NORTHWIND TRADERS POWER BI PROJECT REPORT

Developer: Munir Hassan Usmani

Date: 13-9-2025

Tools Used: Power BI Desktop, SQL Server, DAX, Power Query

1. EXECUTIVE SUMMARY

This project involves creating a comprehensive sales analytics dashboard for Northwind Traders using Power BI. The solution provides interactive visualizations for sales performance, customer analysis, product profitability, employee performance, and shipping efficiency across 5 dedicated report pages with drill-through capabilities.

2. PROJECT OBJECTIVES

- To analyse sales trends and patterns
- To identify top-performing products and categories
- To analyse customer buying behaviour and segmentation
- To track employee performance and productivity
- To provide actionable business insights through interactive dashboards

3. DATA SOURCES

- **Primary Database:** Northwind SQL Server Database
- **Tables Used:**
    - Orders
    - Order Details
    - Customers
    - Products
    - Employees
    - Shippers
    - Categories

4. DATA TRANSFORMATION & CLEANING

Steps Performed in Power Query:

1. **Data Extraction:** Connected to SQL Server and imported required tables
2. **FactSales Table Creation:** Merged Orders and Order Details tables
3. **Calculated Columns:**
    - ExtendedPrice = Quantity × UnitPrice × (1 - Discount)
    - Created Date table with complete date hierarchy

4. **Data Cleaning:**
    - Handled null values in ShipRegion
    - Removed unnecessary columns
    - Standardized text formats
5. **Dimension Tables:**
    - Created DimCustomer, DimProduct, DimEmployee, DimDate tables
    - Added calculated columns for full addresses and names

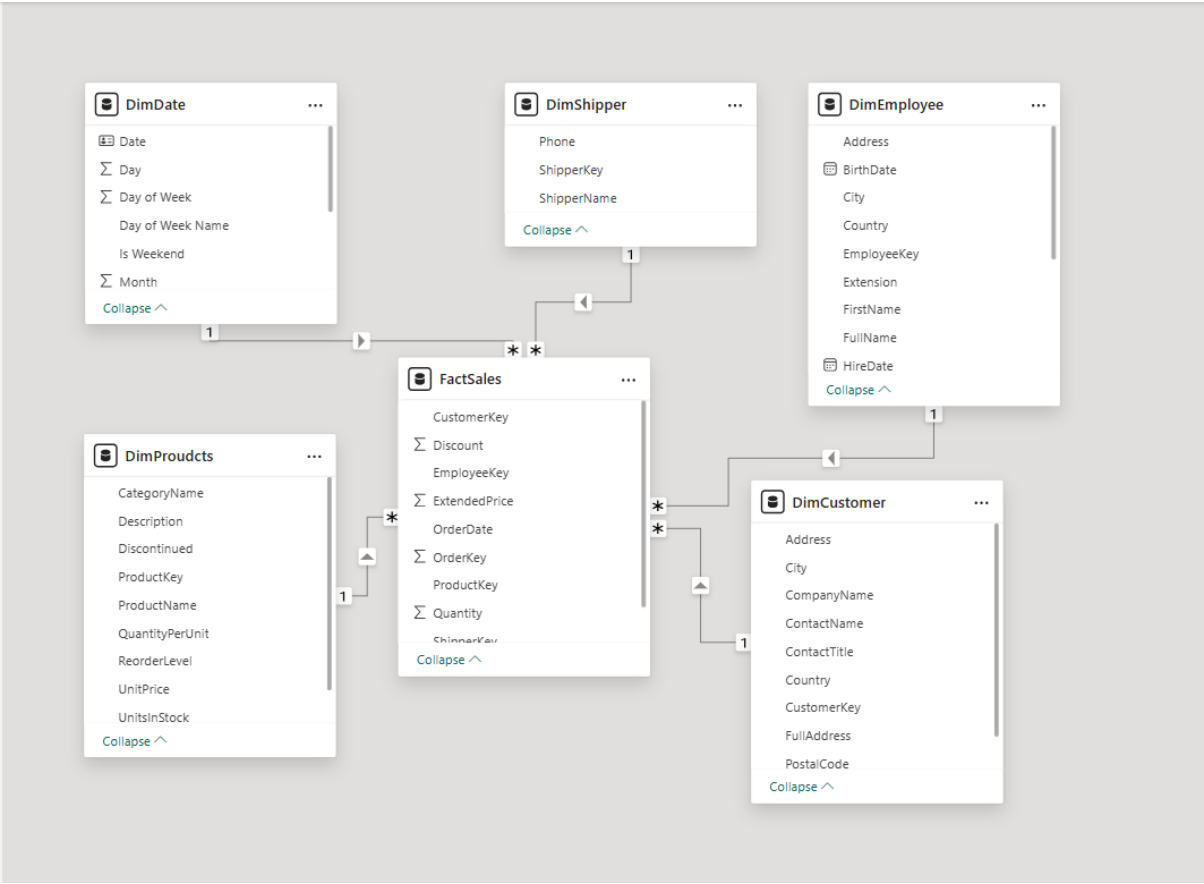
5. DATA MODELING

Star Schema Implementation:

- **Fact Table:** FactSales (Contains transactional data)
- **Dimension Tables:**
    - DimDate (Date intelligence)
    - DimCustomer (Customer information)
    - DimProduct (Product details)
    - DimEmployee (Employee data)
    - DimShipper (Shipping information)

Relationships Established:

- FactSales[CustomerKey] → DimCustomer[CustomerKey] (1:Many)
- FactSales[ProductKey] → DimProduct[ProductKey] (1:Many)
- FactSales[EmployeeKey] → DimEmployee[EmployeeKey] (1:Many)
- FactSales[OrderDate] → DimDate[Date] (1:Many)
- FactSales[ShipperKey] → DimShipper[ShipperKey] (1:Many)



6. DAX MEASURES

Total Sales = SUM(FactSales[ExtendedPrice])

Total Quantity = SUM(FactSales[Quantity])

Total Orders = DISTINCTCOUNT(FactSales[OrderKey])

Average Order Value = DIVIDE([Total Sales], [Total Orders])

Gross Profit Margin = DIVIDE([Total Profit], [Total Sales])

Total Profit = SUMX(FactSales, FactSales[Quantity] * FactSales[UnitPrice] * (1 - FactSales[Discount]) * 0.3)

Total Products = DISTINCTCOUNT(DimProudcts[ProductKey])

Total Product Sales = SUM(FactSales[ExtendedPrice])

Total Customers = DISTINCTCOUNT(DimCustomer[CustomerKey])

Total Employees = DISTINCTCOUNT(DimEmployee[EmployeeKey])

TopEmployee = MAXX(DimEmployee, [Total Sales])

Time Intelligence Measures:

YTD Sales = TOTALYTD([Total Sales], DimDate[Date])

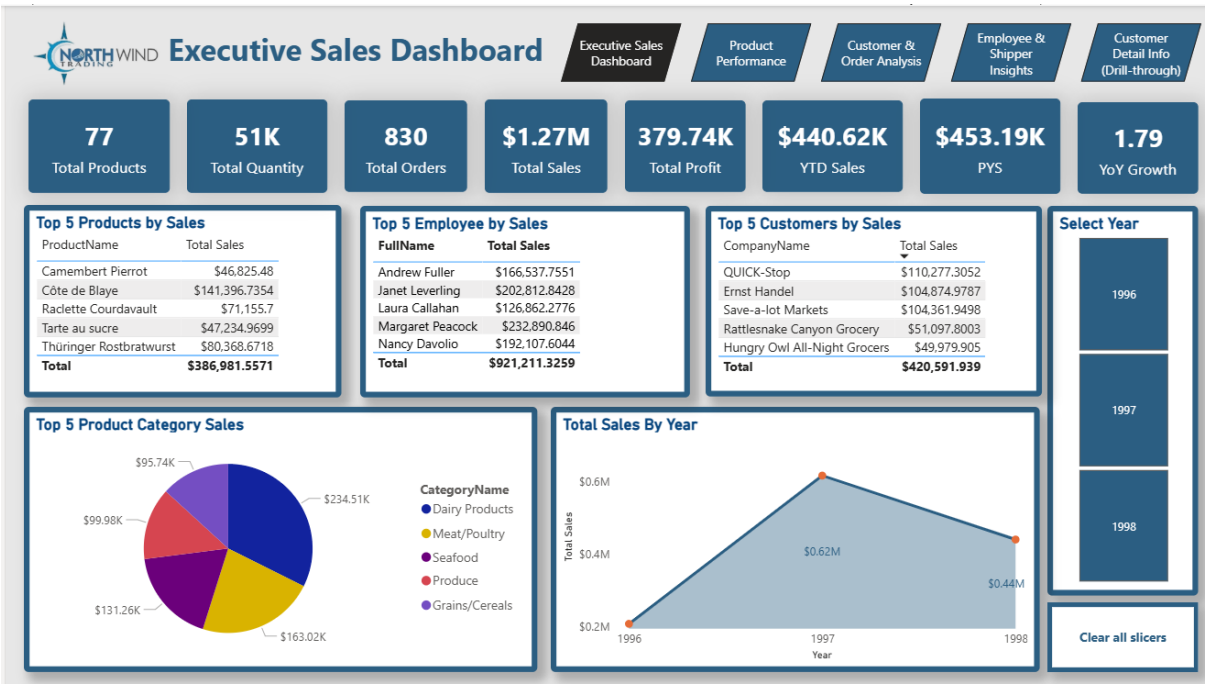
Previous Year Sales = CALCULATE([Total Sales], SAMEPERIODLASTYEAR(DimDate[Date]))

YoY Growth = DIVIDE([Total Sales] - [Previous Year Sales], [Previous Year Sales])

7. REPORT PAGES DESCRIPTION

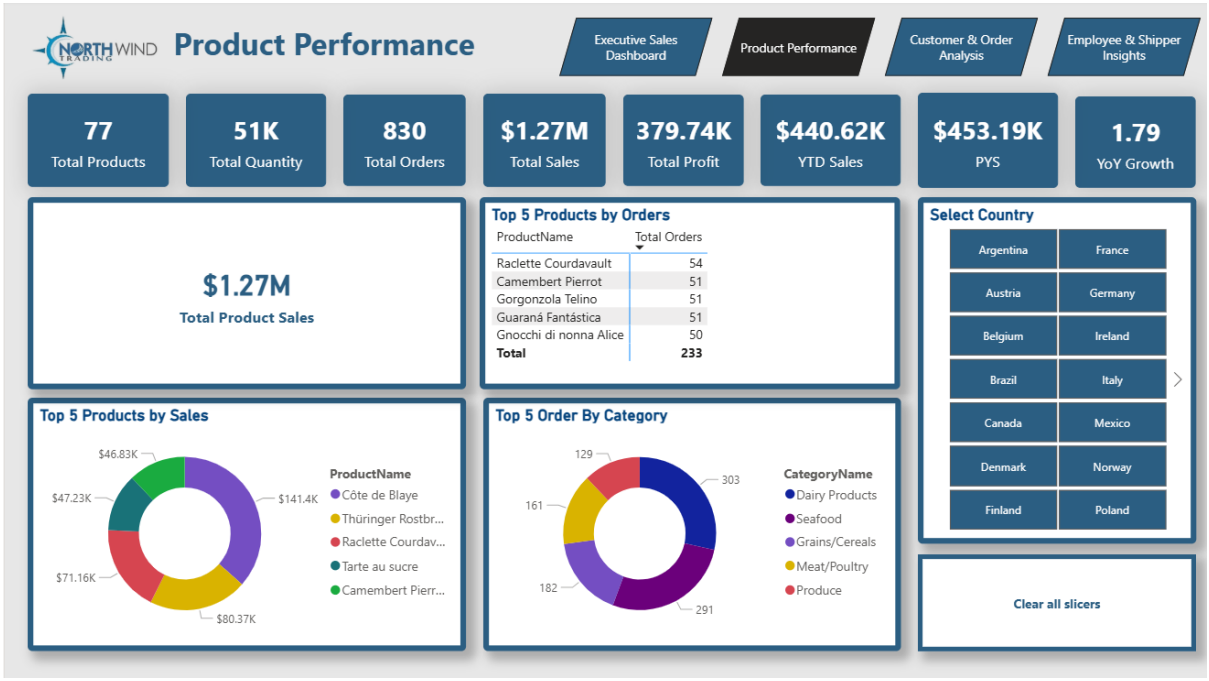
Page 1: Executive Dashboard

- **Purpose:** High-level overview of business performance



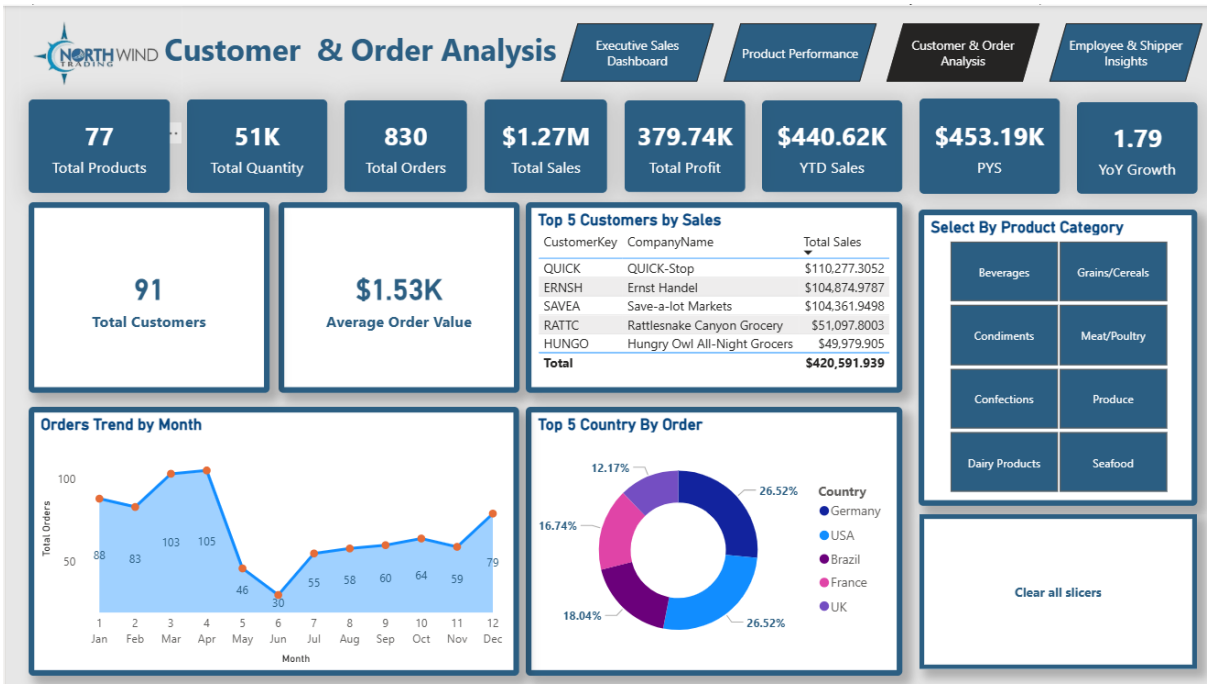
Page 2: Product Performance

- **Purpose:** Analyse product sales and profitability



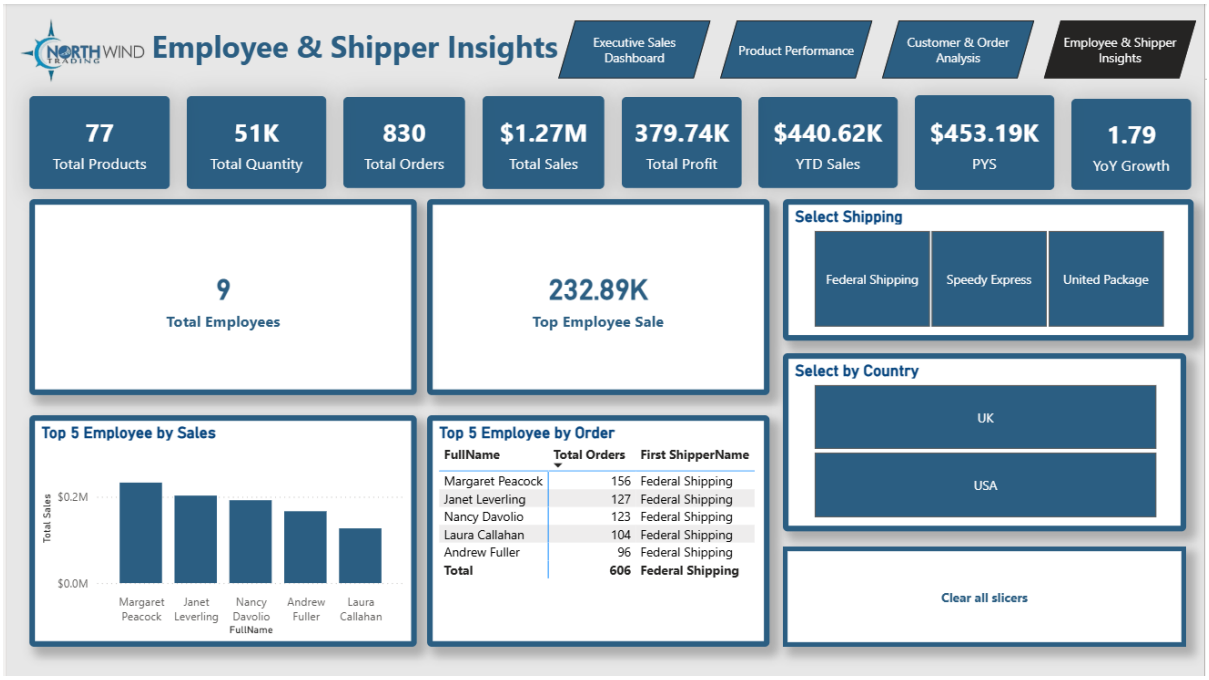
Page 3: Customer & Order Analysis

- **Purpose:** Customer behaviour and order patterns



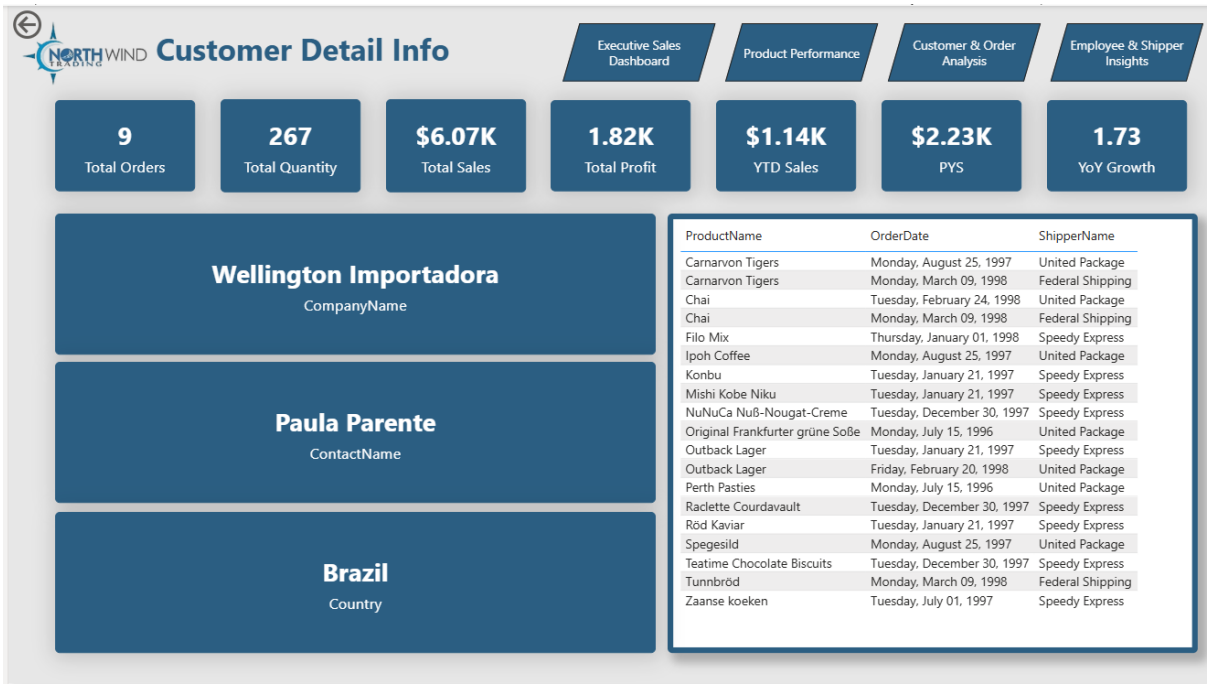
Page 4: Employee & Shipper Insights

- **Purpose:** Performance monitoring



Page 5: Customer Detail Info (Drill-through)

- **Purpose:** Detailed customer analysis
- **Access:** Right-click → Drill-through from customer visuals



8. CONCLUSION

This Power BI project successfully transforms raw Northwind Traders data into actionable business intelligence. The interactive dashboard provides comprehensive insights across sales, products, customers, employees, and shipping operations. The implementation of star schema, advanced DAX measures, and drill-through capabilities makes this a robust analytical solution for decision-makers.