

Customer and Marketing Insights Analysis

Using Google Analytics E-commerce Data

1. Executive Summary

Objective

This analysis evaluates marketing performance, customer behavior, product performance and conversion funnel efficiency using Google Analytics e-commerce data. The goal is to identify revenue drivers, inefficiencies and optimization opportunities that can support data-driven growth decisions.

Key Findings

- A small number of marketing channels generate a disproportionate share of revenue, indicating strong channel concentration.
- High-value customers represent a minority of users but contribute the majority of total revenue.
- Product revenue is highly skewed, with top-performing products driving most sales.
- Significant drop-offs occur early in the conversion funnel, particularly between sessions and product views.

Business Impact

Targeted optimization across acquisition channels, customer retention and funnel efficiency could result in meaningful revenue uplift without proportional increases in marketing spend.

Figure: funnel conversion

2. Data Sources and Methodology

Data Source

- Google Analytics Sample Dataset
- Tables used: `ga_sessions_2017`
- Data extracted using SQL in Google BigQuery and exported as CSV files.

Datasets Created

- Marketing Performance (traffic source & revenue)
- Customer Behavior (engagement & revenue per customer)
- Product Performance (units sold & revenue)
- Funnel Metrics (sessions → product views → purchases)

Methodology Overview

1. SQL-based aggregation in BigQuery
2. Data validation and analysis in Python (Jupyter Notebook)
3. Exploratory data analysis (EDA)
4. Insight synthesis and strategic recommendations

3. Data Quality and Assumptions

Data Quality Checks

- No missing values detected due to prior SQL aggregation.
- Numeric fields validated for correct data types.
- Zero values retained intentionally as they represent legitimate user behavior.

Key Assumptions

- Revenue values are normalized to standard currency units.
- Outliers were retained to preserve high-value customer and product insights.
- The dataset reflects realistic e-commerce behavior patterns rather than anomalies.

4. Marketing Performance Analysis

Overview

Marketing performance was evaluated across traffic sources, mediums and campaigns to understand revenue contribution and efficiency.

source	medium	total_users	total_sessions	total_transactions	total_revenue	revenue_per_session
		1	1	1	64.85	64.850000
mail.aol.com	referral	1	1	1	64.85	64.850000
dfa	cpm	2318	2728	72	119533.57	43.817291
calendar.google.com	referral	1	2	1	55.24	27.620000
mg.mail.yahoo.com	referral	21	23	3	337.33	14.666522
dealspotr.com	referral	137	156	11	2250.51	14.426346
mail.google.com	referral	751	885	43	12250.64	13.842531
search.myway.com	referral	8	8	1	105.94	13.242500
chat.google.com	referral	4	7	1	74.03	10.575714
l.facebook.com	referral	500	572	27	2717.23	4.750402
(direct)	(none)	173392	189445	4697	716676.81	3.783034

Figure: Revenue per Session by Channel

source	medium	total_users	total_sessions	total_transactions	total_revenue
(direct)	(none)	173392	189445	4697	716676.81
google	organic	158813	170006	1466	144780.07
dfa	cpm	2318	2728	72	119533.57
google	cpc	8230	9264	176	20732.75
mail.google.com	referral	751	885	43	12250.64
l.facebook.com	referral	500	572	27	2717.23
dealspotr.com	referral	137	156	11	2250.51
sites.google.com	referral	1314	1440	16	2011.92
groups.google.com	referral	727	784	36	1731.48
google	cpm	432	496	18	1472.14

Figure: Revenue by Source / Medium

Key Insights

- Certain channels generate high traffic but lower revenue efficiency.
- Other channels deliver fewer sessions but significantly higher revenue per session.
- Revenue-per-session analysis highlights opportunities to reallocate marketing spend toward higher-intent traffic sources.

Business Interpretation

Optimizing budget allocation toward high-efficiency channels can improve ROI without increasing overall acquisition spend.

5.Customer Behavior and Segmentation

Overview

Customer engagement and revenue metrics were analyzed at the individual customer level.

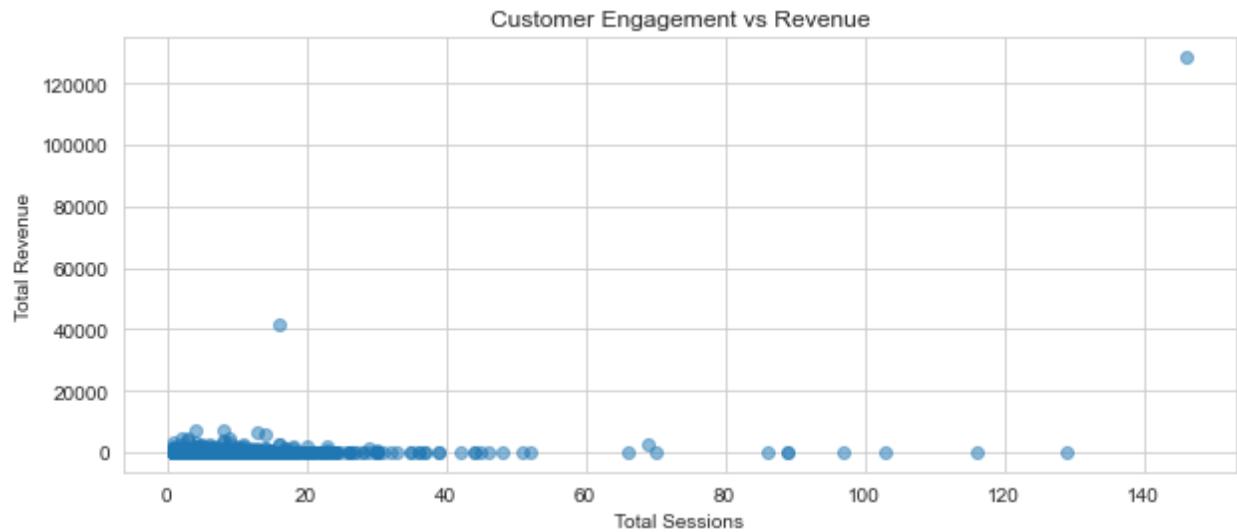


Figure: Engagement vs Revenue scatter plot

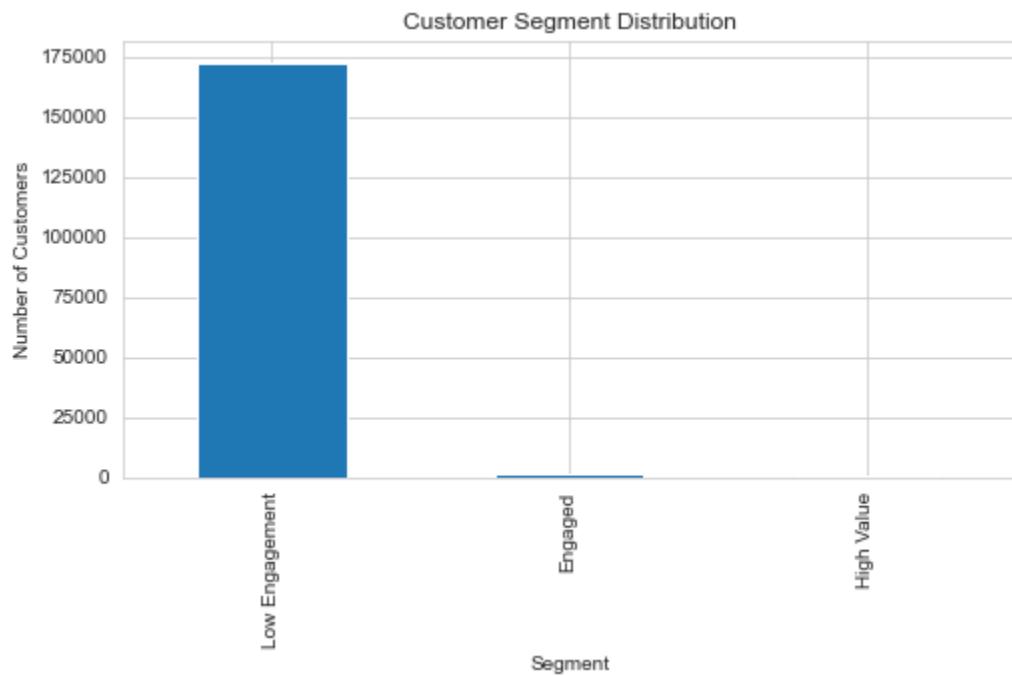


Figure: Customer Segment Distribution

Key Insights

- Customer revenue distribution is heavily right-skewed.
- A small segment of high-value customers contributes the majority of total revenue.
- Higher engagement (sessions, time on site) correlates with increased revenue, though not linearly.

Customer Segments Identified

- High-Value Customers
- Engaged Non-Purchasers
- Low-Engagement Users

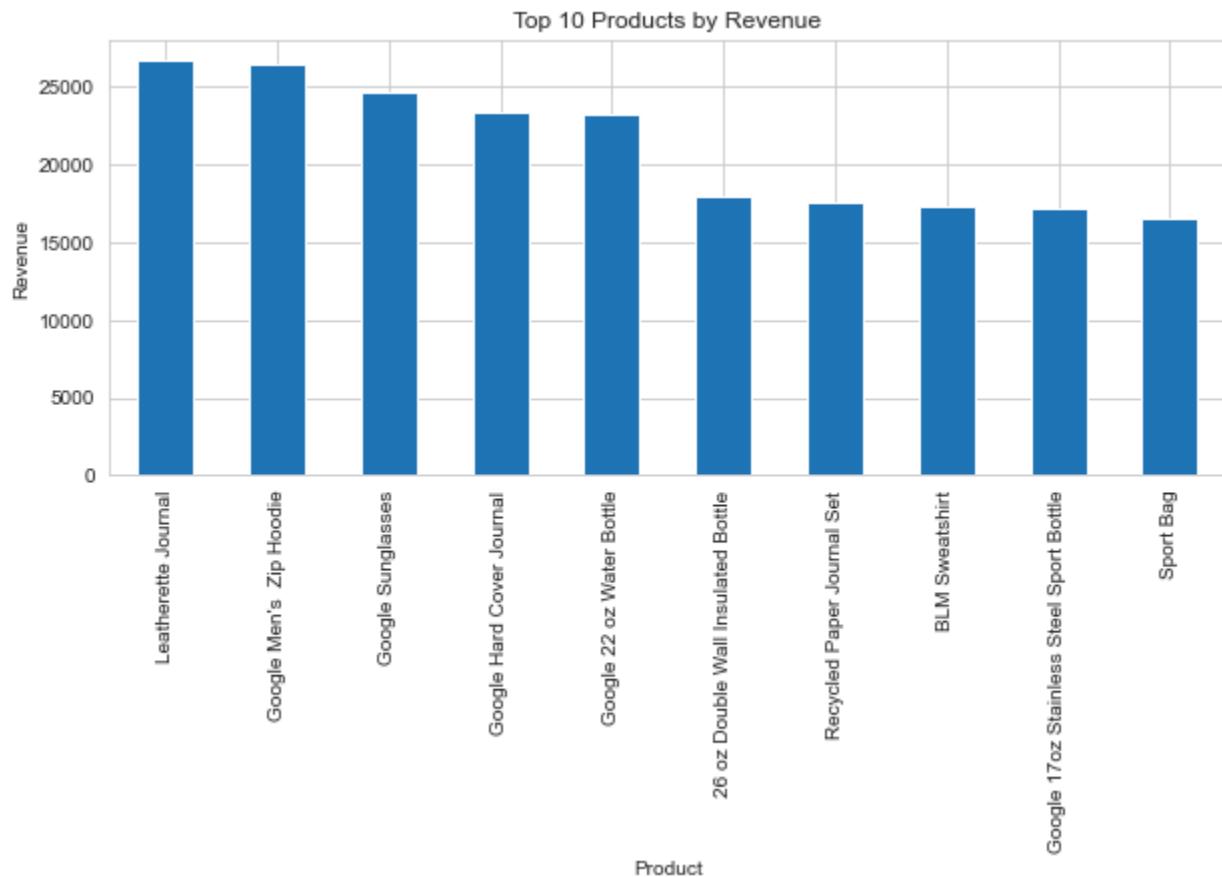
Business Interpretation

Retention and personalization strategies should prioritize high-value and highly engaged customer segments.

6. Product Performance Analysis

Overview

Product-level performance was analyzed to identify top revenue drivers.



Key Insights

Revenue contribution is concentrated among a small subset of products.

Top products represent strong candidates for promotion, bundling and inventory prioritization.

Long-tail products may benefit from improved visibility or targeted campaigns.

7. Conversion Funnel Analysis

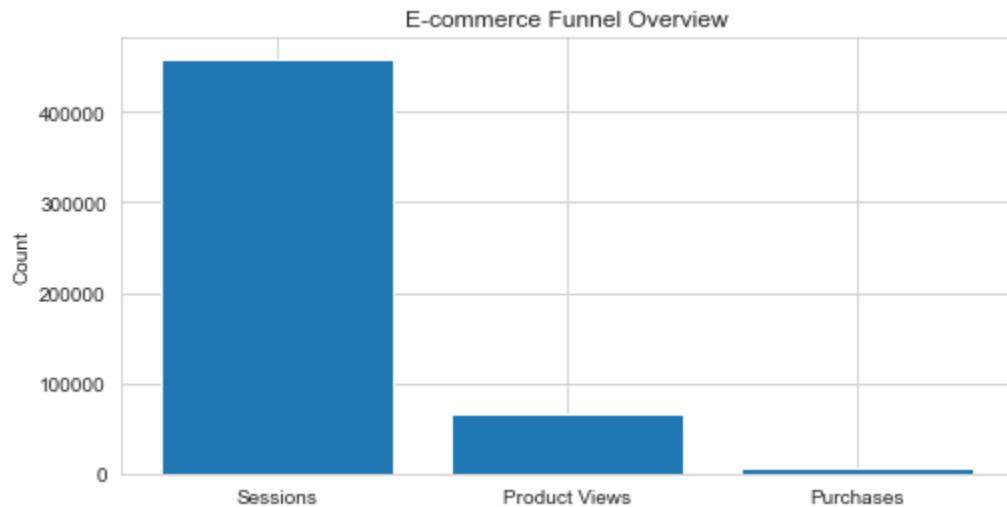


Figure: funnel conversion

Funnel Stages

- Sessions
- Product Views
- Purchases

Key Findings

- Significant drop-off between sessions and product views.
- Moderate conversion from product view to purchase.
- Small improvements at each stage could compound into meaningful revenue growth.

Business Interpretation

Improvements in product discovery, navigation and checkout UX present high-impact optimization opportunities.

8.Strategic Recommendations

Marketing Optimization

- Reallocate budget towards high revenue-per-session channels.
- Test scaling high-performing acquisition sources.

Customer Strategy

- Develop retention and loyalty strategies for high-value customers.
- Use engagement metrics to trigger personalized campaigns.

Product Strategy

- Promote top-performing products through featured placements and bundles.
- Evaluate underperforming products for repositioning or discontinuation.

Funnel Optimization

- Improve homepage and category navigation to increase product views.
- Reduce checkout friction through UX and performance optimization.

9.Conclusion

This analysis demonstrates how combining marketing, customer, product and funnel data enables actionable, revenue-focused decision-making. The insights generated provide a foundation for continuous experimentation, optimization and growth.