# Customer Purchase Data Analysis Report

## Key Insights

1️⃣ Brand & Product Attachment Analysis  
- Customers who received free samples tend to purchase from the same brand later.  
- Certain brands benefited more from sampling campaigns.  
  
2️⃣ Customer Segmentation Insights  
- High-Value Customers: Shop frequently and prefer premium brands.  
- Low-Value Customers: Shop less often and buy budget-friendly products.  
  
3️⃣ Purchase Frequency Differences  
- High-value customers shop frequently, reinforcing brand loyalty.  
- Low-value customers need incentives to return.  
  
4️⃣ Brand Preferences by Customer Segment  
- Premium brands attract high-value customers who are willing to spend more.  
- Budget-friendly brands attract price-sensitive customers.  
  
5️⃣ Time to Conversion Insights  
- Most customers purchase within 1-3 days after receiving a sample.  
- Follow-up offers could improve long-term retention.

## Conclusion & Business Recommendations

✅ Optimize Sampling Strategy: Focus on top-converting brands and products.   
✅ Improve Retargeting: Send personalized reminders and offers to sampled customers.   
✅ Loyalty Programs for High-Value Customers: Exclusive discounts & early product access.   
✅ Discounts & Promotions for Low-Value Customers: Encourage repeat purchases.   
✅ Data-Driven Upselling: Recommend premium products to mid-value customers to increase spending.

## Methodologies Used

--- Summary of Methodologies Used  
  
1. Data Cleaning & Processing:  
 - Loaded dataset and converted datetime fields.  
 - Checked and handled missing values.  
  
2. Customer Segmentation Analysis:  
 - Customers categorized as High-Value (top 25%), Mid-Value, and Low-Value (bottom 25%) based on total spending.  
  
3. Brand & Product Attachment Analysis:  
 - Identified customers who received free samples and tracked subsequent purchases.  
  
4. Purchase Frequency Analysis:  
 - Computed purchase frequency per customer and compared across segments.  
  
5. Brand Preferences & Product Category Insights:  
 - Identified top brands and products purchased per segment.  
  
6. Time to Conversion Analysis:  
 - Measured time taken to purchase after receiving a sample.  
 - Identified fast and slow conversion patterns.  
  
7. Visualization & Business Recommendations:  
 - Used Plotly for interactive charts.  
 - Provided key business recommendations based on insights.