

Northwind Traders Business Performance & Data Analysis

Project Objective

The objective of this project is to analyze Northwind Traders' sales data and develop an interactive Power BI dashboard to provide a clear understanding of the company's performance in key areas, including:

- Sales Trends
- Key Customers
- Product Performance
- Shipping Costs

Project Workflow

1. **Data Import:** Load project data into **PostgreSQL** database from CSV file.
2. **Power BI Connection:** Connect **Power BI** to the **PostgreSQL** database.
3. **Data Transformation:** Use **Power Query Editor** in Power BI to clean, filter, and transform the data, ensuring it's structured for analysis.
4. **Data Modeling:** Perform **data modeling** by creating relationships between tables, defining calculated columns, and establishing measures using DAX.
5. **Report Building:** Create and design interactive dashboards, adding visuals (charts, tables, etc.) based on the transformed data. Developed specific dashboards for **Sales Overview**, **Product Performance**, **Customer Analysis**, and **Shipping Costs** using Power BI Desktop.

Key Features

- **Sales Analysis:** Tracks total revenue, month-over-month growth, and top-selling products by category.
- **Customer Insights:** Analyzes customer distribution, top buyers, and country-wise sales.
- **Product Performance Overview:** Displays product performance, category-wise sales, and order quantity trends over time.
- **Shipping Stats:** Provides a country-wise freight summary, shipping performance, average transit and processing time, and carrier performance.

About The Dataset

Sales and order data for Northwind Traders, a fictitious gourmet food supplier, including information on customers, products, orders, shippers, and employees.

There are seven tables in the dataset: order_details, products, categories, orders, employees, customers, and shippers.

Variable Description

- **orderId:** Unique identifier for each order
- **productId:** Unique identifier for each product
- **productName:** Name of the product
- **quantityPerUnit:** Quantity of the product per package
- **unitPrice:** Price per unit of the product (USD)
- **discount:** Discount percentage applied to the price per unit

- **customerID:** Unique ID of Customer
- **companyName:** Name of the customer's company
- **contactName:** Name of the primary contact for the customer
- **country:** Country where the customer is located
- **city:** City where the customer is located
- **freight:** Shipping cost for the order (USD)
- **shipperID:** ID of the shipping company used for the order
- **orderDate:** Date when the order was placed
- **shippedDate:** Date when the order was shipped
- **requiredDate:** Date when the customer requested the order to be delivered
- **companyName:** Name of the company that provides shipping services
- **categoryID:** ID of the category the product belongs to
- **categoryName:** Name of the category
- **employeeID:** Employee who processed the order
- **employeeName:** Name of employee
- **title:** Employee's job title

Key Insights

- We have sales data of Northwind Traders from JULY 2013 to MAY 2015. Total Sales of 1.27M were observed for 830 orders. From 2013 to 2014, there is a 196.6% increment in sales, whereas from 2014 to 2015, sales decrease by 28.6%. Overall Growth from 2013 to 2015 was observed to be 111.80%.
- Sales showed steady growth from mid-2013 to early 2015, peaking at \$123.8K in may 2015 and there was a sudden drop in April 2015 to \$18.3K, indicating a potential business issue or seasonality effect.
- The moving average sales smooths out short-term fluctuations and shows the overall trend. It helps in identifying whether sales are increasing, decreasing, or stable over time.
- Most selling Product Categories include Beverages(\$267.87k), Dairy Products(\$234.51k) and Confections(\$167.36k).
- USA(\$245.58k), Germany(\$230.28k), Austria(\$128k) and Brazil(\$106.93k) contributes to major portion of sales.
- Quick Stop(\$110.27k), Ernst Handel(\$104.87k) and Save-a-lot market (\$104.36k) are the key customers having more than 8% contribution in total sales of the company and AOV value more than \$3000.
- From 2013 to 2015, the company dealt with a total of 91 clients from different countries, with most of them coming from the USA (13), Germany (11), France (11), Brazil (9), and the UK (7).
- Cote de Blaye (\$141.3K) is the best-selling product, contributing 11.3% to total sales over three years. A major portion of its sales comes from the USA (\$41.35K) and Germany (\$30.83K). Cote de Blaye achieved its peak revenue performance in February 2015, generating \$25.56K.
- Maximum discount of 18.1% offered on Mishi Kobe Niku.
- Most of the orders come from countries like USA, Germany, France, Brazil and UK.

- The company has spent approximately \$64.94K on freight over the years. A total of 326 orders were shipped through United Package, with total freight costs amounting to \$28.2K between 2014 and 2015.
- Countries such as Austria, Ireland, the USA, and Germany have a higher average freight cost than others. Among the shipping companies, United Package has a higher freight cost per order compared to others.
- Federal Shipping has the shortest lead time and order processing time among all shipping providers and, hence, has fewer delayed orders.