

E-Commerce Sales Performance Analysis Using SQL & Power BI

Mini Project Report

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Abstract :

This project focuses on analyzing e-commerce sales data using SQL and Power BI. The dataset contains transactional sales records including invoice dates, products, quantities, and revenue.

The objective of the project is to clean raw data, perform time-based sales analysis, identify revenue trends, best and worst performing months, and present business insights using interactive dashboards.

SQL was used for data cleaning, transformation, and aggregation, while Power BI was used for visualization and dashboard creation.

Objective :

- To clean and prepare raw e-commerce sales data using SQL
- To analyze monthly revenue trends
- To identify highest and lowest revenue months
- To calculate month-over-month revenue growth
- To design an interactive dashboard using Power BI
- To derive meaningful business insights

Dataset Description :

- Source : Kaggle
- File Type : CSV
- Total Rows : 541,910
- Total Columns : 8
- Key Columns:
 - InvoiceNo
 - StockCode
 - Description
 - Quantity
 - InvoiceDate
 - UnitPrice
 - CustomerID
 - Country

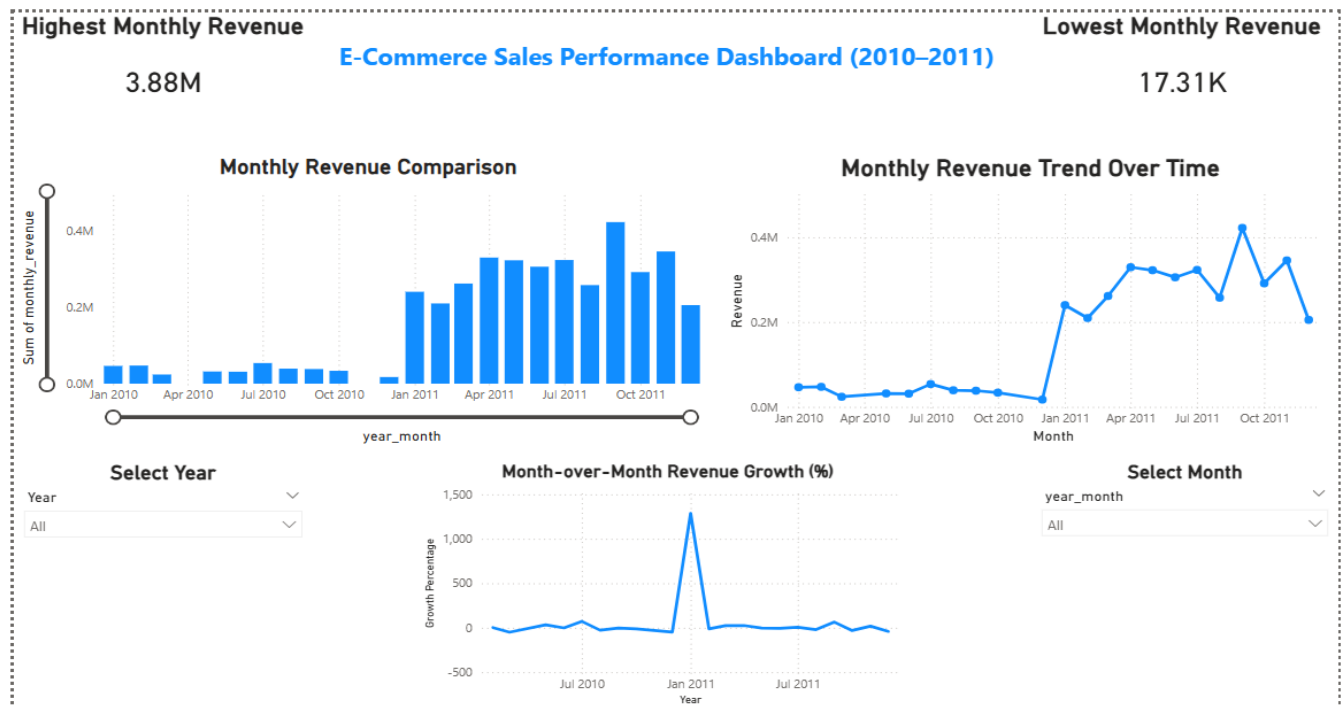
Tools & Technologies :

- SQLite – Data cleaning and SQL analysis
- DB Browser for SQLite – Query execution
- Power BI Desktop – Data visualization
- Excel – Initial data inspection

Methodology :

1. Dataset downloaded from Kaggle
2. Raw data imported into SQLite
3. Data cleaning performed:
 - Removed null values
 - Fixed date formats
 - Created clean tables
4. Monthly revenue aggregation using SQL
5. Best and worst months identified
6. Revenue growth analysis created
7. Cleaned data imported into Power BI
8. Dashboard created with KPIs, charts, and slicers
9. Business insights derived

Dashboard



Insights

📌 Business Insights Summary

- Revenue remained consistently low throughout 2010, indicating early-stage business activity.
- A significant revenue increase is observed from early 2011, suggesting expansion or improved sales strategy.
- Peak revenue of 3.88M occurred during 2011, reflecting strong market performance.
- The lowest revenue month (17.31K) highlights initial underperformance.
- A sharp month-over-month growth spike in early 2011 may indicate promotions, seasonal demand, or market expansion.

📌 Business Recommendations

- Analyze strategies implemented in early 2011 and replicate them.
- Investigate low-performing months to reduce revenue dips.
- Plan targeted campaigns during high-growth periods.
- Monitor monthly growth trends to detect sudden changes early.

Key Insights :

- ✓ Revenue shows a strong **upward** trend in 2011
- ✓ Certain months consistently outperform others
- ✓ Seasonal demand **impacts** sales significantly
- ✓ **Month-over-month growth** highlights business opportunities

Conclusion :

This project demonstrates the complete data analytics workflow using SQL and Power BI. Raw transactional data was transformed into clean, structured insights that support business decision-making.

Interactive dashboards make it easy for stakeholders to understand sales performance and trends.

Future Scope :

- ✓ Customer segmentation analysis
- ✓ Profit and margin analysis
- ✓ Forecasting future sales
- ✓ Publishing dashboards to Power BI Service