**Project Proposal: Customer Segmentation and Targeting for The Look E-Commerce**

**Project Title:**

Customer Segmentation and Targeting Using Clustering Techniques for The Look E-Commerce

**Project Duration:**

[4 weeks]

**1. Introduction**

Customer segmentation is essential for identifying distinct groups of customers and tailoring marketing strategies to suit their behavior, preferences, and demographics. This project aims to segment customers of The Look E-Commerce platform using clustering techniques to enhance customer targeting and personalization efforts. The analysis will also include an A/B testing component to measure the impact of targeted campaigns on various customer segments.

**2. Objectives**

* **Segment customers** based on purchasing behavior, order frequency, demographics, and web interaction data.
* **Identify high-value customer groups** to inform targeted marketing strategies.
* **Perform A/B testing** to evaluate the effectiveness of different marketing strategies (e.g., personalized offers, product recommendations) for distinct customer segments.
* **Provide insights** to improve customer retention and increase average order value.

**3. Scope of Work**

**3.1. Data Collection**

* Access and query the **thelook\_ecommerce** dataset in BigQuery. The dataset contains information about customer transactions, product purchases, and web sessions.
* Extract relevant data on:
  + Customer demographics (e.g., location, acquisition source).
  + Transaction history (e.g., order value, frequency).
  + Web interactions (e.g., session duration, pages visited).

**3.2. Data Preparation**

* Clean and preprocess the data by handling missing values, removing outliers, and standardizing data formats.
* Feature engineering to create additional variables (e.g., total spend, frequency of purchases, customer lifetime value).

**3.3. Customer Segmentation (Clustering)**

* Use **Python** and **SQL** to implement clustering techniques, such as:
  + **K-Means Clustering**: Group customers based on purchasing patterns, total spend, and frequency of purchases.
* Validate and interpret the clusters using statistical metrics (e.g., silhouette score, elbow method).

**3.4. A/B Testing**

* Design an A/B test to evaluate the impact of different marketing strategies on the segmented customer groups. For example:
  + **Group A**: Receive personalized product recommendations.
  + **Group B**: Receive a discount on frequently purchased products.
* Track key performance indicators (KPIs) such as conversion rate, customer retention, and average order value over a fixed period.

**3.5. Visualization and Reporting\***

* Create an interactive **Tableau dashboard** to:
  + Visualize the customer segments and their characteristics.
  + Display the results of the A/B test, including which strategy performed best for each customer segment.
  + Show overall trends in purchasing behavior, web interactions, and customer demographics.

**3.6. Deliverables**

* A comprehensive report detailing:
  + The methodology used for customer segmentation.
  + The results of the A/B test, including actionable insights.
  + Recommendations for targeted marketing strategies based on segment analysis.

**4. Tools and Technologies**

* **Data Extraction & Transformation**: Google BigQuery (SQL)
* **Data Analysis & Clustering**: Python (Pandas, Scikit-learn)
* **A/B Testing & Statistical Analysis**: Python (SciPy, Statsmodels)
* **Data Visualization**: Tableau
* **Version Control & Collaboration**: GitHub

**5. Expected Outcomes**

* **Customer Segmentation**: Clearly defined customer groups based on purchasing behavior, demographics, and web interactions.
* **A/B Testing Results**: Insights into the most effective marketing strategies for each segment, improving conversion rates and customer engagement.
* **Data-Driven Marketing Recommendations**: Actionable insights that will enable the business to increase customer retention and revenue through targeted marketing efforts.

**6. Timeline**

* **Week 1**: Data extraction, cleaning, and feature engineering.
* **Week 2**: Implement clustering algorithms and validate customer segments.
* **Week 3**: Design and execute A/B testing on the segments.
* **Week 4**: Develop Tableau dashboard, report findings, and present recommendations.

**7. Risks and Mitigations**

* **Risk**: Incomplete or missing data that could affect segmentation accuracy.
  + **Mitigation**: Apply imputation techniques or exclude incomplete records, ensuring the analysis remains robust.
* **Risk**: A/B test results may not yield statistically significant differences.
  + **Mitigation**: Ensure an adequate sample size and run tests over a sufficient time period.

**8. Conclusion**

This project aims to deliver a comprehensive customer segmentation model for The Look E-Commerce platform, paired with A/B testing to measure the success of personalized marketing strategies. By leveraging insights from the segmentation, the business can implement more effective marketing campaigns, enhance customer retention, and boost revenue.