# Supply Chain Analytics for Business Optimization

## Team Members


- Sohaila Ahmed Ahmed Farouk
- Hager Mohamed Mohamed Mohamed
- Noha Mohammed Elsaid Mohammed
- Alyaa Hamed Aly Hussein
- Esraa Mostafa Attia Zaghlal
- Sara Mohamed Hussein Hamdi


## Project Idea

The project aims to analyze and optimize supply chain operations using advanced data analytics techniques. By leveraging large-scale datasets, we will transform raw data into actionable insights to:

- Identify top-performing products and customer segments.
- Evaluate supplier and delivery performance.
- Forecast demand for better inventory and resource planning.
- Develop interactive dashboards for executive decision-making.

This project will demonstrate how data-driven approaches can enhance supply chain efficiency, reduce costs, and improve customer satisfaction.

## Initial Task Division

### Data Collection & Cleaning

- **Sohaila + Noha:**
  - Load datasets and check for missing values/duplicates.
  - Handle encoding issues and standardize city/country names.
- **Hager+ Alyaa:**
  - Correct data types (dates, numeric conversions).
  - Remove irrelevant columns and ensure consistency.
- **Esraa + Sara:**
  - Create calculated columns (Profit Margin, Delivery Delay).
  - Validate the cleaned dataset and document the cleaning process.

### Exploratory Data Analysis (EDA)

- **Sohaila + Alyaa:**
  - Customer segmentation and sales trends analysis.
- **Hager + Sara:**
  - Supplier performance analysis.
- **Noha + Esraa:**
  - Shipping and delivery analysis (delays, shipping modes).

### Modeling & Forecasting

- **Sohaila + Esraa:**
  - Build demand forecasting model.
- **Hager + Noha:**
  - Develop supplier/delivery performance prediction models.

- **Alyaa + Sara:**
    - Inventory optimization and product profitability analysis.

### Dashboard Development (Power BI)

- **Sohaila + Sara:**
    - Customer and sales dashboards.
- **Noha + Alyaa:**
    - Shipping and delivery dashboards.
- **Hager + Sara:**
    - Profitability and inventory dashboards.

---

### Documentation & Reporting

- **Sohaila + Hager:**
    - Introduction, project objectives, and dataset description.
- **Noha + Alyaa:**
    - Data cleaning steps and EDA results.
- **Esraa + Sara:**
    - Modeling, results, conclusions, and recommendation