Date	5 March 2025
Team ID	PNT2025TMID01422
Project Name	Global Food Production and Trend Analysis
Maximum Marks	4

Global Food Production - Power BI Analytics Workflow
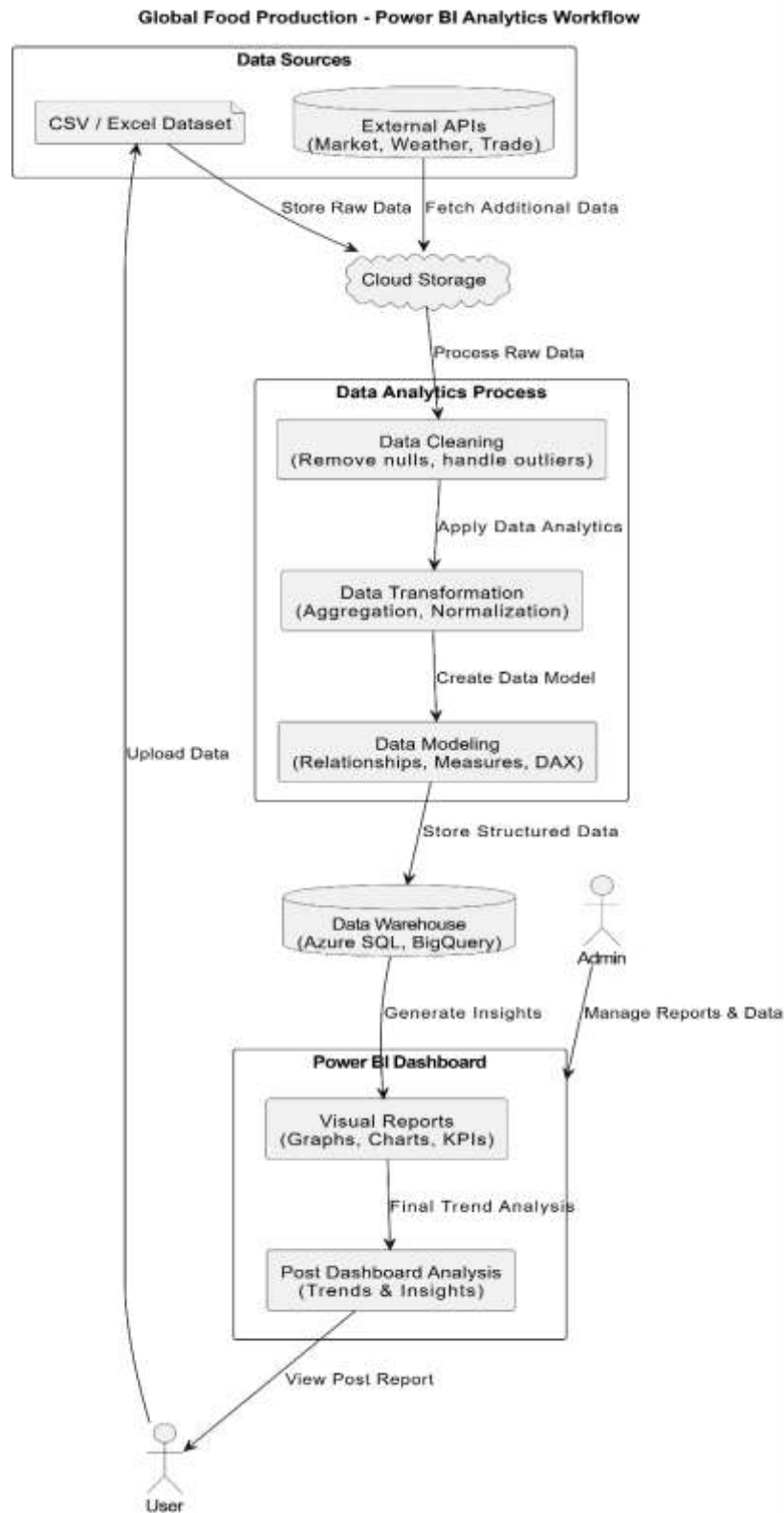
Technical Architecture:

S.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**	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 BigQuery
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.	OpenWeather API, FAO API, Market Data APIs
9	**Machine Learning Model (Optional)**	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 frameworks used in data processing and visualization.	Power BI, Python (Pandas, NumPy), Excel
2	**Security Implementations**	Basic security measures like role-based access and dataset permissions.	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