Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	5 March 2025
Team ID	PNT2025TMID02764
Project Name	Power BI Inflation Analysis: Journeying Through Global Economic Terrain
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

Example: Order processing during pandemics for offline mode

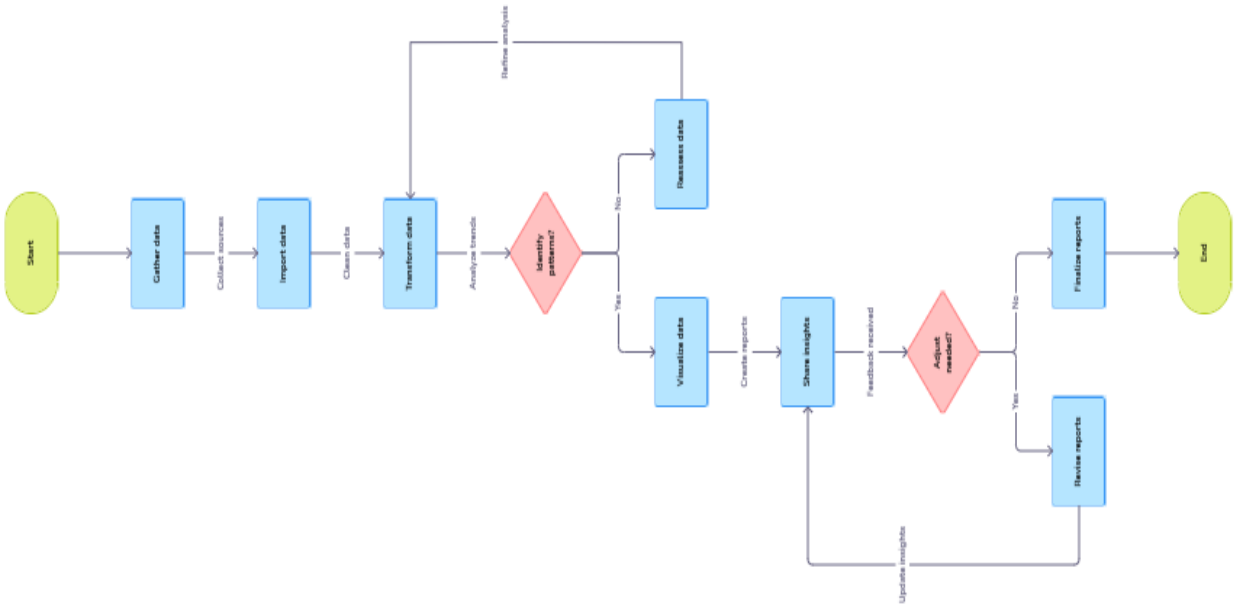

Table-1 : Components & Technologies:

Guidelines:

- Include all the processes (As an application logic / Technology Block)
- Provide infrastructural demarcation (Local / Cloud)
- Indicate external interfaces (third party API's etc.)
- Indicate Data Storage components / services
- Indicate interface to machine learning models (if applicable)

S.No	Component	Description	Technology
1.	User Interface	Web-based or desktop Power BI dashboards for visualization	Power BI Service, Power BI Desktop, HTML, CSS, JavaScript (for embedded reports)
2.	Application Logic-1	Data extraction and preprocessing logic	Python (Pandas, NumPy), SQL, Power Query
3.	Application Logic-2	Data modelling and analysis using DAX	Power BI DAX, R
4.	Database	Stores processed and raw data	MySQL, PostgreSQL, Azure SQL Database
5.	Cloud Database	Cloud-based storage and access	Microsoft Azure, AWS RDS, Google Big Query
6.	File Storage	Storing CSVs, JSON, and historical data	Azure Blob Storage, AWS S3
7.	External API-1	Economic and inflation data sources	IMF API, World Bank API, Federal Reserve API, OECD API
8.	Machine Learning Model	Forecasting future inflation trends	Scikit-Learn, TensorFlow, Power BI AI Insights
9.	Infrastructure (Server / Cloud)	Deployment on local systems or cloud	Power BI Service (Cloud), Power BI Report Server (Local), Kubernetes for scaling
10.	User Interface	Web-based or desktop Power BI dashboards for visualization	Power BI Service, Power BI Desktop, HTML, CSS, JavaScript (for embedded reports)

11.	Application Logic-1	Data extraction and preprocessing logic	Python (Pandas, NumPy), SQL, Power Query

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Libraries for data processing and visualization	Technology of Opensource framework
2.	Security Implementations	Data encryption, access control, and firewall protection	AES-256, SSL/TLS, IAM, RBAC, OWASP Standards
3.	Scalable Architecture	Ensuring scalability for large datasets	Cloud-based deployment, microservices
4.	Availability	Load balancing and redundancy for high uptime	Azure Load Balancer, AWS Auto Scaling
5.	Performance	Optimizing Power BI reports and query execution	Caching (Redis), CDN, Power BI Direct Query