E-Commerce Product & Orders Analysis Project Report

1. PROJECT IMPORTANCE & BUSINESS CONTEXT

E-commerce businesses operate in highly competitive markets where decisions must be driven by data. This project focuses on transforming raw order data into meaningful insights that support strategic and operational decision-making.

2. Project Objectives

- Analyze total sales and revenue performance
- Identify top-performing and low-performing products
- Evaluate region-wise sales contribution
- Understand customer purchasing behavior
- Build interactive dashboards for decision-makers

3. Tools & Technologies Used

SQL (MySQL): Data querying, joins, aggregations, KPI calculations

Power BI: Interactive dashboards and visual analytics

Excel / CSV: Data storage and preparation

DAX: Calculated measures in Power BI

4. REAL-WORLD BUSINESS SCENARIO

Stakeholders such as executives, marketing teams, and regional managers require quick and accurate insights into sales performance, customer behavior, and product demand. This project simulates a real analyst workflow to address these needs.

5.Data Cleaning & Preparation

- Handled missing values in price, quantity, and region fields
- Ensured positive numeric values for price and quantity
- Removed duplicate records
- Validated date formats and data types
- Created Total Order Value = Price × Quantity

6.DATA MODEL EXPLANATION

The Orders table acts as the fact table containing transactional metrics, while Customers and Products serve as dimension tables. This star-schema design improves query performance and simplifies dashboard relationships in Power BI.

7.KPI LOGIC & METRICS

- Total Orders reflect business activity

• Total Revenue measures financial performance

• Average Order Value provides insight into customer purchasing behavior.

8.SQL ANALYSIS APPROACH

SQL was used to aggregate transactional data into region-wise, product-wise, and customer-level summaries, enabling efficient analysis of large datasets.

9.POWER BI DASHBOARD DESIGN

- KPI cards provide executive summaries
- bar charts compare product performance
- pie charts visualize regional contribution
- tables support detailed analysis
- slicers enable interactive exploration.

10.KEY INSIGHTS

• A small set of products generates a majority of revenue
• Regional performance varies significantly
• High-value customers drive disproportionate sales volume

11.BUSINESS RECOMMENDATIONS

- Focus marketing on top-performing products
- strengthen loyalty programs for valuable customers
- optimize underperforming regions and products.

12.REAL-WORLD IMPACT

- Implementing these insights can improve revenue growth
- customer retention
- operational efficiency.

13.CONCLUSION

- This project demonstrates end-to-end analytical capability using SQL and Power BI
- converting data into actionable business intelligence.

14.FUTURE ENHANCEMENTS

• Advanced analytics such as customer segmentation

• sales forecasting

• profit analysis, and trend analysis can further enhance business decision-making.