

Business Intelligence Report

Sales Performance Analysis Dashboard Using Power BI

1. Introduction

This report presents an interactive Sales Performance Dashboard developed using Power BI. The dashboard provides a comprehensive analysis of e-commerce sales, profit margins, customer distribution, and category performance based on the DataCo Smart Supply Chain dataset. The objective of this project is to demonstrate the use of Business Intelligence (BI) techniques — including data modeling, DAX calculations, and visualization design — to support decision-making and highlight key sales insights across years, markets, and products.

Main Goal: Understand overall business health, revenue growth, and trends

The project's main objectives include:

- To measure total sales, profits, and orders over time.
- To identify key profit-generating categories, countries, and years.
- To evaluate the average order value (AOV) trend across months.
- To analyze category-level contribution to total sales and profit margins.
- To support data-driven decisions through interactive visualizations and filters.

These questions focus on overall revenue, growth, and sales trends.

1. What is the total sales revenue, profit, and number of orders this year?
2. How have monthly sales and profit changed over time?
3. Which months or quarters achieved the highest sales?
4. What is the average order value (AOV) and how has it evolved?
5. Which sales channels or departments contribute the most to revenue?
6. What is the profit margin (%) across all categories?
7. Which countries or regions generate the highest sales?

2. Data Description

A DataSet of Supply Chains used by the company DataCo Global was used for the analysis. Dataset of Supply Chain , which allows the use of Machine Learning Algorithms and R Software. Areas of important registered activities : Provisioning, Production , Sales , Commercial Distribution. It also allows the correlation of Structured Data with Unstructured Data for knowledge generation.

Dataset link : <https://data.mendeley.com/datasets/8gx2fvg2k6/5>

This is the dataset of Supply Chains used by the company DataaCo Global which includes a collection of their products sold, financial details(profit, loss, total sales etc.), Shipping details, and customer details such as sales, demographics, and transaction details. The data spans to 91 MB engulfing details of 180,519 customers spanning to 53 columns related to Clothing, Sports, and Electronic Supplies.

It contains structured data related to sales transactions, customers, products, and delivery performance.

Key Tables:

Table	Description
Orders	Transactional data: sales, profit, discounts, and shipping dates
Products	Product-level data: name, category, market, price
Customers	Customer information: location, segment, and region
Date	Custom date dimension for time-based analysis

3. Data Preparation

Extract: Imported sales data from CSV/Excel into Power BI using *Get Data*.

Transform (Power Query Editor):

- Removed duplicates and missing values
- Formatted date and currency fields
- Created calculated columns for Year, Month, and Delivery Delay (Days)
- Implemented a **Star Schema** with Orders as the Fact table and three-dimension tables (Customers, Products, Date)

Load: Cleaned dataset was loaded into the Power BI model.

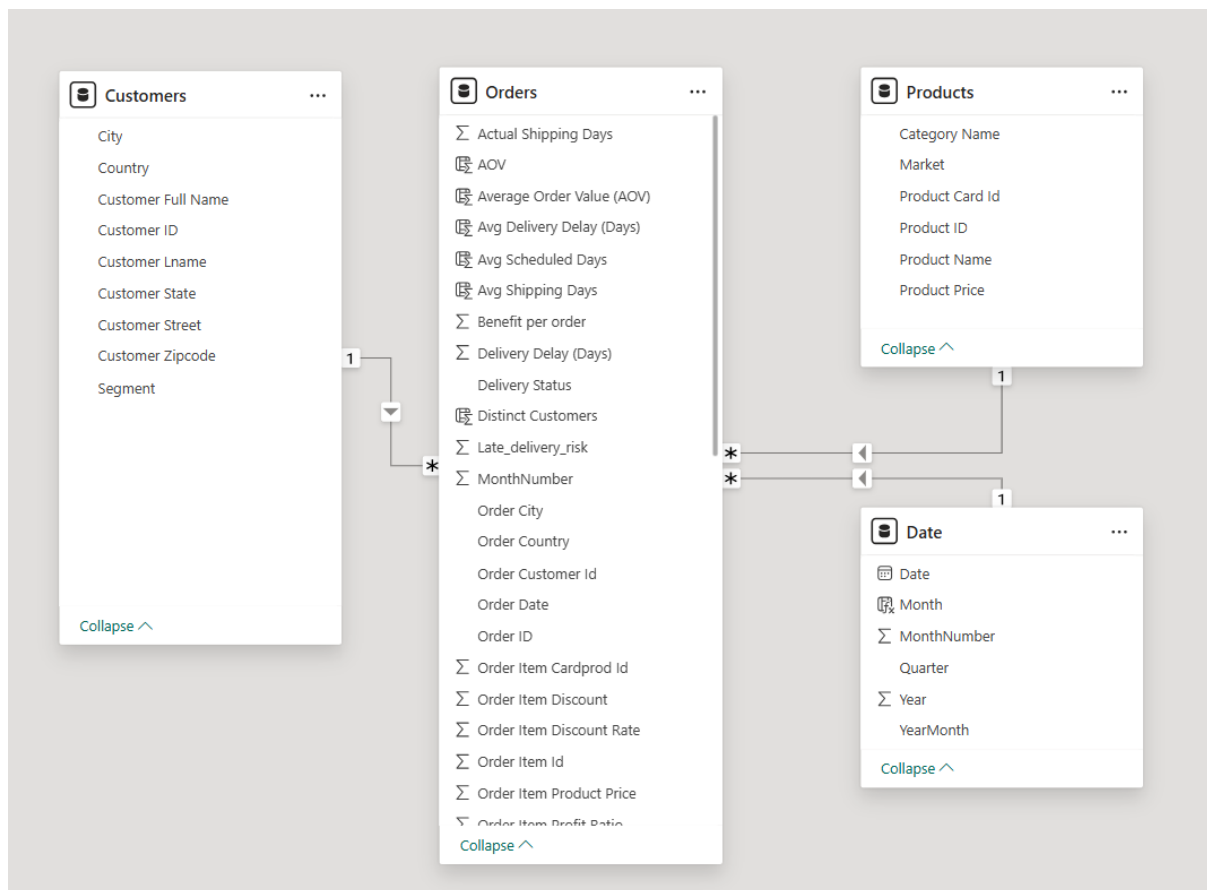
4. Data Modeling and DAX Measures

A Star Schema model was created for efficient analysis:

- Fact Table: Contains transactional data (Sales, Profit, Quantity, Orders).
- Dimension Tables:
 - ✓ Date
 - ✓ Product
 - ✓ Customer

Relationships were established using key fields (e.g., Product ID, Customer ID, Order Date).

This structure improved query performance and simplified aggregation across multiple dimensions (time, category, location).



Data Model Schema for Sale Performances Analytics Dashboard

A **Star Schema** model was designed to improve analytical performance and simplify relationships.

Relationships:

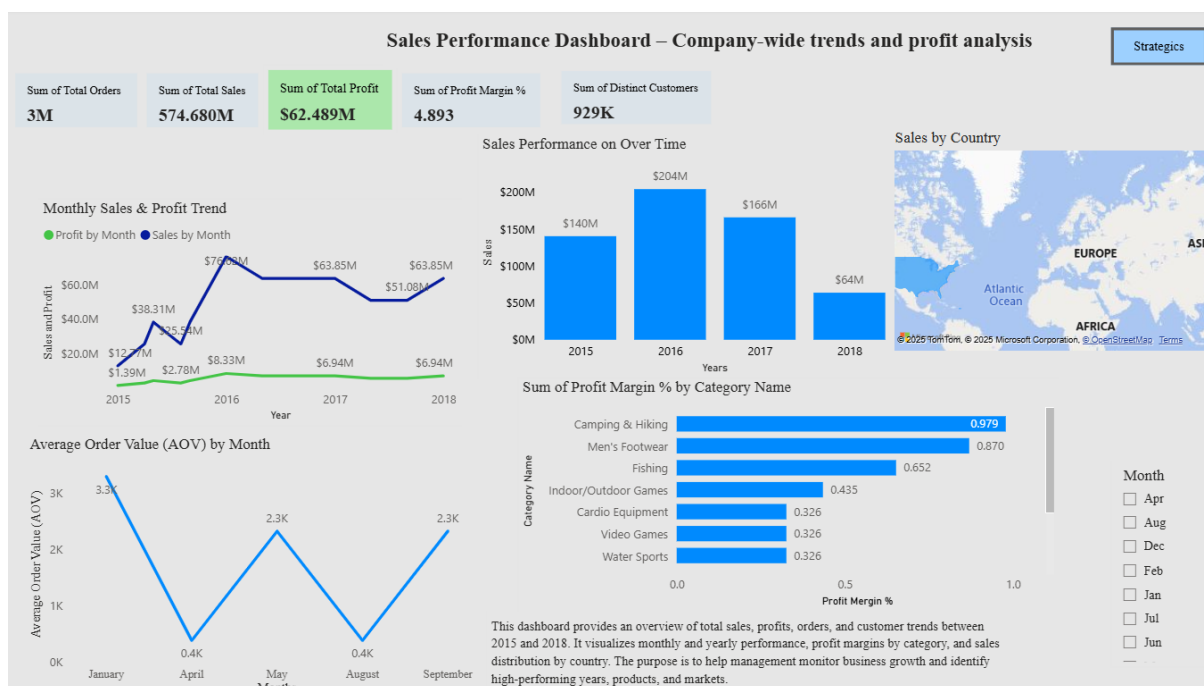
- Orders[Customer ID] → Customers[Customer ID]
- Orders[Product ID] → Products[Product ID]
- Orders[Order Date] → Date[Date]

5. Visualization Dashboard

The visualization dashboards were developed in **Microsoft Power BI** to present complex sales and profit data in an interactive and comprehensible form. Two interconnected dashboards — **Sales Performance Dashboard** and **Strategic Insights & Decision Support Dashboard** — were designed to support both **operational monitoring** and **strategic decision-making**.

These dashboards convert raw sales transactions into meaningful insights through **KPIs, charts, and filters**, enabling users to analyze performance across time, geography, product category, and customer segments.

5.1 Sales Performance Dashboard



Sales Performance Dashboard in Power BI

The **Sales Performance Dashboard** provides a comprehensive overview of overall business health by visualizing sales, profit, order volume, and customer distribution.

It helps managers and analysts understand high-level trends, identify peak years, and observe variations in profit margins and customer activity over time.

The **Sales Performance Dashboard** provides a **high-level overview** of overall sales and profitability across time and geography.

It highlights historical sales patterns, profit margins, and customer growth.

Key Performance Indicators (KPIs)

- **Total Orders:** 3M → Indicates the total number of orders processed between 2015–2018.

- **Total Sales:** \$574.68M → Represents gross revenue generated across all product categories.
- **Total Profit:** \$62.49M → Reflects net gain after deducting costs.
- **Profit Margin:** 4.89% → Average profitability across all transactions.
- **Distinct Customers:** 929K → Total number of unique customers during the observed period.

These KPIs summarize the company's scale and efficiency. The combination of sales and margin metrics enables quick performance evaluation.

Visual Analysis and Interpretations

Monthly Sales and Profit Trend (Line Chart):

- Displays how sales and profit fluctuate over time from 2015–2018.
- The chart highlights the 2016 sales peak (\$204M), showing business growth followed by a decline in 2017.

Sales Performance Over Time (Bar Chart):

- Compares annual sales performance, revealing that 2016 was the most successful year, followed by a gradual decline.
- This helps executives evaluate yearly growth and plan future targets.

Sales by Country (Map Chart):

- Shows the geographic spread of total sales across continents.
- This visual identifies strong markets such as Europe and North America, and highlights expansion opportunities in regions with low sales density.

Average Order Value (AOV) by Month (Line Chart):

- Illustrates customer spending patterns by month.
- Peaks in January and May suggest seasonal or promotional effects, guiding decisions on when to schedule marketing campaigns.

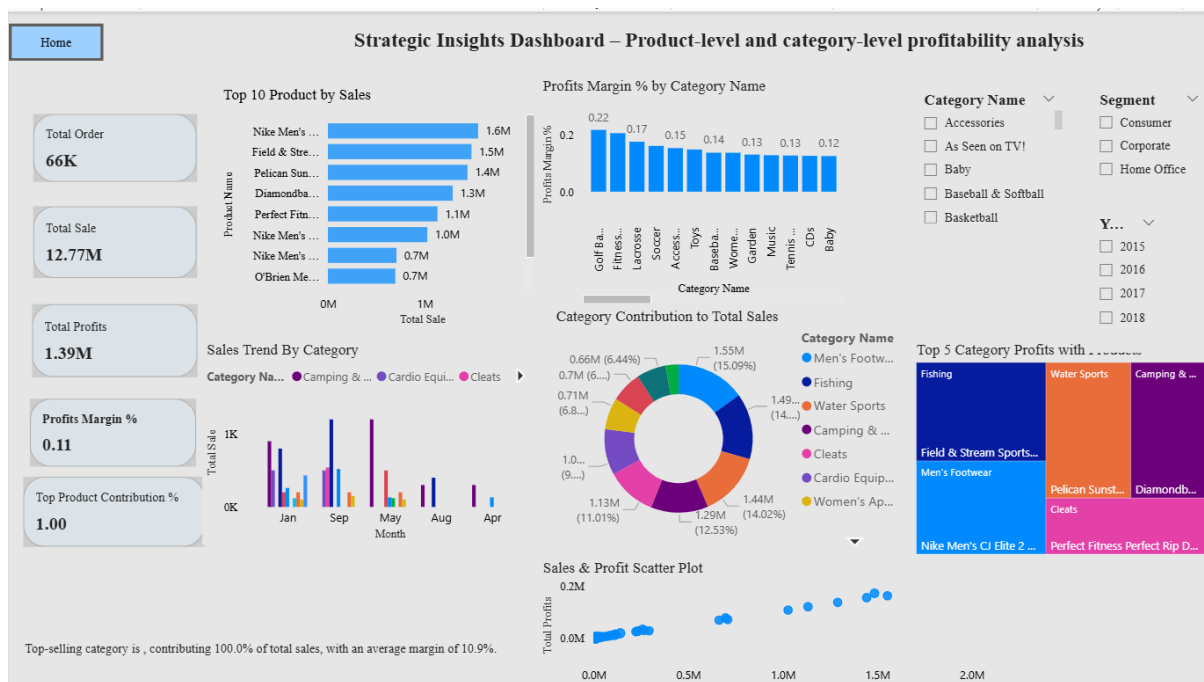
Profit Margin % by Category (Horizontal Bar Chart):

- Compares profitability across product categories.
- Camping & Hiking and Men's Footwear have the highest profit margins, while Video Games and Water Sports show lower returns.
- This enables product managers to focus on high-margin items for future campaigns.

This dashboard allows senior management to monitor business health at a glance, detect year-over-year patterns, and drill down into profit-driving segments. This dashboard provides an overview of total sales, profits, orders, and customer trends between 2015 and 2018. It visualizes monthly and yearly performance, profit margins by category, and sales distribution by country. The purpose is to help management monitor business growth and identify high-performing years, products, and markets.

5.2 Strategic Insights & Decision Support Dashboard

The Strategic Insights Dashboard was designed to assist decision-makers in identifying top-performing products, high-margin categories, and sales contributions. It goes beyond high-level KPIs to uncover deeper relationships between categories, months, and profitability.



Strategic Insights and Decision Support Dashboard in Power BI

KPI Summary

- **Total Orders:** 66K
- **Total Sales:** \$12.77M
- **Total Profit:** \$1.39M
- **Profit Margin:** 0.11%
- **Top Product Contribution:** 100%

These metrics help management focus on category-level profitability rather than overall totals.

Visual Analysis and Interpretations

Top 10 Products by Sales (Bar Chart):

- Highlights leading products such as Nike Men's, Field & Stream, and Pelican Sunstream.
- This identifies best-sellers and helps target product promotions.

Profit Margin % by Category (Bar Chart):

- Displays profitability for each category, showing Golf and Fitness as high-performing areas.

Category Contribution to Total Sales (Donut Chart):

- Visualizes percentage contribution of each category to total revenue.
- Men's Footwear (15.09%) and Fishing (14%) are dominant, showing stable market segments.

Sales Trend by Category (Clustered Column Chart):

- Depicts seasonal sales patterns across categories throughout the year.
- This supports inventory planning and marketing scheduling.

Sales and Profit Scatter Plot:

- Shows the correlation between total sales and total profit per category or product.
- Positive correlation confirms that high-selling products also yield high profits.

Top 5 Category Profits (Tree Map):

- Visualizes profit dominance of Fishing, Water Sports, Camping & Hiking, and Footwear.
- The color-coded design makes it easy to interpret profit share distribution.

This dashboard presents a detailed breakdown of category-level and product-level profitability. It highlights top 10 products by sales, category contribution to total revenue, and

profit margin distribution. The dashboard enables data-driven strategic planning by identifying high-value product categories and seasonal performance patterns.

7.Conclusion

The Power BI dashboards developed in this project provide an effective business intelligence framework for transforming raw sales data into actionable insights. The Sales Performance Dashboard offers a comprehensive overview of sales, profit, and customer metrics, while the Strategic Insights Dashboard provides deeper analysis of category performance, profitability, and product-level contributions.

Through interactive visualization and real-time analytics, these dashboards:

- Enable the management team to monitor performance trends efficiently.
- Highlight top-performing products and profitable categories.
- Reveal regional and seasonal sales variations.
- Support strategic and operational decisions with accurate, data-driven insights.

Overall, the project demonstrates how Power BI can enhance organizational performance through improved transparency, faster reporting, and informed strategic planning. By continuously maintaining and expanding this analytical framework, the company can achieve sustained growth, improve profitability, and maintain a competitive advantage in the dynamic retail environment.

Dashboard Access: [Supermarket Sale Dashboards - Power BI](#)