Power BI Inflation Analysis: Journeying Through Global Economic Terrain

Description:- Inflation, a critical economic indicator, profoundly impacts businesses, consumers, and policymakers worldwide. In this scenario, a multinational corporation operating in diverse markets seeks to optimize pricing strategies, mitigate risks, and make informed investment decisions. Leveraging Power BI's analytical prowess, we delve into inflation data to offer tailored recommendations aligned with each market's unique economic conditions.

Our approach involves data collection, preparation, and modeling to build a robust analysis framework. Through insightful visualizations and strategic recommendations, we aim to equip stakeholders with actionable insights for informed decision-making. Our deliverables include an interactive Power BI dashboard showcasing inflation trends and a comprehensive report summarizing analysis findings and recommendations.

Scenario 1: Lack of Data Integration and Standardization
In the context of "Power BI Inflation Analysis: Journeying Through Global Economic Terrain," a key problem might be the lack of standardized data sources and integration methods. Different regions and organizations may report inflation data differently, leading to inconsistencies and challenges in aggregating and analyzing global inflation trends effectively within Power BI. This lack of standardization hampers the ability to provide accurate and comprehensive insights into inflation dynamics worldwide.

Scenario 2: Limited Historical Data Accessibility
Another challenge could be the limited accessibility to historical inflation data across various countries and regions. This scarcity of historical data poses a significant obstacle in building robust predictive models within Power BI for forecasting inflation trends accurately. Without a comprehensive historical dataset, analysts may struggle to identify long-term patterns and correlations necessary for making informed decisions and projections.

Scenario 3: Complex Economic Interdependencies
The intricate interdependencies among global economies pose a complex challenge in "Power BI Inflation Analysis: Journeying Through Global Economic Terrain." Fluctuations in one country's inflation rate can have ripple effects across other regions, making it difficult to isolate and analyze the drivers of inflation within individual economies. Effectively capturing and analyzing these interdependencies within Power BI requires sophisticated modeling techniques and access to diverse datasets, which may not be readily available or easily integrated into the analysis platform.

Technical Architecture:
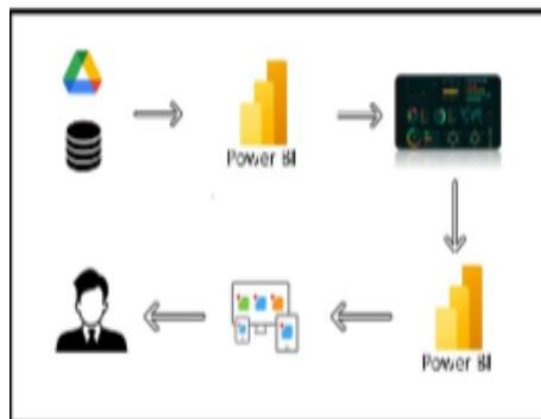
Project Flow:-

1) Data Collection

     o Collect the dataset,

     o Connect Data with Power Bl

2) Data Preparation

     o Prepare the Data for Visualization

3) Data Visualizations

     o Visualizations

4) Dashboard

     o Responsive and Design of Dashboard

5) Report

     o Report Creation

6) Performance Testing

     o Utilization of Data Filters

     o No. of Calculation fields

     o No. of Visualizations/Graphs

7) Project Demonstration & Documentation

     o Record explanation Video for project end to end solution

     o Project Documentation Step by step project development procedure

Milestone 1:-Data Collection

❖ **Collect the dataset:-** We collect data set from the website called "Kaggle".

Link:-   https://www.kaggle.com/datasets/sazidthe1/global-inflation-data

Data contains all the meta information regarding the columns described in the CSV files.

Column Description of the Dataset:

1) Country_name: Name of the Country.

2) Inflation Rate: Inflation rate of each country.

3) Region: Region of country which belongs

4) Year: represents the calendar year for which the corresponding inflation data is recorded.

5) AdjustedInflationRate: The 'Adjusted Inflation Rate' column is derived by multiplying the inflation rate by 0.01 .

6) InflationRateCategory:The 'Inflation Rate' column is categorized as   high, medium, or low based on predefined thresholds.

❖ **Connect Data with Power Bl:-**

Open Power BI ----> click "Get Data" ----> Select option either "CSV/EXCEL" ----> Then choose file from ypur computer ----> Finally click "Load".

Milestone 2:-Data Preparation

Data preparation is a critical stage in the data analysis process, encompassing activities aimed at cleaning, transforming, and organizing raw data into a structured format suitable for analysis. This process involves identifying and addressing issues such as missing values, outliers, inconsistencies, and inaccuracies in the dataset, ensuring data quality and reliability.

Data processing can be done at "**Transform state**". Preparing the data for visualization involves cleaning the data to remove irrelevant or missing data, transforming the data into a format that can be easily visualized, exploring the data to identify patterns and trends, filtering the data to focus on specific subsets of data, preparing the data for visualization software, and ensuring the data is accurate and complete. This process helps to make the data easily understandable and ready for creating visualizations to gain insights into the performance and efficiency. Since the data is already cleaned, we can move to visualization.

❖ **Before data Pre-processing:-**

| A	B	C	D	E	F
country_n	indicator_	1980	1981	1982	1983
Afghanist	Annual av	13.4	22.2	18.2	15.9
Albania	Annual average inflation (consumer prices) rate				
Algeria	Annual av	9.7	14.6	6.6	7.8
Andorra	Annual average inflation (consumer prices) rate				
Angola	Annual av	46.7	1.4	1.8	1.8
Antigua ar	Annual av	19	11.5	4.2	2.3

❖ **After data Pre-processing:-**

Index	Year	Inflationrate	AdjustedInflationrate	InflationRateCategory	InflationrateDifference	InflationRateChange
1	1980	13.4	1.34	High	12.06	-0.382222222222222
2	1981	22.2	2.22	High	19.98	-0.382222222222222
3	1982	18.2	1.82	High	16.38	-0.382222222222222
4	1983	15.9	1.59	High	14.31	-0.382222222222222
5	1984	20.4	2.04	High	18.36	-0.382222222222222
6	1985	8.7	0.87	High	7.83	-0.382222222222222

Milestone 3:-Data Visualization

Data visualization is the process of creating graphical representations of data to help people understand and explore the information. The goal of data visualization is to make complex data sets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.
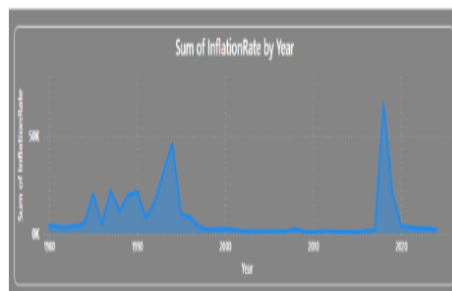
Activity 1.1: Average Inflation Rate
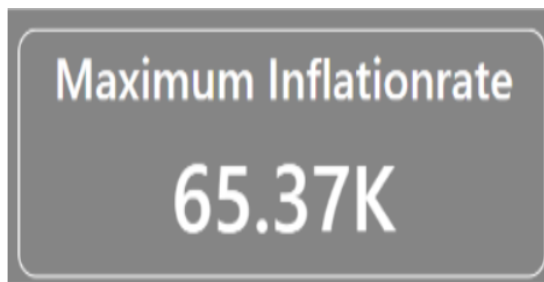
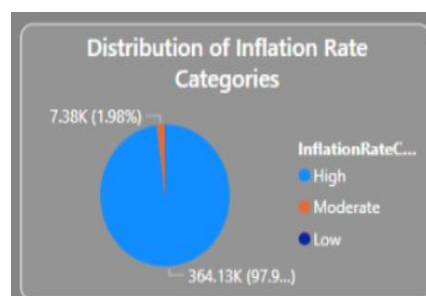Activity 1.2: Maximum Inflation Rate

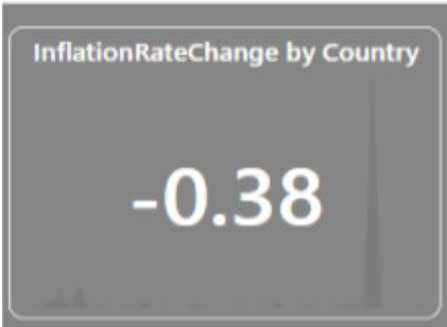
Activity 1.3: Total Number of Regions

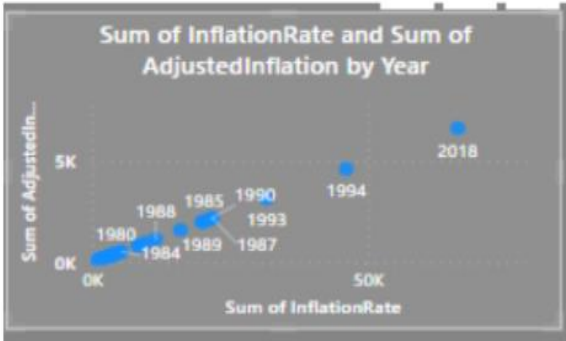Activity 1.4: Filter applied On Country Column

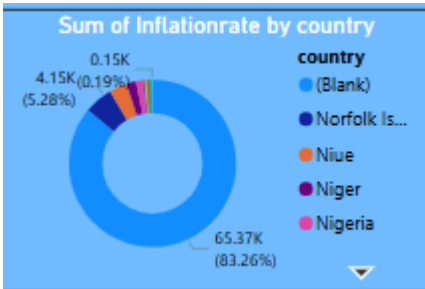Activity 1.5: InflationRate change over a year

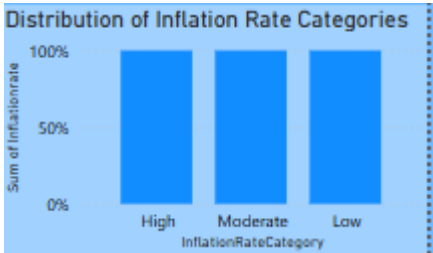Activity 1.6: Distribution Of Inflationrate Categories.

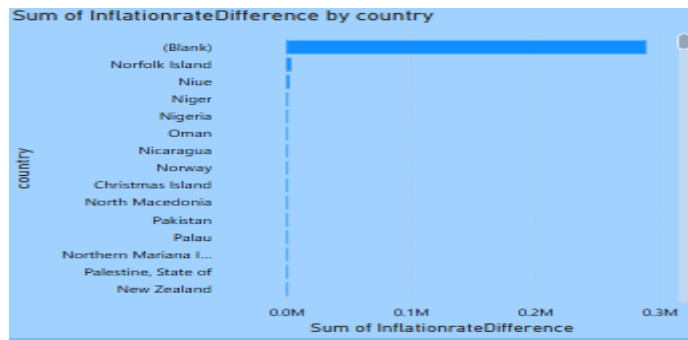Activity 1.7: Average Inflation Rate Change by Country

Activity 1.8: inflation rate and adjusted inflation rate change over years
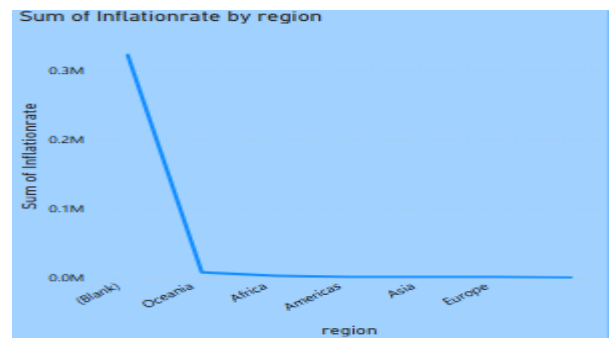

Activity 1.9: Top 3 inflation rate Countries

Activity 1.10: inflation rate Distribution

Activity 1.11: sum of inflation rate difference by countries

Activity 1.12: sum of inflation rate by region

Milestone 4:-Dashboard

A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data and are typically designed for a specific purpose or use case. Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

➢ Responsive and Design of Dashboard

Average Inflation Rate

42.06

Maximum Inflation Rate

65.37K

Region Count

196

Country

☐ Afghanistan
☐ Albania
☐ Algeria

Distribution of Inflation Rate Categories

10.72K (2.89%)

357.92K (96.48%)

InflationRateCategory
● High
● Medium
● Low

Distribution of Inflation Rate by Categories

0.4M

0.2M

0.0M

High   Medium   Low

InflationRateCategory

Sum of Inflation Rate by country_name

0.74K (0.2%)
1.07K (0.2...)
1.54K (0....)
2.04K (0....)
4.07K (1....)
7.71K (2.0...)
11.87K (3.2%)

91.88K (24.77%)

35.63K (9.6%)
30.43K (8.2%)

country_name
● Venezuela
● Congo, Dem. ...
● Nicaragua

Sum of Inflation Rate by Year

50K

0K

1980   1990   2000   2010   2020

Year

Sum of Inflation Rate and Sum of AdjustedInflation by Year

500

0

0K   10K   20K   30K   40K   50K   60K   70K

Sum of Inflation Rate

Milestone 5:-Report

A report is a comprehensive document that provides a detailed and structured account of data analysis, findings, and insights. It is typically used for in-depth analysis, documentation, and communication of results. Reports are suitable for a diverse audience, including decision-makers, analysts, and stakeholders who need a comprehensive understanding of the data.

➢ Design of Report

Designing a report in Power BI involves connecting to data sources, creating visualizations like charts and graphs, customizing their appearance and interactivity, organizing them logically on the canvas, formatting elements for consistency and clarity, and optionally creating dashboards for a summarized view. Throughout the process, it's essential to consider the audience's needs and ensure the report effectively communicates insights from the data. Finally, iterate based on feedback to continually improve the report's design and usefulness.
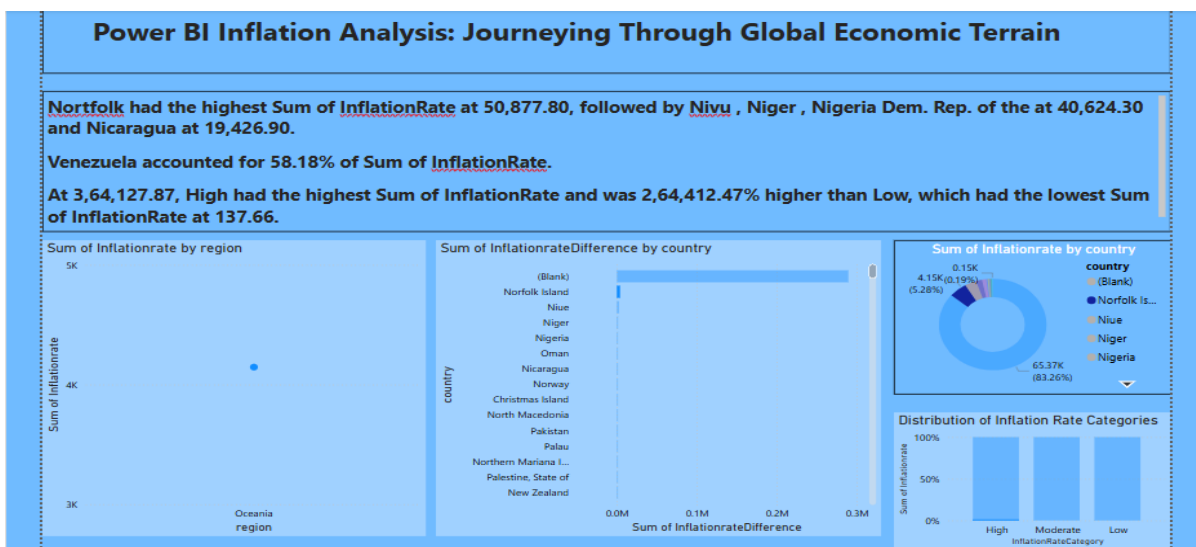
Milestone 6:-Preformance Testing

Performance testing is a critical component of software development aimed at evaluating the speed, responsiveness, and stability of an application under varying load conditions. By simulating real-world scenarios, such as heavy user traffic or high data volumes, performance testing helps identify potential bottlenecks, weaknesses, and areas for optimization within the system.

➢ **Amount of Data Loaded**

"Amount of Data Loaded" refers to the quantity or volume of data that has been imported, retrieved, or loaded into a system, software application, database, or any other data storage or processing environment. It's a measure of how much data has been successfully processed and made available for analysis, manipulation, or use within the system.

Milestone 7:-Project Demonstration :-

➢ **Record explaination video for project end to end solution:-**

Creating a Record explaination video for project end to end solution is crucial for ensuring clarity and transparency in its implementation ans serve as comprehensive guide which detailing every aspect of the project from inspection to completion.

Drive Link: https://drive.google.com/drive/folders/1rEwA--FLEH_9TW32Vcg3jO-8IdpooBL6