# **📊 Project Documentation: E-Commerce SQL Analytics (BigQuery)**

## **📝 Overview**

This project demonstrates how structured SQL analysis can be applied to a real-world e-commerce dataset using **Google BigQuery**. The goal is to simulate the kind of exploratory and reporting tasks a data analyst or business intelligence professional would perform when working with retail data.

The entire project is focused on answering **key business questions** using SQL, such as:

* How much revenue is being generated month over month?
* Which products are driving the most revenue and sales?
* Are certain products being returned more often than others?
* Who are our most valuable customers?

The results help provide business insights into sales performance, customer behavior, and product issues.

## **🎯 Project Goals**

* Practice advanced SQL using a realistic dataset
* Simulate a business use case with real questions and answers
* Cleanly document each query and its purpose
* Showcase skills for portfolio or job applications

## **📦 Dataset Details**

* **Source:** bigquery-public-data.thelook\_ecommerce
* **Hosted On:** Google Cloud Public Datasets (via BigQuery)
* **Dataset Description:** The Look eCommerce dataset includes anonymized sales and customer data for a fictional online store. It contains information about orders, order items, users, products, inventory, and returns.

### **Tables Used:**

| **Table** | **Description** |
| --- | --- |
| orders | One row per order, includes order status and timestamps |
| order\_items | Items within each order, including sale\_price and returns |
| products | Product catalog, with product names and categories |
| users | Customer demographic and sign-up data |

## **📈 Business Questions + Query Approach**

### **1. Monthly Revenue Trend**

* **Goal:** Understand how revenue changes month-to-month
* **Method:** Use order\_items to sum sale\_price by created\_at month
* **Use case:** Helps stakeholders track performance over time

### **2. Top-Selling Products**

* **Goal:** Identify which products are generating the most revenue
* **Method:** Join order\_items with products and sum revenue and orders
* **Use case:** Useful for marketing, inventory planning, and highlighting bestsellers

### **3. Product Return Analysis**

* **Goal:** See which products are returned the most
* **Method:** Count how many order items have a non-null returned\_at timestamp
* **Use case:** Can indicate product quality issues or mismatch with customer expectations

### **4. Customer Lifetime Value (LTV)**

* **Goal:** Find out which customers bring the most revenue
* **Method:** Sum all purchases (sale\_price) per user\_id
* **Use case:** Helps define VIP customers for loyalty programs and targeted marketing

## **🛠️ Tools & Technologies**

| **Tool** | **Purpose** |
| --- | --- |
| **SQL** | Data querying and transformation |
| **BigQuery** | Managed data warehouse & query execution |
| **GitHub** | Version control and project sharing |
| **Looker Studio / Charts** | Optional visualization layer |

## **📁 Folder Structure**

bash

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ecommerce-sql-analysis/

├── queries/ # Main SQL scripts answering business questions

├── charts/ # Optional folder for charts or screenshots

├── docs/ # Optional markdown documentation

├── README.md # Project summary and instructions

├── .gitignore # Git exclusions

└── LICENSE # Open source license (MIT)