

# Supply Chain Data Analysis - Notes

## 1. Introduction to Supply Chain

- **Definition:** The supply chain is the network between a company and its suppliers to produce and distribute a specific product.

**Tool Used:** Power BI

## Feature explanation

**-Product Type:** The type of product associated with specific data in the supply chain.

**-SKU (Stock Keeping Unit):** Unique code used to identify a particular product.

**-Price:** The price of the product or item in the supply chain.

**-Availability:** Information about product availability.

**-Number of Products Sold:** The number of products that have been sold in a certain time period.

**-Revenue Generated:** Total revenue generated from product sales in a certain time period.

**-Customer demographics:** Information about customer characteristics, such as age, gender, geographic location, etc.

**-Stock Levels:** The number of products still available in stock at any given time.

**-Lead Times:** The time required to order products from suppliers.

**-Order Quantities:** The number of products ordered in one order or shipment.

**-Shipping Times:** The time required to ship products from the suppliers to warehouse or distribution.

**-Shipping Carriers:** Companies or services used to ship products to customers.

**-Shipping Costs:** Costs associated with shipping products, including delivery fees and additional fees.

**-Supplier Name:** Name of supplier or vendor who provides products or materials to the company.

**-Location:** The physical location associated with the data in the supply chain, such as the location of a warehouse or distribution center.

**-Lead Time:** The time required to obtain products from warehouse to Customers.

**-Production Volumes:** The number of products produced in a certain time period.

**-Manufacturing Lead Time:** The time required to produce a product, from ordering materials until the product is ready.

**-Manufacturing Costs:** Costs related to the production process, including raw material costs, labor, etc.

**-Inspection Results:** Results of product or material quality inspection.

**-Defect Rates:** The level of defects or defects in the products produced.

**-Transportation Modes:** The transportation mode used to send products, such as land, sea or air.

**-Routes:** Routes or paths used to send products from one point to another in the supply chain.

**-Costs:** Costs related to various aspects of the supply chain, including transportation costs, production costs, and other costs

## 2.Data Cleaning & Corrections

During the data cleaning phase, all datasets were thoroughly checked for accuracy, consistency, and completeness. Key tasks included:

- **Removing duplicates**
- **Handling missing values**
- **Standardizing formats (dates, categories, etc.)**
- **Verifying logical relationships between variables**
- **Outliers**

All data points were accurate and well-structured, with no major issues found — except one:

#### **Incorrect Revenue Calculation**

The revenue was initially calculated incorrectly.

After review, we corrected the formula to:

**Revenue = Number of Products Sold × Price per Unit**

## **Data Adjustments - Lead Time Terminology**

- The previously ambiguous lead times were renamed to better reflect their specific purposes:
  - **Order Lead Time:** The time required to order or receive products from suppliers.
  - **Material Lead Time:** The time required to obtain products or materials from a particular supplier.

**And these are the steps in power query**

#### ▲ APPLIED STEPS

Changed Type		▲
Added Custom	⚙	
Rounded Off	⚙	
Rounded Off1	⚙	
Rounded Off2	⚙	
Rounded Off3	⚙	
Rounded Off4	⚙	
Rounded Off5	⚙	
Removed Columns		
Added Custom1	⚙	
Added Custom2	⚙	
Added Custom3	⚙	
Renamed Columns		
Filtered Rows		
Added Custom4	⚙	
Filtered Rows1		
Renamed Columns1		
Added Custom5	⚙	
Filtered Rows2		
Removed Columns1		
✕ Renamed Columns2		▼

### 3. Data Modeling

## Tables Overview:

### 1. Products Table

- **Key Columns:** SKU, Product Type, Price, Stock Levels, Availability
- **Purpose:** Contains essential product details and inventory status.

### 2. Suppliers Table

- **Key Columns:** Supplier Name, Location, Transfer Lead Time, Manufacturing Lead Time, Manufacturing Costs
- **Purpose:** Stores supplier data along with manufacturing attributes.

### 3. Shipping Table

- **Key Columns:** Shipping Carriers, Transportation Modes, Routes, Shipping Times, Shipping Costs
- **Purpose:** Focuses on shipping operations and logistics metrics.

### 4. Shipping\_Lookup Table

- **Key Columns:** Mode ID, Transportation Modes
- **Purpose:** Acts as a reference table to normalize transportation modes and link with the Shipping table.

### 5. Fact Table – SupplyChainFacts

- **Key Columns:** SKU, Supplier Name, Shipping Carrier, Customer Demographics, Inspection Results, Products Sold, Revenue, Order Lead Time, Quantities, Production Volumes, Defect Rates, Costs
- **Purpose:** Serves as the central fact table, capturing measurable supply chain metrics and connecting all dimensions.

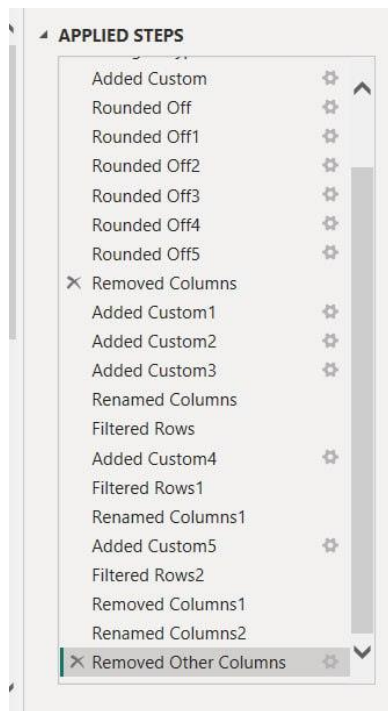
## Products table

APPLIED STEPS	
Added Custom	✖
Rounded Off	✖
Rounded Off1	✖
Rounded Off2	✖
Rounded Off3	✖
Rounded Off4	✖
Rounded Off5	✖
Removed Columns	
Added Custom1	✖
Added Custom2	✖
Added Custom3	✖
Renamed Columns	
✖ Filtered Rows	
Added Custom4	✖
Filtered Rows1	
Renamed Columns1	
Added Custom5	✖
Filtered Rows2	
Removed Columns1	
Renamed Columns2	
✖ Removed Other Columns	✖

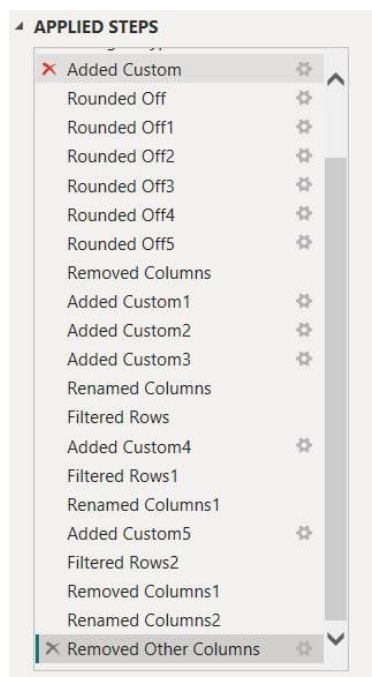
Suppliers table

APPLIED STEPS	
Added Custom	✖
Rounded Off	✖
Rounded Off1	✖
Rounded Off2	✖
Rounded Off3	✖
Rounded Off4	✖
Rounded Off5	✖
Removed Columns	
Added Custom1	✖
Added Custom2	✖
Added Custom3	✖
Renamed Columns	
Filtered Rows	
Added Custom4	✖
Filtered Rows1	
Renamed Columns1	
Added Custom5	✖
Filtered Rows2	
Removed Columns1	
Renamed Columns2	
✖ Removed Other Columns	✖

Shipping table



## SupplyChainFacts table



## Modeling

