Project Title: Analyzing Sales Data

Project Overview

Objective: The objective of this project is to analyze e-commerce sales data to uncover insights about sales trends, product performance, and customer behavior. The analysis aims to provide actionable insights for improving sales strategies and customer engagement.

Project Goals:

* Analyzing sales trends over time.
* Identifying top-selling products.
* Understanding customer purchasing behavior.
* Segmenting customers based on purchase history.

Tools and Technologies:

* Google BigQuery
* SQL
* Data Visualization Tools (Power BI)
* Google Colab (for additional data processing and visualization)

Dataset Description: The dataset contains the following tables:

1. Transactions
   * Sales transactions over a period.
   * Columns: TransactionID, ProductID, CustomerID, StoreID, Date, Quantity, TotalAmount.
2. Stores
   * Details about stores.
   * Columns: StoreID, StoreName, Location.
3. Salespersons
   * Information about salespersons.
   * Columns: SalespersonID, SalespersonName, StoreID.
4. Products
   * Information about products.
   * Columns: ProductID, ProductName, Category, Price.
5. Customers
   * Customer details.
   * Columns: CustomerID, CustomerName, Location, Age, Gender.

Data Source: The dataset was created internally for this project.

Project Steps

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1. Data Import and Preparation

* Step 1.1: Import the dataset into Google BigQuery.
  + Create a new dataset in BigQuery.
  + Upload the CSV files to BigQuery and create tables.
* Step 1.2: Clean and preprocess the data.
  + Remove duplicate records.
  + Handle missing values.
  + Ensure correct data types for analysis.

2. Exploratory Data Analysis (EDA)

* Step 2.1: Analyze sales trends over time.
  + Visualize total revenue by month/year using line charts.
* Step 2.2: Identify best-selling products.
  + Determine top 10 products by total revenue.
  + Visualize using bar charts.
* Step 2.3: Analyze revenue by product category.
  + Calculate total revenue by category.
  + Visualize using pie charts or bar charts.

3. Key Metrics Calculation

* Step 3.1: Calculate average order value.
  + Query: Calculate the average revenue per transaction.
* Step 3.2: Calculate customer retention rate.
  + Analyze the percentage of returning customers.
* Step 3.3: Calculate customer lifetime value.
  + Estimate the total revenue contributed by each customer.

4. Data Visualization

* Step 4.1: Create interactive dashboards.
  + Use Power BI to visualize key metrics and trends.
* Step 4.2: Share the dashboard with stakeholders.
  + Provide access to dashboards for easy viewing and analysis.

5. Insights and Recommendations

* Step 5.1: Summarize key findings.
  + Provide insights into sales performance, customer behavior, and product trends.
* Step 5.2: Provide actionable recommendations.
  + Recommend strategies to enhance sales, improve customer engagement, and optimize inventory management.

Conclusion

Project Summary and Business Insights

* Summary:
  + Explored and cleaned transactional data to ensure accuracy.
  + Analyzed sales performance across stores, products, and customer segments.
  + Derived insights into customer spending patterns and retention metrics.
* Recommendations:
  + Implement automated data validation to maintain data quality.
  + Focus marketing efforts on top-selling products and high-performing stores.
  + Develop personalized customer retention strategies based on purchase behavior.
  + Enhance salesperson performance through targeted training and recognition.
  + Optimize inventory management based on sales trends and seasonal fluctuations.