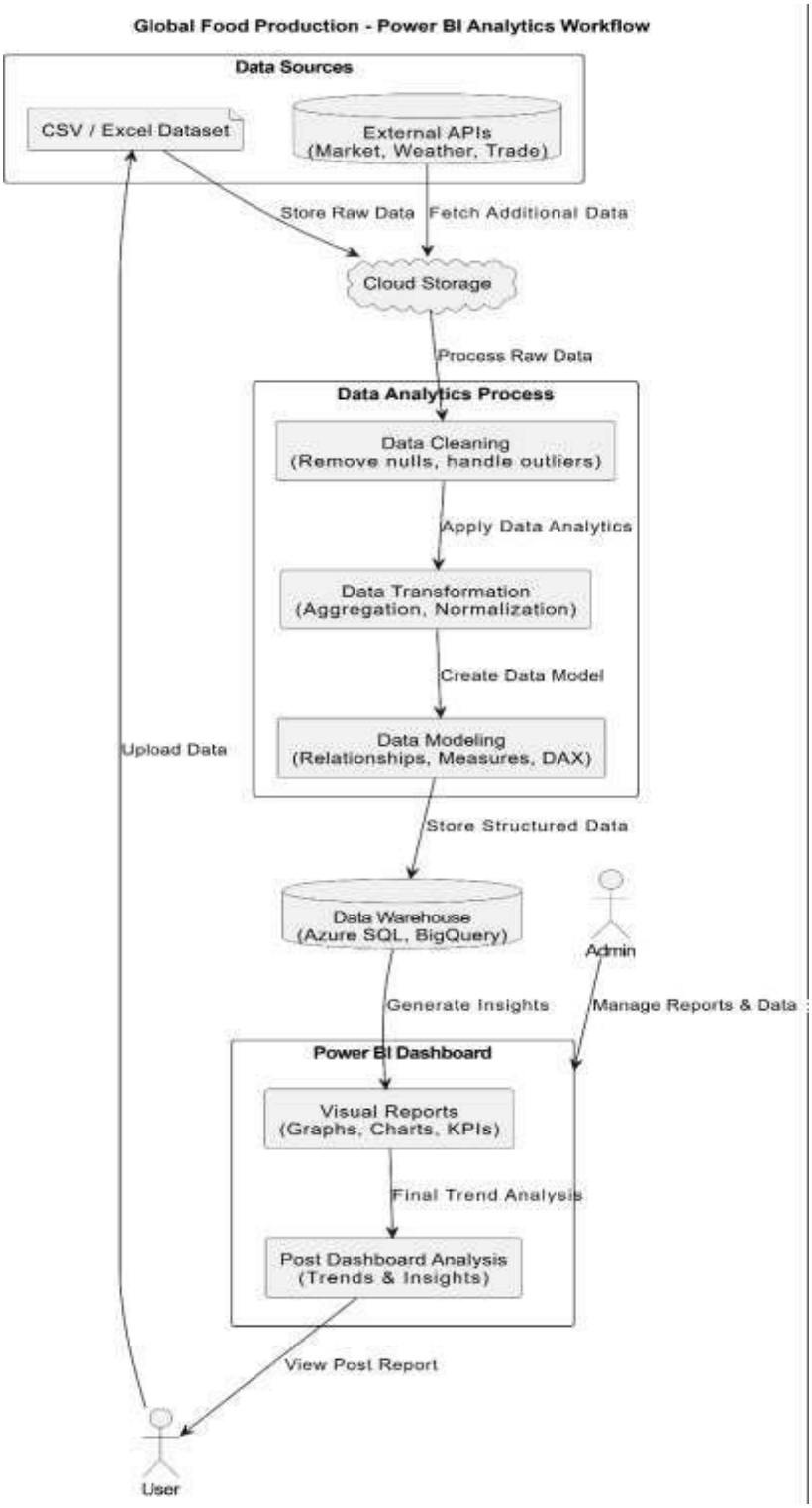
Date	12 March 2025
Team ID	PNT2025TMID02987
Project Name	Global Food Production Trend and Analysis a comprehensive study from 1961 to 2023 using power BI
Maximum Marks	4



Technical Architecture:

Sr.No	Component	Description	Technology
1	User Interface	How users interact with Power BI reports and dashboards (e.g., Web UI, Interactive Reports).	Power BI, Web UI
2	Data Collection	Collectinghistoricalfood production data from various sources.	Python, Pandas, APIs
3	Data Cleaning s Preprocessing	Handling missing values, standardizingformats, and normalizing data.	Python, SQL, Power Query
4	Data Storage (Local)	Storingprocessed data for further analysis.	MySQL, PostgreSQL, CSV, Excel
5	Cloud Database	Storingstructureddatafor accessibility and scalability.	AWS RDS, Azure SQL, Google BigQuery
6	Data Processing s Transformation	Aggregating data, calculatingtrends, and structuring for visualization.	Python, Power Query, SQL
7	Visualization s Reporting	Creating dashboards and reports with interactive insights.	Power BI, Tableau
8	External APIs	Fetching additional data like weather patterns, crop indices, and market prices.	OpenWeather API, FAO API, Market Data APIs
9	Machine Learning Model	Predicting future food production trends based on historical data.	Scikit-learn,TensorFlow, Azure ML

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	List the open-source frameworksused indata processing and visualization.	Power BI, Python (Pandas, NumPy), Excel
2	Security Implementations	Basic security measures like role-based access and datasetpermissions.	Power BI Row-Level Security(RLS), Power BI Service Permissions
3	Scalable Architecture	Ensures scalability for handling large datasets and multiple users.	Power BI Cloud Service, Azure SQL, Google BigQuery
4	Availability	Ensuring accessibility of reports through cloud deployment.	Power BI Service, Power BI Embedded, SharePoint Integration
5	Performance	Optimizing report load times and data refresh rates.	Power BI Data Modeling, DAX Optimization, DirectQuery vs. Import Mode