

Assignment Brief: Hackathon on Customer Segmentation

Objective: In this hackathon, you will work on a customer segmentation project based on the provided data set. The goal of this project is to analyse customer data and segment them into meaningful groups for targeted marketing strategies.

Background: The company, a prominent automobile manufacturer, has been experiencing a significant decline in sales within the young professional segment, impacting overall revenue. Research indicates that a lack of personalized customer experiences and the absence of tailored after-sales services are major factors driving the decline in this segment. The project's goal is to conduct customer segmentation analysis to identify key customer groups, predict future purchasing behaviours, and devise personalized customer experiences to improve customer engagement and retention rates.

Data Provided:

Raw_data: This Excel file dataset included the following sheets of data:

- **Transactions_data:** This dataset included the transactions data of the customers across all the different states in Australia.
- **NewCustomerList:** This dataset included the new customers who visited the automobile bike company recently.
- **CustomerDemographic:** This dataset included entire details of the Customer Demographics.
- **CustomerAddress:** This dataset included the address of the Customers.

Tasks:

1. **Data Exploration:** Understand the features, data types, and any missing values and visualize the data using appropriate plots (e.g., histograms, scatter plots, etc.).
2. **Data Preprocessing:** Clean the data by handling missing values, outliers, and duplicates and perform feature engineering if necessary (e.g., creating new features, scaling, etc.).
3. **Customer Segmentation:** Apply clustering algorithms (e.g., K-means, DBSCAN, GMM, etc.) to segment customers, evaluate the quality of the clusters (e.g., silhouette score, inertia, etc.) and interpret the results and describe the characteristics of each segment.
4. **Marketing Recommendations:** Based on the customer segments, propose targeted marketing strategies and discuss how different segments can be approached differently (e.g., promotions, personalized offers, etc.).

Deliverables:

- A Jupyter Notebook containing your code, analysis, and visualizations.
- A Power BI dashboard showing relevant visualization.
- A PowerPoint report summarizing your findings and recommendations.

Evaluation Criteria:

- Code quality and readability
- Data exploration and visualization
- Data preprocessing techniques
- Clustering performance
- Marketing recommendations

Timeline:

- The hackathon will take place over a period of 3 weeks.
- Final presentations and reports are due on **Friday May 17, 2024.**

Note:

- Teams are encouraged to explore beyond the provided datasets and consider external data sources that could enhance the model's accuracy.
- Collaboration and knowledge sharing among teams are highly recommended.