# Detailed Guide for the Northwind Data Analysis Project

## Project Background

You are working as a *data analyst* for **Northwind**: A wholesale distributor that supplies a wide range of food and beverage products to retail businesses, restaurants, and other companies around the world. The company operates through a digital platform where customers can browse products, place orders, and manage their accounts. Northwind's mission is to provide quality products efficiently and to build strong relationships with its clients, ensuring they receive what they need when they need it.

Your role is to analyze data from Northwind's digital store to generate insights that could **help the company improve its profitability**. Imagine you're preparing this analysis for Northwind's board, who will use your findings to make strategic decisions.

## Data
Northwind excel file and SQL tables, 11 tables in total:

1. Category
2. Customers
3. Employees
4. Employee Territories
5. Order Details
6. Orders
7. Shippers
8. Suppliers
9. Products
10. Region
11. Territories

## Business Question

The central question you need to answer is: **"How can Northwind increase its profits using data-driven decisions?"**

Your project should be focused on uncovering patterns, trends, and actionable insights, <u>in three key areas of your choice</u>, that could help the company make informed decisions about product sales, customer segments, operational improvements, or marketing strategies.

**Project Deliverables**

Your project includes two primary deliverables:

1. **Dashboard**:
    ○ **Dashboard**: Create a visual dashboard that clearly communicates key findings, trends, and recommendations. This dashboard should be visually engaging and easy to interpret.
2. **Presentation**: (7-10 min long)
    ○ Prepare a presentation to showcase your dashboard and key findings. Think of this as a business presentation where you'll briefly explain your approach, major insights, and recommendations.
    ○ The presentation should contain: brief introduction, general matrices of the company, your analysis (of the 3 key areas you chose to analyze), and your conclusions and recommendations from each part and in general.
    ○ The presentation and final submission should also contain an appendix (for further review of the project). The appendix should include all SQL queries, tableau files, excel sheets, or any other resources you used in the analysis.

**Tools to Use**

You can use any tools you've learned in the course, including:

● **SQL**: For querying and analyzing the data.
● **Excel**: For data cleaning, preliminary analysis, or basic visualizations.
● **Tableau**: To build a visual dashboard that summarizes your key findings and analyses.

**How to Approach the Project**

Here's a suggested approach to tackling the project, organized into key steps:

1. **Define Your Research Questions**: Start by framing at least three core research questions that will guide your analysis. These questions should help you explore different ways Northwind can increase its profitability.

    Make sure each question is clear and actionable so that your findings can directly lead to recommendations.

2. **Develop a Work Plan**: Before starting your analysis, create a detailed list of tasks. Each task should correspond to a specific part of your analysis. Here's a recommendation to how to structure this:

- **Task List**: Break down each main question into smaller tasks, such as specific SQL queries or Tableau operations.
- **Identify Data Needs**: Determine which tables or fields in the Northwind dataset you need for each question.
- **Document Your Approach**: For each task, write a short description of what you're doing and why. This documentation will be valuable when writing your report and in case you need to adjust your analysis later.

3. **Execute and Document Your Analysis**: As you work through each task, document your progress. For each main question, include:
   - **Data Queries**: Record each SQL query or code snippet you use (for the Appendix).
   - **Findings**: Note down the key findings from each query or visualization for presenting in the conclusions.
   - **Visualizations**: Create visual representations (e.g., charts, graphs) of your findings. Use these to clearly reflect your desired conclusion.
   - **Insights**: Write a few sentences explaining the significance of each finding. Focus on what these insights mean for Northwind's profitability.

**Presentation Structure**

Your report should be well-organized, professional, and easy to follow. Here's a suggested format:

1. **Introduction**:
   - Briefly describe Northwind and the purpose of your analysis.
   - Introduce the business question and your main research questions.
2. **Main Analysis**:
   - Present key matrices of the company and the data.
   - For each research question, outline your approach, including:
     - Summarize your main findings for each question while using visualization (screenshots of the dashboard you created OR presenting directly the dashboard, while coming back to the presentation for the conclusions and recommendations.
     - Provide actionable recommendations based on your analysis.
3. **Appendix**:
   - Include all SQL queries, Excel calculations, Tableau screenshots, and any additional resources you used.

**Tips for Success**

- **Understand your data**: Before diving into the analysis, understand the company's data - which table connects to another, what is the information in each table, etc.
- **Plan First**: Before diving into the analysis, outline your approach to stay focused.
- **Use Visuals**: Choose appropriate charts or graphs that clearly convey your findings.
- **Stay Organized**: Document every step. It will make it easier to write your report and ensure you have all the information needed.
- **Actionable Insights**: When making recommendations, focus on practical actions Northwind could realistically implement.

## About Northwind: Conceptual Overview

### Company Profile
Northwind is a wholesale distributor that supplies a range of products primarily within the food and beverage categories, that specializes in the importation and exportation of different food products from around the world.

### Core Operations of the Company

1. Product Sourcing and Pricing:
   - Northwind sources products through various *suppliers*. Each supplier provides specific product categories, such as beverages, produce, or packaged items.
   - UnitPrice fields in the "Products" table and the "Order Details" table denote the buying and selling prices, respectively. Northwind buys products at wholesale prices from suppliers and sells them at marked-up prices to customers, aiming to generate profit through this margin.
2. Inventory Management:
   - Inventory is implied in the "Products" table, with fields such as UnitsInStock and UnitsOnOrder, which help Northwind track current stock levels and items awaiting restocking.
3. Customer Relationships:
   - Northwind serves a variety of business customers, and tracks and manages orders for each customer.
   - Customer relationships are reflected in ordering data, showing who is ordering, how frequently, and the specifics of each order.
4. Order Fulfillment:
   - Northwind's Orders and Order Details tables document each sale, including order dates, shipping details, and employee assignments. These tables support the entire order process, from initial order placement to shipping and delivery.

### Profit Generation

Northwind's profit generation approach is built on buying products at wholesale prices and selling them at higher prices to customers.

- Revenue is generated when orders are placed and fulfilled. The selling price is typically higher than the buying cost, creating a margin that represents gross profit.
- Because Northwind is a wholesale distributor, it likely focuses on selling in bulk, leveraging high volumes to drive revenue.