

Online Retail Sales Analysis | Power BI Project

Project Overview

This project analyzes online retail sales data from January to August to evaluate business performance, identify sales trends, and uncover actionable insights related to customers, products, and sales channels. The objective is to support data-driven decision-making through interactive and well-designed Power BI dashboards.

Business Context

The company operates an online retail platform selling:

- Electronics
- Clothing
- Home Appliances

Sales are conducted through two channels:

- Website
- Mobile Application

Customers are individual consumers located in different cities.

Dataset Description

The dataset consists of a clean star schema model:

- **Fact Table:** Sales (500 transactions)
- **Dimension Tables:** Customers, Products, Calendar
- **Time Period:** January to August

The data was intentionally designed to include hidden patterns and variations to encourage analytical thinking and insight discovery.

Data Preparation

Data cleaning and transformation were performed using **Power Query**, including:

- Removing duplicates and blank values

- Standardizing data types
- Cleaning text fields (City, Category, Channel)
- Optimizing the model by removing unnecessary columns

Data Modeling

A **star schema** data model was implemented:

- Customers → Sales
- Products → Sales
- Calendar → Sales

The Calendar table was marked as a Date Table to enable accurate time intelligence calculations.

DAX Measures

Key business metrics were created using DAX, including:

- Total Sales
- Total Orders
- Total Quantity
- Quarter -over- Quarter Growth

All calculations were implemented using measures to ensure better performance and flexibility.

Dashboard Design

The dashboard is structured into multiple pages:

1. **Executive Overview** – High-level KPIs and sales trends
2. **Sales Analysis** – Performance by city, category, and sales channel
3. **Product & Customer Insights** – Top products, top customers, and profitability analysis

The design follows visualization best practices with a focus on clarity, consistency, and usability.

Key Insights

- The Mobile App generates fewer orders but a higher average order value compared to the Website
- Electronics contribute the highest sales volume but not necessarily the highest profitability

- Sales performance varies significantly across cities, indicating opportunities for targeted marketing

Business Recommendations

- Increase marketing investment in high-performing cities
- Optimize pricing or cost structure for low-profit product categories
- Promote mobile app usage through exclusive offers

Tools & Skills Used

- Power BI Desktop
- Power Query (Data Cleaning & Transformation)
- DAX (Measures & Time Intelligence)
- Data Modeling (Star Schema)
- Dashboard Design & Performance Optimization