



# ***E-Commerce Sales Analysis Dashboard***

(Power BI)

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## ★ Project Overview

This project presents a comprehensive **E-Commerce Sales Analysis Dashboard** built using **SQL for data analysis** and **Power BI for visualization**.

The dashboard provides executive-level insights into **sales performance, product intelligence, and customer behavior**, enabling data-driven decision-making for revenue growth and optimization.

The project follows an end-to-end BI workflow — from data modeling and metric validation to advanced DAX analytics and dashboard UX design.

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## 🎯 Business Objectives

- ★ Track overall **sales performance and revenue trends**
  - ★ Identify **top-performing products and categories**
  - ★ Analyze **customer revenue concentration and high-value segments**
  - ★ Understand **regional sales distribution**
  - ★ Support strategic decisions around product focus and customer retention
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## 📁 Dataset Description

The analysis is based on the following tables:

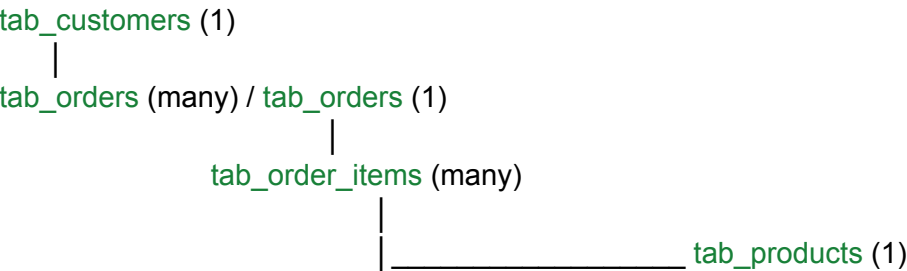
Table	Description
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tab_customers	Customer demographics and region
tab_orders	Order details and order status
tab_order_items	Line-item level sales data
tab_products	Product catalog and categories

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## Data Model Design

The model follows a **clean star-schema structure**:



### Model Best Practices Applied

- ❖ Single-direction relationships
- ❖ No bidirectional filters
- ❖ Centralized customer and product dimensions
- ❖ Line-item level revenue calculation
- ❖ Optimized for performance and filter integrity

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## Key Metrics & DAX Measures

- ❖ Total Revenue
- ❖ Total Orders
- ❖ Total Customers
- ❖ Average Order Value (AOV)
- ❖ Total Quantity Sold
- ❖ Average Revenue per Customer
- ❖ Product & Customer Ranking (RANKX)
- ❖ Cumulative Revenue & Pareto Analysis (80/20 rule)

## Advanced DAX functions used include:

- ❖ SUMX
  - ❖ RANKX
  - ❖ CALCULATE
  - ❖ FILTER
  - ❖ DIVIDE
  - ❖ Context transition techniques
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## Dashboard Pages

### 1 Executive Sales Overview

- ❖ Revenue, Orders, Customers, AOV
- ❖ Revenue Trend Over Time
- ❖ Revenue by Region
- ❖ Revenue by Category
- ❖ Order Status Distribution
- ❖ Interactive slicer panel (bookmark-based)

### 2 Product Intelligence

- ❖ Top 5 Products by Revenue
- ❖ Top 5 Products by Quantity Sold
- ❖ Category Revenue Contribution
- ❖ Product Revenue Concentration (Pareto Analysis)
- ❖ Identification of high-impact and low-impact SKUs

### 3 Customer Intelligence

- ❖ Average Revenue per Customer
  - ❖ Revenue by Region & Gender
  - ❖ Top 5 Customers by Revenue
  - ❖ Customer Revenue Pareto (80/20 analysis)
  - ❖ Revenue dependency insights
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## Dashboard UX & Interactivity

- ★ Bookmark-controlled slicer panel (Open / Close)
  - ★ Synced slicers across all pages
  - ★ Clean executive layout
  - ★ Consistent color theme
  - ★ Proper sorting and formatting
  - ★ Interactive filtering across all visuals
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## Key Business Insights

- ★ Revenue is highly concentrated among a small subset of products and customers.
  - ★ Certain regions significantly outperform others in total sales.
  - ★ High-volume products do not always generate high revenue.
  - ★ A small group of customers contributes a disproportionately large share of revenue.
  - ★ Product and customer Pareto analysis highlights dependency risk and optimization opportunities.
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## Business Recommendations

- ★ Focus retention efforts on high-value customers to stabilize revenue.
  - ★ Optimize pricing and promotions for low-revenue high-volume products.
  - ★ Rationalize low-impact SKUs with minimal revenue contribution.
  - ★ Strengthen marketing and logistics strategies in high-performing regions.
  - ★ Use Pareto insights to guide inventory and assortment planning.
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## Tools & Technologies Used

- ★ SQL (Data Analysis & Validation)
  - ★ Power BI Desktop
  - ★ DAX (Advanced Analytics & Ranking)
  - ★ Data Modeling (Star Schema)
  - ★ Business Intelligence & Data Visualization
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## Project Structure

```
E-Commerce-Sales-PowerBI/
|
|— data/
|   |— tab_customers.csv
|   |— tab_orders.csv
|   |— tab_order_items.csv
|   |— tab_products.csv
|
|— dashboard/
|   |— ECommerce_Sales_Analysis.pbix
|
|— template/
|   |— ECommerce_Sales_Analysis.pbit
|
|— report/
|   |— ECommerce_Sales_Analysis_Dashboard.pdf
|
|— README.md
```

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## Portfolio Value

This project demonstrates:


- ★ End-to-end BI development
- ★ Strong data modeling fundamentals
- ★ Advanced DAX proficiency
- ★ Business-driven analytical thinking
- ★ Executive-ready dashboard design
- ★ Real-world decision support capability

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