Power BI Inflation Analysis: Journeying Through Global Economic Terrain

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CONTENT

Dataset Link

GitHub & Project Demo Link

INTRODUCTION

a. Project Overview

Inflation significantly impacts global economies, affecting businesses, consumers, and policymakers. The Power BI Inflation Analysis project aims to provide a comprehensive data-driven approach to analysing inflation trends. This project integrates real-time and historical inflation data, applies predictive modelling, and delivers interactive dashboards to enable businesses and financial analysts to make informed decisions.

1.2 Purpose

The key objectives of this project include:

Enhancing Data-Driven Decisions – By integrating inflation data from multiple sources, businesses can optimize pricing strategies, mitigate risks, and improve investment outcomes.

Improving Data Consistency – Standardizing inflation reporting across various regions ensures accurate comparisons and enhances data reliability.

Expanding Access to Historical Data – Incorporating long-term trends helps users understand inflation patterns and develop strategic policies.

Providing Actionable Insights – Interactive dashboards visualize inflation trends to aid decision-making.

Increasing Business Confidence – Organizations can make strategic decisions backed by real-time data visualizations.

Facilitating Macroeconomic Analysis – Policymakers and economists can analyse inflation trends across different regions and predict future economic shifts.

Supporting Financial Planning – Investors and financial analysts can assess inflation's impact on stock markets, interest rates, and purchasing power.

Automating Inflation Reporting – Reducing manual data processing by generating automated reports for governments, businesses, and research institutions.

Encouraging Transparency in Economic Data – Providing publicly accessible dashboards for better economic literacy and awareness.

These enhancements ensure that the Power BI Inflation Analysis project delivers **comprehensive, reliable, and actionable** insights to users across various sectors.

1. **IDEATION PHASE**

    a. **Problem Statement**

Customer Problem Statement Template:

I am a multinational corporation operating in diverse markets. I'm trying to make data-driven decisions to optimize pricing strategies, mitigate risks, and enhance investment outcomes.
But I face challenges with inconsistent data integration, limited historical data availability, and complex economic interdependence.
Because different regions report inflation data differently, historical data is scarce, and global economic factors influence each other unpredictably.
Which makes me feel uncertain about making accurate predictions and strategic decisions that align with each market's economic conditions.

Example:

Problem Statement	I am (Customer)	I'm trying to	But	Because	Which makes me
PS-1	A multinational corporation operating in diverse global markets.	Use inflation data to make smart pricing and investment decisions.	The data is inconsistent and hard to analyse.	Different regions report inflation differently, and historical data is often missing.	Uncertain and less confident about decision-making.
PS-2	A global retail corporation with operations in many countries.	Understand inflation trends to make pricing and supply chain decisions.	The data is inconsistent t and hard to compare.	Each country reports inflation differently, and data is often incomplete.	Vulnerable to making bad decisions that could hurt profits.

2.2 Empathy Map Canvas

Empathy Map Canvas:

An empathy map is a simple, easy-to-digest visual that captures insights about stakeholders' perspectives on inflation impacts and economic challenges.

It is a useful tool that helps teams better understand how inflation dynamics affect business strategies and decision-making. Creating an effective inflation strategy requires understanding the real economic issues and the perspectives of those who are impacted. The exercise of creating the map helps participants consider inflation effects from the viewpoint of various stakeholders, including their goals, challenges, and responses to economic shifts.

Reference:click her e t o chec k mor e in detai   l

2.2 Brainstorming

Brainstorm & Idea Prioritization Template for Power BI Inflation Analysis:

Brainstorming is an essential part of analyzing global inflation trends and developing datadriven insights for multinational corporations. This process encourages team members to share creative ideas and practical solutions, focusing on exploring diverse perspectives to tackle challenges related to data integration, historical data accessibility, and complex economic interdependencies.

By fostering an open and collaborative environment, team members can freely discuss potential approaches and share innovative techniques to improve data accuracy and visualization in Power BI dashboards. Out-of-the-box thinking is highly valued, as it helps uncover unique solutions that might otherwise be overlooked.

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Step-2: Brainstorm, Idea Listing and Grouping

Step-3: Idea Prioritization

3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

Reference::Click Here

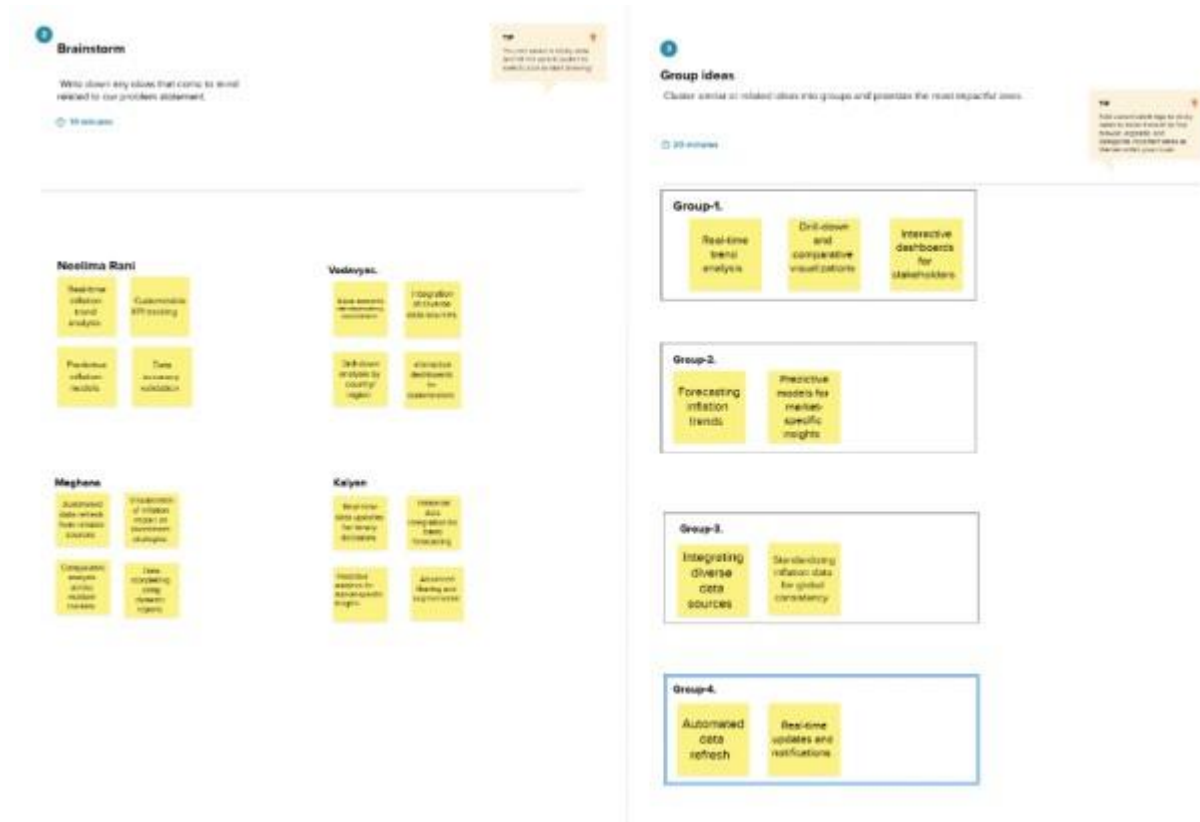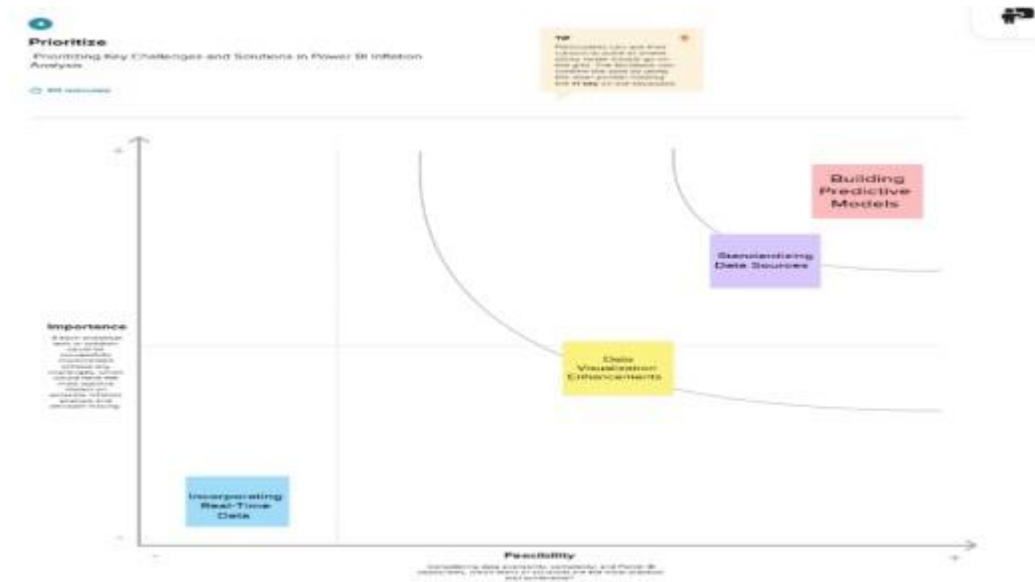### 3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement	Sub Requirement (Story / Sub-Task)
FR-1	**(Epic)** Data Collection	Collect inflation data from multiple reliable sources
FR-2	Data Standardization	Convert data formats to ensure uniformity Handle missing or inconsistent data
FR-3	Data Visualization	Build interactive dashboards to display inflation trends
FR-4	Data Reporting	Generate automated reports summarizing inflation insights

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The dashboard should have an intuitive and user-friendly interface for effortless navigation and data
NFR-2	Security	Ensure secure access with role-based ^{ti} authentication and data encryption to protect
NFR-3	Reliability	The system should provide accurate and ^{iti} $^{i\ f}$ ^{ti} consistent results without unexpected failures or
NFR-4	Performance	^{t}he dashboards should load and update data^{l} efficiently, even with large datasets, to maintain
NFR-5	Availability	The system should be available 24/7 to allow^{i} users to access real-time insights at any given
NFR-6	Scalability	^{ti}The solution should be able to handle increasing data volume and additional features without

f   d   d ti

3.3 Data Flow Diagram

Data Flow Diagrams:

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a data analysis system. In the context of our Power BI Inflation Analysis project, a neat and clear DFD can graphically depict the flow of inflation data, from data collection and preprocessing to visualization and report generation. It shows how inflation data is gathered from various sources, processed, analyzed, and transformed into interactive dashboards, providing valuable insights for strategic decision-making.

Example of Data Flow Diagram:

User Stories

Use the below template to list all the user stories for the product.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Data Analyst	Data Collection	USN-1	.As a data analyst, I can collect inflation data from various sources to ensure comprehensive analysis	I can access complete and accurate inflation data.	High	Sprint-1
	Data Standardization	USN-2	As a data analyst, I will receive standardized data that is consistent across different sources	I can work with uniform data for reliable analysis.	High	Sprint-1
	Data Visualization	USN-3	As a data analyst, I can visualize inflation trends using interactive dashboards.	I can view clear and insightful visualizations of inflation data.	Medium	Sprint-2
	Data Reporting	USN-4	As a data analyst, I can generate comprehensive reports on inflation trends and predictions.I	I can produce reports that summarize key findings and insights.	Medium	Sprint-1
Business User	Dashboard Access	USN-5	As a business user, I can log into the dashboard to view inflation analysis and insights.	I can easily navigate and interact with the dashboard.	High	Sprint-1

3.4 Technology Stack

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

Example: Inflation Data Analysis Workflow in Power BI
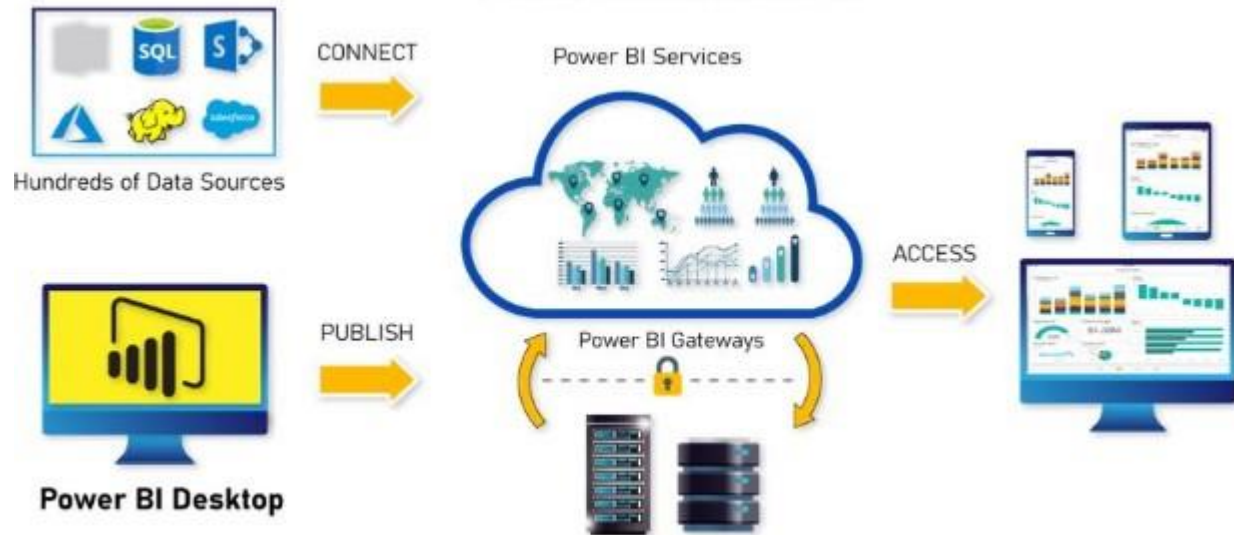
S.No	Component	Description	Technology
1.	User Interface	How users interact with the dashboards and reports.	Power BI Desktop, Power BI Service
2.	Data Sources	Data input for analysis.	Excel, SQL, CSV, JSON
3.	Data Transformation	Data cleaning, shaping, and transformation.	Power Query, DAX
4.	Data Modelling	Establishing relationships between tables.	Power BI Data Model
5.	Visualization Layer	Displaying data through charts and visuals.	Power BI Visualizations, Custom Visuals
6.	Cloud Service	Publishing and sharing reports online.	Power BI Service, OneDrive
7.	File Storage	Storing project files and datasets.	Local Filesystem, OneDrive
8.	External API-1	API used for fetching real-time inflation data.	Inflation Rate API (e.g., FRED API)
9.	External API-2	API for currency exchange rates.	Exchange Rate API
10.	Machine Learning Model	Model for predictive inflation trends.	Azure Autum, Python Integration
11.	Infrastructure (Server / Cloud)	Deployment and hosting platform.	Microsoft Azure, Cloud Storage

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Frameworks used for data processing.	Python (Pandas, NumPy), R
2.	Security Implementations	Data encryption and access control.	Row-level security (RLS), IAM
3.	Scalable Architecture	Ensuring Scalability with larger data sets.	Power BI Premium, Azure Synapse
4.	Availability	Ensuring availability of reports and dashboards.	Power BI Service with Auto-refresh
5.	Performance	Optimizing performance with caching and tuning.	Power BI Aggregations, Dataflows

4.PROJECT DESIGN

4.1 Problem Solution Fit

Problem – Solution Fit Template:

The Problem-Solution Fit ensures that the solution effectively addresses the customer's problem. It helps business analysts, data professionals, and corporate decision-makers identify behavioural patterns and understand the effectiveness of their solutions.

Purpose:

1. Enable data-driven decisions to optimize pricing strategies, mitigate risks, and enhance investment outcomes.

2. Improve consistency in data integration and expand access to historical data

3. Provide actionable insights to address the challenges of complex economic interdependence

4. Standardize regional inflation data reporting to enhance accuracy and comparability.

5. Increase business confidence by supporting strategic decisions with comprehensive ,real-time data visualization.

Template:

4.2 Proposed Solution

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	The Corporation struggles with inconsistent data integration ,limited historical data ,and complex economic interdependence, making
2.	Idea / Solution description	Develop a power BI solution to integrate and standardize inflation data, visualize trends and enhance predictive insights for strategic
3.	Novelty / Uniqueness	Combines real time dashboards, automated data extraction, and predictive modelling to create dynamic and insightful visualizations
4.	Social Impact / Customer Satisfaction	Enables better pricing strategies, risk mitigation, and investment decisions, leading to improved market adaptability and

|			
5.	Business Model (Revenue Model) Leverages data analytics as service model to offer insights and decision-making tools, enhancing profitability through data-		
6.	~~Scalability of the Solution The solution is scalable to include additional economic~~ indicators, global regions ,and custom metrics, supporting future business		

4.3Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

Find the best tech solution to solve existing business problems.
Describe the structure, characteristics, behaviour, and other aspects of the Power BI solution to project stakeholders.
Define features, development phases, and solution requirements. Provide specifications according to while

Solution Architecture Diagram:
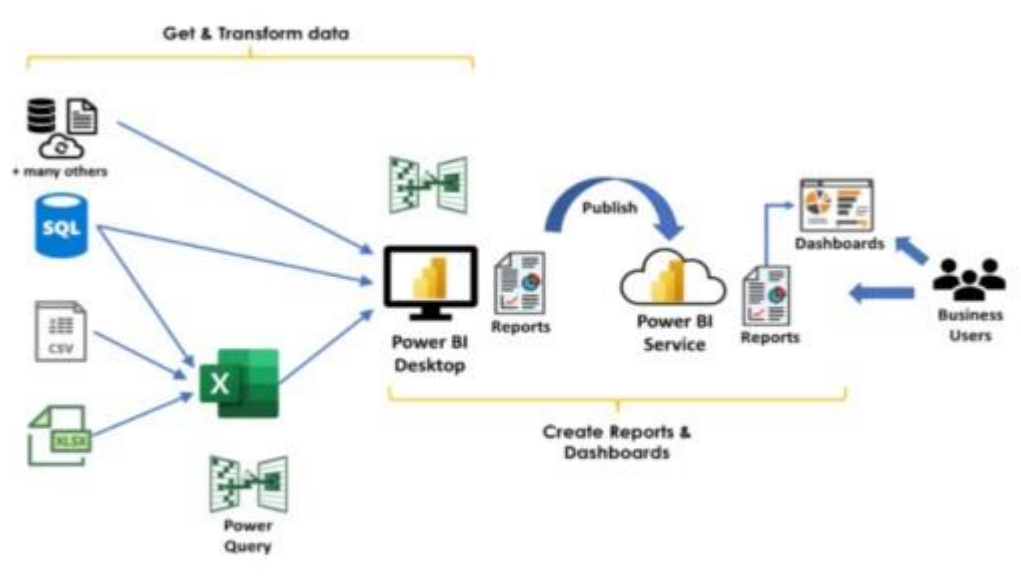
Architecture and Data Flow of the Power BI Inflation Analysis project

5.PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points) template to create product backlog and sprint schedule

Sprint	Functional Requirement	User Story	User Story / Task	Story Points	Priority	Team Members

Sprint-1	Data Collection	USN-1	As a User,I can collect inflation data from	2	High	Team Members
Sprint-1	Data Preprocessing	USN-2	As a user , I can clean and standardize data for	1	High	Team Members
Sprint-1	Data Integration	USN-3	As a user, ,I can Integrate datasets from	2	Low	Team Members
Sprint-2	Data Visualization	USN-4	As a user, I can view inflation trends on	2	Medium	Team Members
Sprint-2	Predictive Modeling	USN-5	As a user, I can apply Forecasting models to	1	High	Team Members
Sprint-2	Dashboard	USN-6	As a user,I can generate reports summarizing	3	High	Team Members

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	30	14 Days	31 Jan 2025	13 Feb 2025	30	13 Feb 2025
Sprint-2	30	14 Days	14 Feb 2025	28 Feb 2025	30	28 Feb 2025

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint).
Let's calculate the team's average velocity (AV) per iteration unit (story points per day

$$AV = \text{Total Story Points} / \text{Sprint Duration} = 30/14 = 2.14$$

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile softwar e develo pment methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.
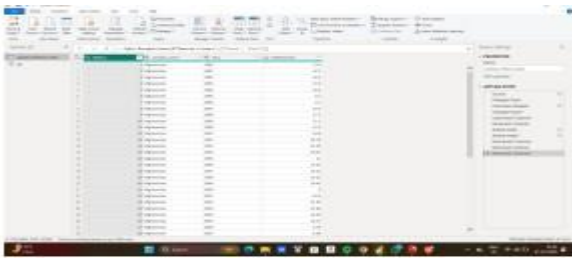
6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 Performance Testing

Model Performance Testing:

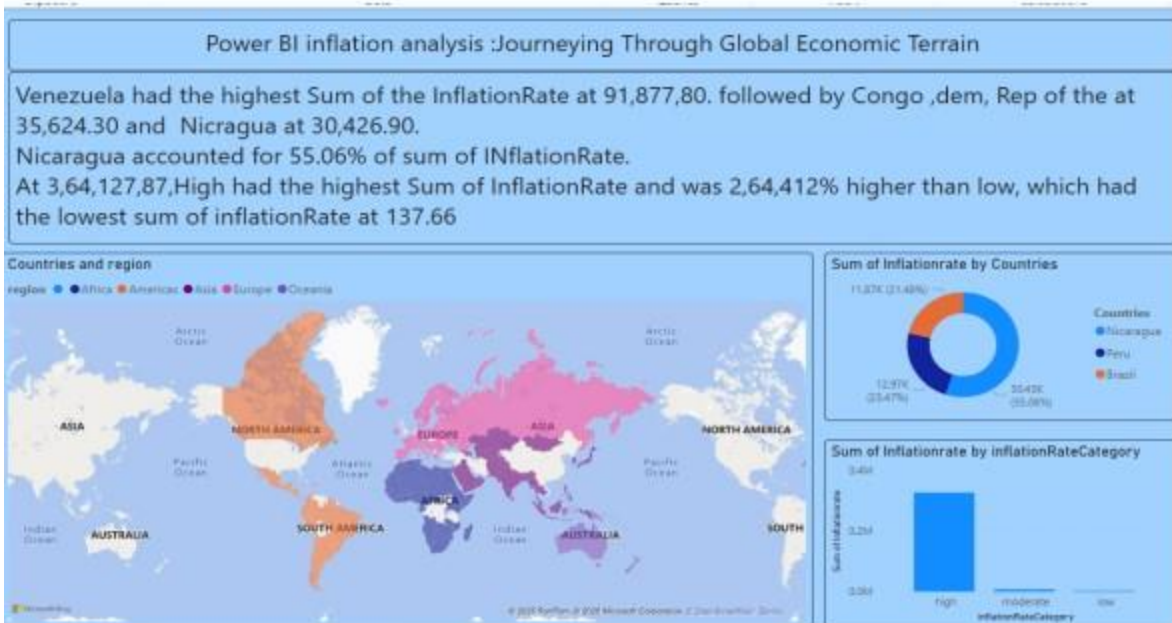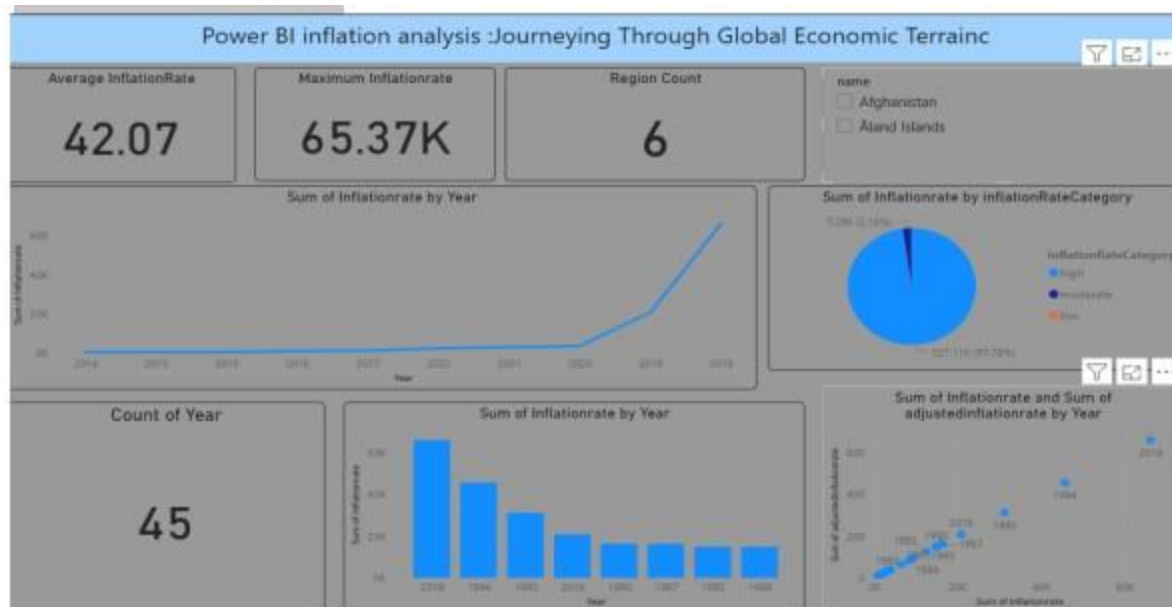Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Screenshot / Values

1.	Data Rendered	
2.	Data Preprocessing	

3.	Utilization of Data Filters	
4.	DAX Queries Used	
5.	Dashboard design	
6	Report Design	

7. RESULTS

7.1 Output Screenshots

8. \

ADVANTAGES

Provides a user-friendly interface for seamless content sharing.

Enhances engagement through interactive features.

Offers data analytics to track performance and audience behaviour.

DISADVANTAGES

Requires significant infrastructure and maintenance costs.

Faces competition from well-established platforms.

Potential privacy and security concerns for users.

9. CONCLUSION

The platform aims to bridge gaps in existing video-sharing services.

Offers unique features tailored for a specific audience.

Provides opportunities for creators and users to engage effectively.

Focuses on user experience to stand out from competitors.

Aims to implement strong security and data protection measures.

Scalability potential to expand features based on user demand.

10. FUTURE SCOPE

Integration of AI-driven content recommendations.

Expansion to support multiple languages and regional content.

Enhancement of security measures for user data protection.

Development of interactive and immersive content formats (e.g., AR/VR).

Implementation of blockchain technology for copyright protection.

Improved monetization options for creators, including tipping and premium content.

Collaboration with influencers and brands to increase platform reach.

11. APPENDIX

Technical specifications of the platform.

Survey results and user feedback.

References and additional resources.

Comparison with existing video-sharing platforms.

Case studies of successful content creators.

Details on backend architecture and technology stack.