# E-commerce Sales Performance Analysis

Name: Pradheep Shanmugam

Tool Used: Power BI  
Project Type: Business Intelligence Dashboard  
Objective: To analyze sales performance across various business dimensions and deliver actionable insights for strategic decision-making.

## Step 1: Problem Statement and Project Goal

The business required a solution to monitor its e-commerce performance across categories, regions, and customer segments. The goal was to develop an interactive Power BI dashboard that would provide real-time tracking of key metrics like sales, profit, quantity, and profit margin.

## Step 2: Data Understanding and Cleaning

Initial raw data included orders, product details, customer segments, and shipping info. Cleaning involved:  
• Removing duplicates and handling missing values  
• Creating necessary columns such as Sales, Profit, and Quantity if missing  
• Standardizing data fields like category names, shipping types, and region labels  
• Ensuring proper date formats to enable time intelligence in Power BI

## Step 3: Data Import and Modeling

Data was imported into Power BI Desktop. Modeling steps included:  
• Creating relationships between tables (Orders, Products, Regions, Customers)  
• Developing a clean star schema to improve performance  
• Adding a Date table to facilitate YoY and time-based comparisons  
• Hiding unnecessary columns to simplify user navigation

## Step 4: KPI Creation using DAX

Custom DAX measures were developed for:  
• YTD Sales = TOTALYTD(SUM(Sales), Date)  
• YTD Profit = TOTALYTD(SUM(Profit), Date)  
• YTD Quantity Sold = TOTALYTD(SUM(Quantity), Date)  
• Profit Margin = DIVIDE(SUM(Profit), SUM(Sales))  
• YoY Calculations = Using SAMEPERIODLASTYEAR to compare periods  
These metrics were used to generate dynamic KPI cards.

## Step 5: Visual Components and Insights

The dashboard was composed of several interactive visuals:  
• Segment Toggle: Filters all visuals by customer segment (Consumer, Corporate, Home Office)  
• Sales by Category: Tracks top categories (Furniture, Office Supplies, Technology)  
• Top 5 / Bottom 5 Products: Highlights best and worst performers by sales  
• Sales by Region (Donut Chart): Highlights regional performance  
• Sales by State (Map): Drillable map with region-coded color format  
• Sales by Shipping Type: Visualizes logistics class usage and efficiency

## Step 6: Filters, Drill-Through, and UX Features

To enhance interactivity and insights:  
• Slicers for customer segment, product category, shipping type, and region  
• Drill-through on maps and charts for detailed views  
• Conditional formatting on KPIs to indicate positive or negative performance  
• Toggle switch added to segment analysis for stakeholder-specific views

## Step 7: Business Impact and Takeaways

This dashboard provided the company with a centralized tool to:  
• Track performance trends and compare YoY growth  
• Identify top- and bottom-performing products and regions  
• Monitor profit margins and logistical performance by shipping type  
• Empower different business units with segment-specific insights  
  
The project strengthened skills in Power BI, DAX, interactive design, and end-to-end business intelligence delivery.