

Business Objectives:

The e-commerce company aims to conduct a detailed exploratory analysis using available data to achieve the following goals:

Sales & Customer Analysis

- Assess key performance indicators (KPIs) such as
 - Revenue
 - number of orders
 - average order value (AOV)
 - number of customers (existing/new)
 - Quantity
 - category
- Understand how many customers are acquired every month.
- Measure customer retention on a month-on-month basis.
- Analyze revenue trends from new and existing customers.
- Identify trends and seasonality of sales based on category, location, and time.
- Analyze sales variations on different days of the week.
- Identify frequently purchased products and top-selling products by quantity.

Marketing Spend vs Revenue

- Calculate revenue, marketing spend and percentage contributions.
- Examine the impact of marketing spend on revenue.

Assumptions:

- Revenue and ad spend are measured in US dollars.
Reason: Available Locations are in the United States
- A new customer is defined based on their first recorded transaction.
Reason: The business wanted to identify customer retention, customer

retention information not available.

Data Preparation

1. Download CSV Files (Source: Kaggle):

- OnlineSales Data
 - i. Transaction_Date
 - ii. Transaction_ID
 - iii. Product SKU
 - iv. Product_Description
 - v. Product_Category
 - vi. Quantity
 - vii. Avg_Price
 - viii. Delivery_Charges
 - ix. GST
- Customer Data
 - i. CustomerID
 - ii. Gender
 - iii. Location
- Marketing Spend Data
 - i. Date
 - ii. Offline Spend
 - iii. Online Spend

2. Data Merging and Transformation:

- Merge the customer's gender and location into the sales data using a join based on **CustomerID**.
- Merge the revenue from the sales data into the marketing spend table using a join based on **Transaction_Date**.
- Change gender from M -> Male & F -> Female
- Calculated Revenue in Online Sales Table

- Identified First-time purchasers by using Min(Transaction_Date)
- Identified Customer type by comparing CustomerID transaction date with Min(Transaction_Date) if it matches then it is “New Customer” otherwise, it is “Returning Customer”
- Checked duplicates, missing values, formatting, and consistency when everything was approved then connected the data with Looker Studio
- Calculated ROAS
- Calculated % of revenue utilising in MarketingSpend
- Calculated retention %

E-commerce Business Insight Captured

Sales Insight

- Yearly Overview of Data
 - Total Revenue: \$4.68M
 - Average Order Value: \$88.38
 - Customer: 1468
 - Total Order: 25.1K
 - Quantity Sold: 238K
 - Retention%: 50%
 - Total Marketing Spend: \$1.73M
 - Total Online Spend: \$695.65K
 - Total Online Spend: \$1.04M
 - ROAS: 3
- Top 5 categories by revenue and order
 - Nest- USA
 - Apparel
 - Nest
 - Office
 - Drinkware
- Top 5 products by Quantity Sold

- Nest- USA
 - Nest Cam Outdoor Security Camera - USA
 - Nest Learning Thermostat 3rd Gen-USA - Stainless Steel
 - Nest Cam Indoor Security Camera - USA
 - Nest Protect Smoke + CO White Battery Alarm-USA
 - Nest Protect Smoke + CO White Wired Alarm-USA

- Apparel
 - Google Twill Cap
 - Google Men's 100% Cotton Short Sleeve Hero Tee Black
 - Google Men's 100% Cotton Short Sleeve Hero Tee White
 - YouTube Twill Cap
 - Google Men's Vintage Badge Tee Black

- Nest
 - Nest Thermostat E - USA
 - Nest Cam IQ - USA
 - Nest Secure Alarm System Starter Pack - USA
 - Nest Cam IQ Outdoor - USA (Preorder)
 - Nest Detect - USA

- Office
 - Maze Pen
 - Google Metallic Notebook Set
 - Google Laptop and Cell Phone Stickers
 - Recycled Paper Journal Set
 - Ballpoint LED Light Pen

- Drinkware
 - Google 22 oz Water Bottle
 - Foam Can and Bottle Cooler
 - Google 17oz Stainless Steel Sport Bottle
 - 26 oz Double Wall Insulated Bottle
 - Red Shine 15 oz Mug

- Females contribute 63.2% of total revenue whereas Males contribute 36.8% of the total revenue
- California generates the maximum revenue whereas Washinton DC generates the minimum revenue
- Acquiring new customer trends over a month is declining, whereas the retention % trend over a month is increasing, which means Returning customers is rising over the month. This also increases revenue by returning customers compared to new customers over time.
- Sales Started to incline from Wednesday and started to decline from Saturday

Marketing Spend vs Revenue Insight

- Yearly Overview of Marketing Data
 - Total Revenue: \$4.68M
 - Total Marketing Spend: \$1.73M
 - Total Online Spend: \$695.65K
 - Total Online Spend: \$1.04M
 - ROAS: 3
- Moderate Positive Correlation between marketing spend & revenue, but it is not a strong correlation. There are a few data points significantly above or below the trend line, indicating months where spend and revenue did not align closely.
- ROAS is also dropping over time
- % of revenue spent in marketing also fluctuates between 37% to 60%

Recommendations

- Reallocate the marketing budget towards high-performing channels and optimize for cost-effective ads to improve marketing spend allocation.
- Focus on targeted marketing campaigns and explore new customer acquisition opportunities to increase new customer acquisition.

- First, identify and then allocate the budget to acquiring new customers and returning customers.
- Invest in retaining high-value returning customers by offering tailored rewards to maximize revenue from them using personalized communication through email marketing/sms..
- Implement weekend-specific promotions and targeted campaigns to drive traffic and boost weekend sales.
- Replicate successful strategies from high-revenue regions like California and apply them to other areas with untapped potential.
- Focus on promoting top-performing categories
- Monitor and adjust marketing spending regularly to ensure it stays aligned with revenue goals and maintains efficiency.