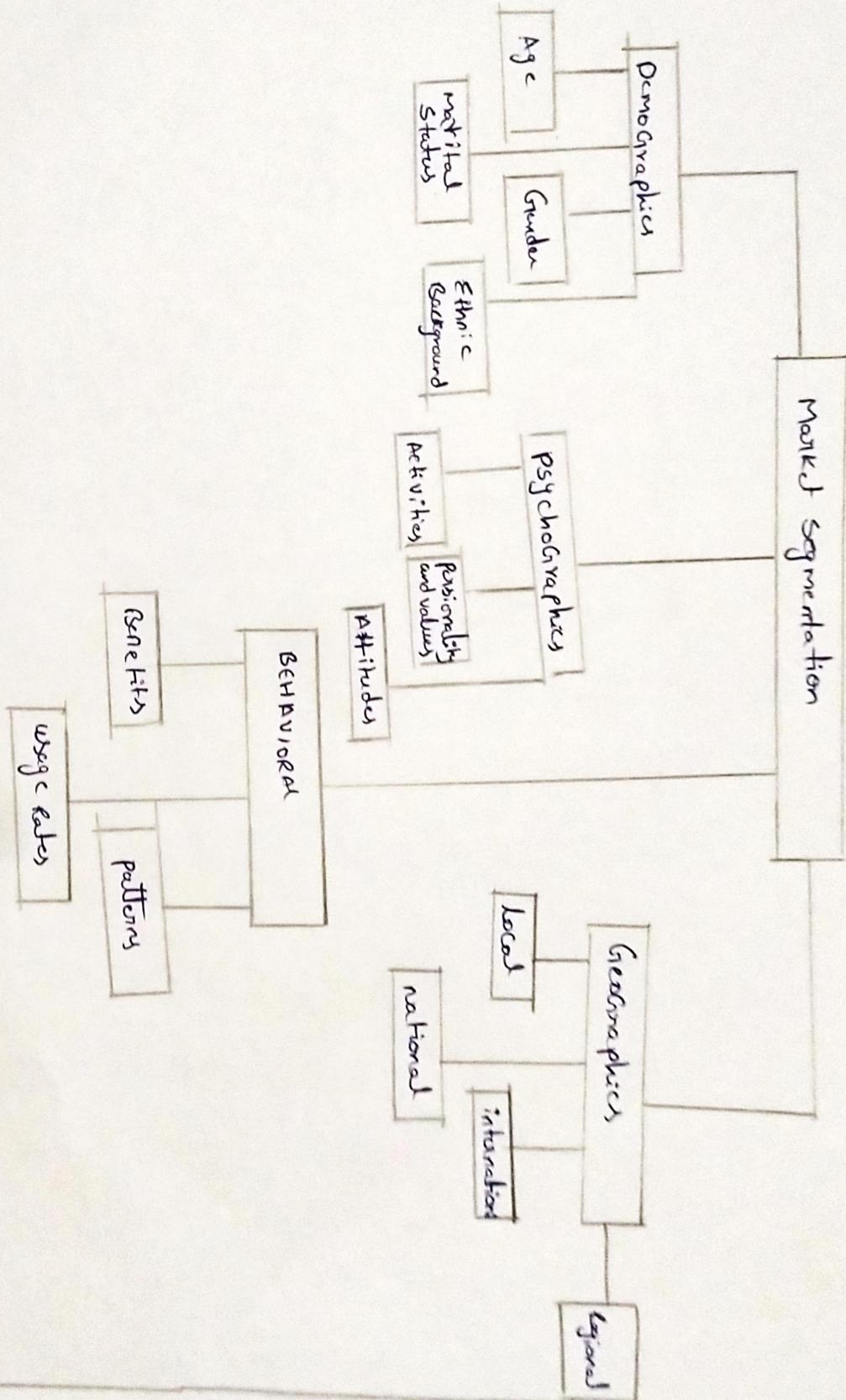
→ Proposed Solution:-

Existing approaches or method to solve this problem:-

There are many methods and techniques to solve the problems of market segmentation analysis using ml, depending on the types, sizes, and distribution of the data however one of the most common and general methods is the clustering approach which consists of the following steps.

\* Data preprocessing prepared and clean the data for the segmentation task. you can use tools such as data exploration, feature engineering feature scaling or outlier detection to help you with this step.

- \* **cluster analysis** :- apply a clustering algorithm to partition the data into groups based on the similarity of their features. you can use tools such as K-means or hierarchical clustering, or association rule mining to help you with this step.
- \* **cluster evaluation** :- assess the quality and usefulness of the cluster. you can use tools such as elbow method, silhouette score, or domain knowledge to help you with this step.
- \* **cluster interpretation** :- understand and describe the characteristics and preferences of each cluster. you can use tools such as principal component analysis (PCA), visualization, or descriptive statistics to help you with this step.
- \* **cluster application** :- use the cluster to design and implement personalised marketing strategies and campaigns for each segment. you can use tools such as A/B testing, customer feedback, or performance metrics to help you with this step.



→ Diagram Hardware / software designing :-

\* Hardware requirements to complete this project you must have

Hardware and software requirements of this project:-

Hardware requirements to complete this project you must required laptop

To complete this project you must required following software's concepts and packages.

\* Anaconda navigator and pycharm:-

Refer the link below to download anaconda navigator.

\* Python packages:-

Open anaconda prompt as administrator

○ type "pip install numpy" and click enter

○ type "pip install pandas" and click enter

○ type "pip install scikit-learn" and click enter

○ type "pip install matplotlib" and click enter

○ type "pip install scipy" and click enter

○ type "pip install pickle-mixin" and click enter

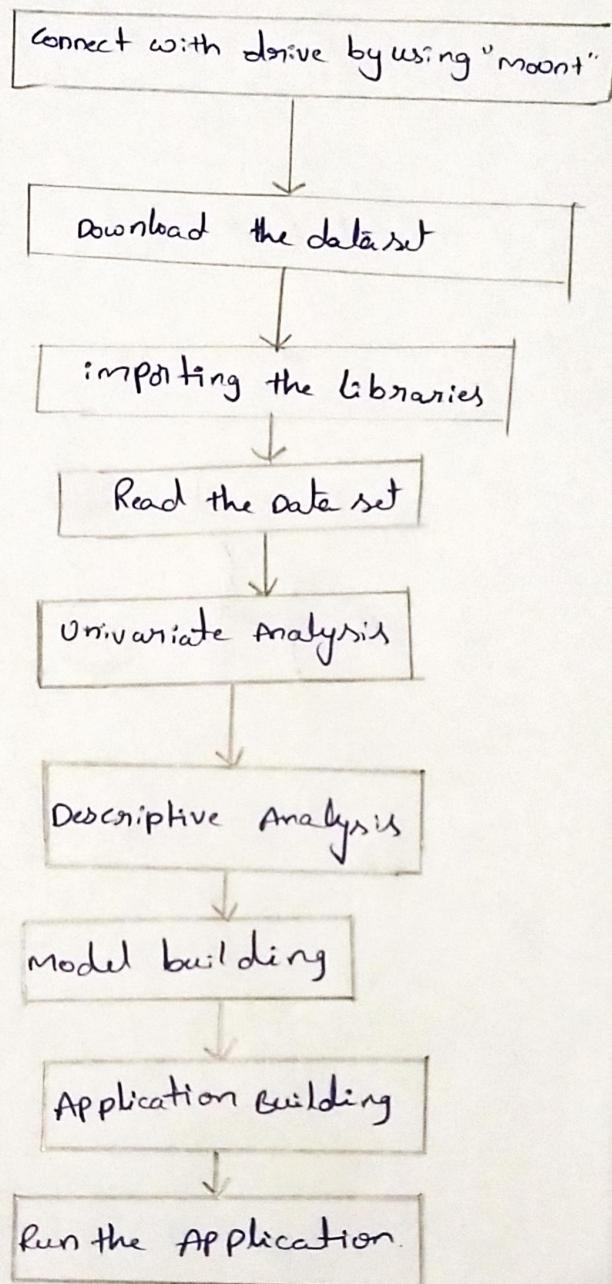
- o type "pip install seaborn" and click enter
  - o type "pip install flask" and click enter.
4. Experimental investigation:-

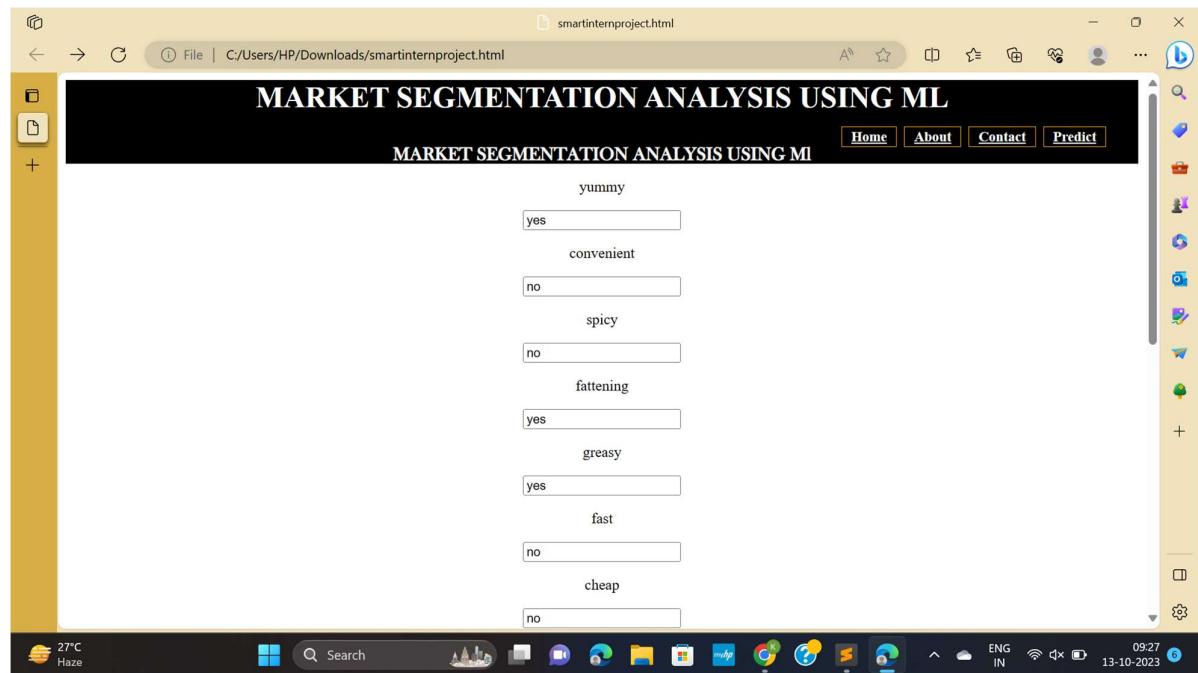
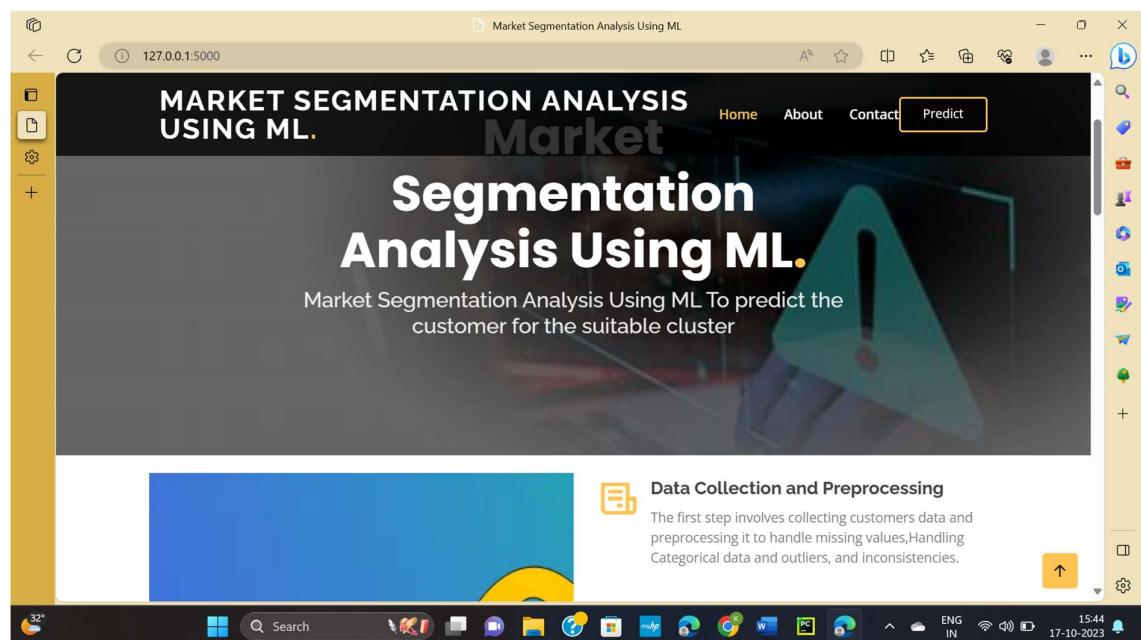
To accomplish this project we have to complete all the activities listed below.

- + Data collection we have to collect the dataset & or create the dataset
- + Visualising and analysis data , univariate analysis , Bivariate analysis ; multivariate analysis and descriptive analysis.
- + Data Pre-processing checking for null values handling outlier handling categorical data and splitting data into train and test .
- + Model building to import the model building libraries for initializing the model to training and testing the model for evaluating performance of model to save the model .
- + Application Building by creating an html file and build python flask code .

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- 5) flow chart Diagram showing the control flow chart of the solution :-





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## Advantages and disadvantages

Advantages of market segmentation analysis using :-

- \* It can help you to identify the most profitable and loyal customers and focus your resources on them.
- \* It can help you to create more effective marketing campaigns that target the specific needs and wants of each segment.
- \* It can help you to develop new products or services that cater to the gaps or opportunities in the market.
- \* It can help you to gain a competitive edge over your rivals by offering more value and satisfaction to your customers.

disadvantages of market segmentation analysis using :-

- \* It can increase your costs and complexity as you have to create different marketing mixes for different segments.

- \* It can require more time, effort and money in research and data collections to segment the market accurately.
- \* It can pose ethical and legal issues if you use sensitive personal data to segment the market without the consent of the customers.
- \* It can alienate some customers who do not fit into any segment or who feel discriminated by your segmentation strategy.

### 8. Applications:-

The areas where this solution can be applied :-

There are some potential business requirements for Market Segmentation Analysis using ML

Accurate forecasting the predictor must be able to accurately forecast the spending behaviour of customers.

UX-Friendly interface the predictor must have a user-friendly interface that is easy to navigate and understand.

The interface should present the result of the predictor in a clear and concise manner to satisfaction and retention.

Increased customer satisfaction and retention: By understanding the spending behavior of their customers, wholesale businesses can tailor their marketing strategies and product offerings to better meet the needs of each customer segment. This can lead to increased customer satisfaction and retention, as customers are more likely to do business with companies that understand their needs and preferences.

#### 9. Conclusion:-

The result of this project to predict the data and give the strategic value to understand the customer satisfaction & and retention to client to up to improve the this business and customer reviewed.

## **11.BIBILOGRAPHY: -**

References:

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For KNN learning:

<https://www.javatpoint.com/k-nearest-neighbor-algorithm-for-machine-learning>

For Flask learning:

<https://www.geeksforgeeks.org/deploy-machine-learning-model-using-flask/>