Retail Sales Analysis Using Power BI

Introduction

The purpose of this project is to analyze retail sales data and uncover meaningful insights using Power BI. By applying data cleaning techniques, creating calculated fields, and building interactive dashboards, this analysis supports better understanding of sales patterns, customer behavior, product performance, and regional trends.

Dataset Overview

The dataset consists of customer orders from a retail store, containing:

- Order details (Order ID, Order Date, Ship Date)
- Customer information (Customer Name, Segment, Region)
- Product information (Category, Sub-Category, Product Name)
- Geographic fields (City, State, Postal Code)
- Sales amount

This dataset enables multi-dimensional analysis across time, location, product category, and customer segments.

Data Cleaning & Preparation

Data cleaning was performed in **Power Query** to ensure accuracy and consistency.
Steps completed:

Data Type Corrections

- Converted **Order Date** and **Ship Date** into **Date** data type.
- Ensured **Sales** is in Decimal format.
- Corrected Postal Code to Whole Number.

Removing Null Values

- Removed any blank rows and missing values to maintain data reliability.

Measures (DAX Calculations)

The following DAX measures were created:

- **Total Sales = SUM(Sales)**
- **Total Orders = DISTINCTCOUNT(Order ID)**
- **Average Sales per Order**

These measures are used across KPI cards and visualizations.

Dashboard Development

An interactive dashboard was designed using charts, slicers, and KPI tiles.
Key components:

- ➢ **KPI Cards**

- **Total Sales:** 2.26M
- **Total Orders:** 5K

These provide a quick high-level summary of business performance.

- ➢ **Visualizations**

Sales by Product Category

Technology leads in sales, followed by Furniture and Office Supplies.
This shows strong customer interest in tech-related items.

Sales by Region

The West Region generates the highest revenue, with strong performance also in East and Central.
South is the lowest-performing region.

Sales by Customer Segment

Consumer segment dominates sales at over 1M, followed by Corporate and Home Office.
This indicates that individual customers drive the majority of revenue.

Top Performing Sub-Categories

Phones, Chairs, and Storage are the best-performing sub-categories, each achieving high total sales.
Bookcases and Copiers are lower-performing.

Monthly Sales Trend

The trend shows a gradual decline from early 2016 to mid-2018, with some peak months at the beginning.
This helps identify seasonal patterns and possible demand drops.

Slicers and Interactivity

To enhance user experience, slicers were added for:

- YearMonth
- Region
- Category

These allow users to filter the dashboard and explore sales behavior across different dimensions.

Key Insights & Conclusions

- **Technology products** are the strongest revenue generators.
- **Consumer segment** contributes the majority of total sales.
- **West region** is the top-performing geographic area.
- **Phones and Chairs** are the best-selling sub-categories.
- Sales show a **gradual downward trend** over time, suggesting seasonality or reduced market demand.
- Regional and category-level differences show opportunities for targeted strategies.

Final Conclusion

The Power BI dashboard successfully transforms raw retail data into meaningful business insights. Through effective use of data cleaning, date intelligence, interactive filtering, and visual storytelling, this project demonstrates a complete end-to-end analytics workflow.
The insights can help retail businesses optimize product planning, customer targeting, and region-specific strategies.

Final Dashboard