Ecommerce Consumer Behavior Analysis

\*\*Executive Summary:\*\*

This analysis explores how marketing channels (ads, social media, and discounts) influence purchasing decisions, with the goal of identifying strategies to enhance loyalty, increase revenue, and drive smarter customer targeting. The interactive Tableau dashboard reveals key patterns in demographics, product engagement, and channel performance.

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\*\*Problem Statement:\*\*

Despite having access to rich behavioral data, businesses often lack clarity on how individual marketing strategies impact different customer groups. This project addresses how purchase intent, brand loyalty, and satisfaction are influenced by discounts, social media, and ads.

\*\*Data Source:\*\*

Dataset from Kaggle: https://www.kaggle.com/datasets/salahuddinahmedshuvo/ecommerce-consumer-behavior-analysis-data

\*\*Methodology:\*\*

1. Cleaned and transformed dataset using SQL in BigQuery  
2. Modeled loyalty and satisfaction levels  
3. Exported final dataset to Tableau for visualization

\*\*Key Insights:\*\*

- Ads drive satisfaction, especially when paired with discounts  
- Social media drives impulsive intent among non-loyal younger users  
- Discounts reduce loyalty—engagement post-purchase is key  
- Loyal users respond better to app and email, not social platforms

\*\*Recommendations:\*\*

Segment campaigns by loyalty level and age group. Use email/app ads for loyal users and social content for impulse buyers. Incentivize loyalty post-discount purchase.

\*\*Visualizations:\*\*

Each dashboard chart includes filters for age, gender, loyalty, satisfaction, and marketing channel. Hover for detail. Use KPI cards to compare across cohorts.

\*\*SQL Code Reference:\*\*

-- Data Cleaning  
SELECT  
 SAFE\_CAST(Customer\_ID AS STRING) AS Customer\_ID,  
 SAFE\_CAST(Age AS INT64) AS Age,  
 Gender,  
 Income\_Level,  
 Marital\_Status,  
 Education\_Level,  
 Occupation,  
 Location,  
 Purchase\_Category,  
 SAFE\_CAST(Purchase\_Amount AS FLOAT64) AS Purchase\_Amount,  
 SAFE\_CAST(Frequency\_of\_Purchase AS INT64) AS Frequency\_of\_Purchase,  
 Purchase\_Channel,  
 SAFE\_CAST(Brand\_Loyalty AS INT64) AS Brand\_Loyalty,  
 SAFE\_CAST(Product\_Rating AS INT64) AS Product\_Rating,  
 SAFE\_CAST(Time\_Spent\_on\_Product\_Research AS INT64) AS Time\_Spent\_on\_Product\_Research,  
 Social\_Media\_Influence,  
 Discount\_Sensitivity,  
 SAFE\_CAST(Return\_Rate AS FLOAT64) AS Return\_Rate,  
 SAFE\_CAST(Customer\_Satisfaction AS INT64) AS Customer\_Satisfaction,  
 Engagement\_with\_Ads,  
 Device\_Used\_for\_Shopping,  
 Payment\_Method,  
 SAFE\_CAST(Time\_of\_Purchase AS DATETIME) AS Time\_of\_Purchase,  
 Discount\_Used,  
 Customer\_Loyalty\_Program\_Member,  
 Purchase\_Intent,  
 Shipping\_Preference,  
 Payment\_Frequency,  
 SAFE\_CAST(Time\_to\_Decision AS INT64) AS Time\_to\_Decision  
FROM  
 `project.dataset.raw\_orders`  
WHERE  
 Customer\_ID IS NOT NULL;  
  
-- EDA Queries (Examples)  
SELECT Gender, AVG(Purchase\_Amount) AS AvgSpend FROM `project.dataset.cleaned\_orders` GROUP BY Gender;  
SELECT Social\_Media\_Influence, COUNT(\*) AS Count FROM `project.dataset.cleaned\_orders` GROUP BY Social\_Media\_Influence;  
  
-- Feature Engineering  
SELECT  
 \*,  
 CASE  
 WHEN Brand\_Loyalty >= 7 THEN 'Loyal'  
 ELSE 'Non-Loyal'  
 END AS Loyalty\_Segment,  
 CASE  
 WHEN Customer\_Satisfaction >= 8 THEN 'High Satisfaction'  
 WHEN Customer\_Satisfaction BETWEEN 5 AND 7 THEN 'Moderate Satisfaction'  
 ELSE 'Low Satisfaction'  
 END AS Satisfaction\_Level  
FROM  
 `project.dataset.cleaned\_orders`;

\*\*Terminology:\*\*

Loyalty\_Segment = Binary group: Loyal (Brand\_Loyalty ≥ 7)  
Satisfaction\_Level = Grouped satisfaction (High: 8-10, Moderate: 5-7, Low: <5)

\*\*Appendix:\*\*

Dataset: Synthetic e-commerce behavior data  
Report and Tableau developed July 2025