

Northwind Sales Data Exploration Project Summary

Project Goal

The goal of this project was to explore and visualize sales data from the Northwind dataset to uncover key commercial and operational insights using SQL and Power BI. This includes understanding:

- Product and customer performance
- Revenue trends
- Operational bottlenecks
- Customer behavior patterns

This type of exploration helps a company make more informed, data-driven decisions across sales, marketing, and operations.

Tools & Techniques Used

- SQL (MySQL): Complex joins, subqueries, CTEs, window functions
- Power BI: Visual analytics, dashboard building, interactive filtering, DAX
- Dataset: Northwind sample retail database

What We Did

1. Data Exploration via SQL:

- Top-selling products
- Monthly revenue trends
- Customer Lifetime Value (LTV)
- Average Order Value (AOV)
- Repeat vs new customers
- Inventory movements (stock vs sold)
- Fulfillment time and shipping efficiency

2. Dashboard Development in Power BI:

- Revenue metrics
- Top products & customers
- Monthly trends
- Sales by country/region
- Customer segmentation
- Visuals with dynamic filters by product category, country, or time period

Challenges Faced & Solved

- Complex table relationships Designed ERD & used effective joins
- Segmenting customers dynamically Created intermediate tables & DAX logic
- Optimizing dashboard responsiveness Pre-aggregated queries & proper data modeling
- Normalizing inconsistent dates Used SQL formatting & DAX time intelligence

Key Outcomes

- Developed a fully functional sales analytics solution from raw data
- Created visual reports that enable fast decision-making
- Empowered non-technical users to answer key business questions interactively

What We Would Present to This Company

We built a reporting solution that transforms your transaction-level data into real-time business insights. Your team can now quickly see:

- Who your best customers are
- Which products drive the most revenue
- Where sales are growing
- How fulfillment performance is trending

The dashboard enables business users to filter by time period, geography, and category without needing SQL knowledge. This gives your sales, marketing, and operations teams the tools to make better, faster decisions.

Next Steps We Could Take

- Integrate live production data for real-time updates
- Enable automated email reporting to teams
- Forecast sales using Power BI AI visuals or Python/R scripts
- Track customer retention/churn over time