Sales & Revenue Performance Analysis – Documentation

1. Project Overview

This project analyzes the sales, revenue, customer behavior, marketing efficiency, and product performance of an eCommerce business using SQL, Python, and Power BI.

The goal is to:

- Understand overall business performance
- Identify growth opportunities
- Analyze marketing ROI
- Study customer behavior patterns
- Recommend insights for decision-making

This analysis uses a relational database with 9 structured tables including customers, products, orders, payments, campaigns, and inventory logs.

2. Dataset Description

Table Name	Description
customers	Customer demographics & segments
orders	Order-level details, revenue, payment method
order_items	Product-level sales
products	Product catalog with price, cost & category
categories	Product categories
payments	Transaction details
inventory_log	Stock movement (sale, return, restock)
marketing_campaigns	Marketing spend & revenue
reviews	Product ratings & customer feedback

Total records analyzed:

- Customers: 1,000
- Orders: 1,500
- Order Items: 4,500
- Products: 500
- Payments: 1,500
- Marketing Campaigns: 50
- Inventory Logs: 3,000

3. Tools & Technologies

- SQL (MySQL): Data extraction, joins, aggregation, window functions
- Python: Pandas, Matplotlib for EDA and visualization
- Jupyter Notebook: Exploration & analysis
- Power BI: Dashboard creation

4. Business Questions (KPIs)

The analysis answers:

Sales Performance

- What are the monthly & quarterly revenue trends?
- What is the Average Order Value (AOV)?
- Which products and categories generate the most revenue?

Marketing Performance

- What is the ROI for each marketing channel?
- Which campaigns deliver the highest profit?

Customer Analytics

- Which customer segments purchase the most?
- Who are the top repeat customers?
- What payment methods are preferred?

Product & Inventory

- Which products sell the most quantity?
- How does stock move over time?
- Which brands contribute the most to revenue?

5. Data Cleaning & Preprocessing

Performed in Python:

Datatype Fixes

Converted to datetime:

- order_date
- payment_date
- signup_date
- campaign start & end date
- review_date
- inventory_log change_date

Null & Duplicate Checks

- No duplicates found in primary tables
- Null values handled safely
- Outliers reviewed for unit price, quantity, discount

6. Key Analysis & Results

1. Revenue & Sales Trends

- Monthly revenue shows consistent growth with seasonal highs.
- Q3 (July–Sept 2025) shows peak revenue.
- Cumulative revenue crossed ₹59,24,677 by Nov 2025.
- Average Order Value remains between ₹3,800–₹4,600.

Insight:
Increase marketing & stock planning for Q3 where demand spikes.

2. Product & Category Performance

Top Revenue-Generating Products

- Western Harum Elite
- Quia Consequuntur Mini
- Repellat Impedit Pro

Best Categories

1. Electronics – ₹23,38,558
2. Clothing – ₹19,20,356
3. Books – ₹18,21,208

Insight:
Electronics and Clothing must receive higher inventory priority.

3. Customer Insights

Customer Segments

- Regular: 57%
- New: 21%
- Premium: 14%
- VIP: 6%

Frequent Buyers : 447 customers placed 2+ orders.

Insight:
Introduce loyalty program for Regular customers → push them to Premium.

4. Payment Method Distribution

Top used methods:

- Net Banking (19.4%)
- UPI (17.87%)
- COD (16.8%)

Insight:
Offer incentives (cashback) for UPI to drive more conversions.

5. Marketing ROI Analysis

ROI by Channel:

Channel	ROI
Email	244.61%
Google Ads	172.10%
Influencer	148.92%
Affiliate	107.30%
Other	103.46%
Social Media	94.88%

Insights:

- Email marketing delivers highest value → Expand personalised email campaigns.
- Social media ROI lowest → Optimize targeting or reduce spend.

6. Inventory & Stock Movement

Using SQL window functions:

- Real-time stock tracking created using SUM() OVER().
- Identified fast-moving SKUs and products needing restocking.
- Returned items captured accurately.

Insight:

Automate low-stock alerts based on cumulative stock.

7. Final Recommendations

Sales Strategy

- Increase stock for Electronics & Clothing in Q3.
- Push high AOV products with bundling offers.

Marketing

- Focus heavily on Email & Google Ads.
- Reduce social media spend by 10–15%.

Customer Retention

- Launch loyalty program for Regular customers.
- Personalized recommendations via email.

Product & Inventory

- Track low-stock SKUs weekly.
- Improve forecasting using past Q3 spikes.

9. Conclusion

This project demonstrates end-to-end data analytics skills across SQL, Python, data visualization, dashboard design, and business insight generation.
It showcases abilities required for roles in:

- Data Analyst
- Business Analyst
- Marketing Analyst
- Product Analyst
- E-commerce Analyst