**Integration Process: Importing SQL Data into Excel**

The goal is to integrate SQL data into Excel while ensuring data consistency. Below is a step-by-step guide on how I achieved that:

**1. Exporting Data from SQL Database**

**Connect to the SQL Database**:

* Open MySQL Workbench (or your SQL client).
* Run the SQL queries to retrieve data from the tables:

Sql

SELECT \* FROM Products;

SELECT \* FROM Production;

SELECT \* FROM Sales;

SELECT \* FROM Customers;

* Verify the data fetched for accuracy and completeness.

**Export Data to CSV**:

In MySQL Workbench:

* Right-click the result set of each query.
* Select **Export Result Set** > **Export to CSV**.

Save each table (Products.csv, Production.csv, etc.) in a well-organized folder.

**2. Importing Data into Excel**

**Open Excel**:

* Create a new workbook.

**Load CSV Files into Excel**:

* Go to the **Data** tab in the Ribbon.
* Click **Get Data** > **From File** > **From Text/CSV**.
* Select the respective CSV file (e.g., Products.csv).
* Repeat for all tables, loading each into a separate sheet.

**Check Data Consistency**:

* Ensure column headers match the table structure (e.g., ProductID, ProductName, etc.).
* Review the imported data for completeness (no missing or mismatched values).

**3. Data Preparation in Excel**

**Combine Data if Necessary**:

If you need a unified dataset (e.g., joining Products and Sales tables):

* Use Excel’s **Power Query** feature.
* Go to **Data** > **Get Data** > **From Other Sources** > **Combine Queries**.
* Perform joins (e.g., inner join on ProductID) to merge related tables.

**Format Data**:

* Convert the imported data into Excel Tables for easier filtering and analysis:

**Check Data Types**:

* Ensure numeric columns (e.g., UnitPrice, Revenue) are formatted as numbers.
* Verify dates (e.g., ProductionDate, SaleDate) are in the correct format.

**4. Create Pivot Tables for Analysis**

**Insert Pivot Tables**:

* Go to **Insert** > **Pivot Table**.
* Choose the table/range or use **Power Query** for combined data sources.

**Build Insights**:

**Revenue Analysis**:

* + - Drag ProductName to Rows and Revenue to Values.
* Analyze total revenue by product.

**Waste Trends**:

* + - Drag ProductName to Rows and WasteGenerated to Values.
    - Analyze waste generation by product.

**Create Charts**:

Visualize pivot table insights using charts (e.g., bar, pie, or line charts).

**5. Maintain Data Consistency**

**Verify Relationships**:

Cross-check key relationships between tables:

* Ensure ProductID matches across Products, Production, and Sales.
* Ensure no orphan records (e.g., sales data without matching products).

**Data Refresh**:

If data in the SQL database updates, refresh Excel data:

* Go to **Data** > **Refresh All**.
* Ensure updates reflect in pivot tables and charts.

**6. Documentation and Testing**

**Document the Process**:

* Record each step taken for importing, combining, and analyzing data.
* Highlight any manual interventions (e.g., cleaning or formatting data).

**Test for Accuracy**:

* Verify that results in Excel match SQL queries (e.g., total revenue).
* Check for data anomalies, such as missing values or inconsistent joins.