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]

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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.

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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.

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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

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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.

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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.

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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.

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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.