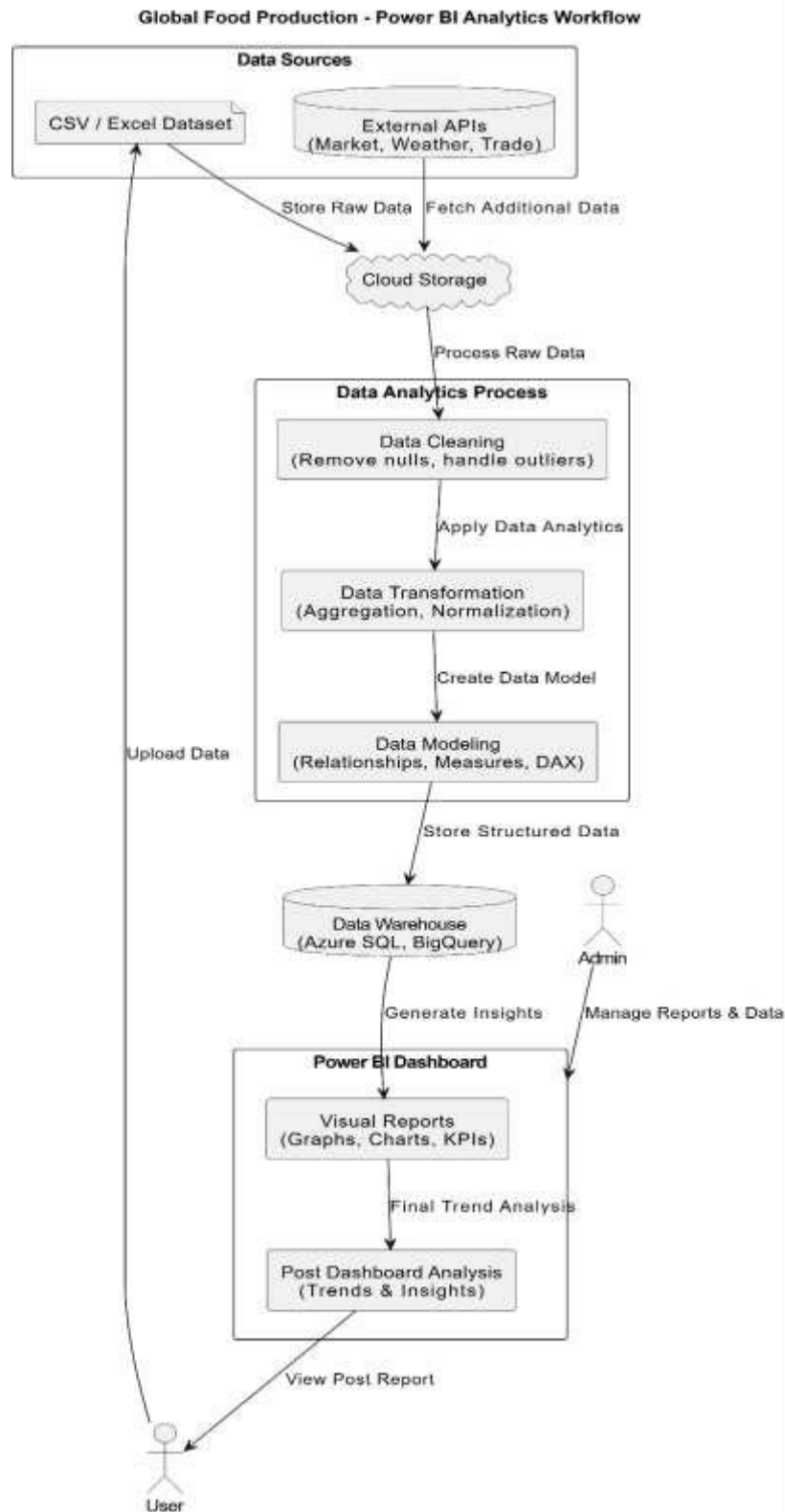


Date	10 March 2025
Team ID	PNT2025TMID02626
Project Name	Global Food Production and Trend Analysis A Comprehensive Study from 1961 to 2023 using power BI
Maximum Marks	4



Technical Architecture:

S.No	Component	Description	Technology
1	User Interface	Interactive views showing food production trends, crop yields, and supply chain insights	Power BI Service (Cloud), Power BI Desktop
2	Data Collection	Collecting historical food production data from various sources.	Python, Pandas, APIs
3	Data Cleaning s Preprocessing	Handling missing values, standardizing formats, and normalizing data.	Python, SQL, Power Query
4	Data Storage (Local)	Storing processed data for further analysis.	MySQL, PostgreSQL, CSV, Excel
5	Cloud Database	Storing structured data for accessibility and scalability.	AWS RDS, Azure SQL, Google Big Query
6	Data Processing s Transformation	Aggregating data, calculating trends, 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.	Open Weather API, FAO API, Market Data APIs
9	Machine Learning Model (Optional)	Predicting future food production trends based on historical data.	Scikit-learn, Tensor Flow, Azure ML

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	List the open-source frameworks used in data processing and visualization.	Power BI, Python (Pandas, NumPy), Excel
2	Security Implementations	Ensures only authorized users can access or modify food production data.	Azure Active Directory (AAD), Row-Level Security (RLS), Multi-Factor Authentication (MFA)
3	Scalable Architecture	Handles large datasets and scales to support global agricultural data.	Azure Synapse Analytics, Power BI Premium, Auto-Scaling
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