

Project Report Format

1. INTRODUCTION

1.1 Project Overview

Economic freedom plays a critical role in determining a country's prosperity, competitiveness, and the overall well-being of its citizens. However, while numerous datasets and reports exist, there is a gap in interactive and comparative tools that make this information accessible and actionable for diverse stakeholders.

This project aims to analyse and visualize the Index of Economic Freedom across multiple countries to provide insights into the relationship between economic policies and national prosperity. Using statistical analysis, data visualization techniques, and real-time filtering capabilities, the platform enables policymakers, researchers, investors, and the general public to explore key economic indicators in an intuitive and meaningful way.

The solution integrates data ingestion, processing, and visualization in a modular architecture, offering features like global freedom heatmaps, year-wise trends, top/bottom ranked countries, and correlation analysis with other socio-economic metrics like GDP and unemployment rates. This project bridges the gap between raw data and informed decisionmaking through a transparent, scalable, and user-centric approach.

1.2 Purpose

The purpose of this project is to create an accessible, data-driven platform that enables the analysis and visualization of the Index of Economic Freedom across different countries and time periods. This initiative seeks to empower policymakers, researchers, and investors by providing them with actionable insights into how economic freedom influences prosperity, governance, and development. By transforming complex datasets into interactive dashboards and comparative tools, the project promotes informed decision-making, encourages transparency in economic policies, and supports academic and institutional research. Ultimately, the solution aspires to highlight global economic patterns and guide strategic reforms aimed at enhancing economic liberty and growth.

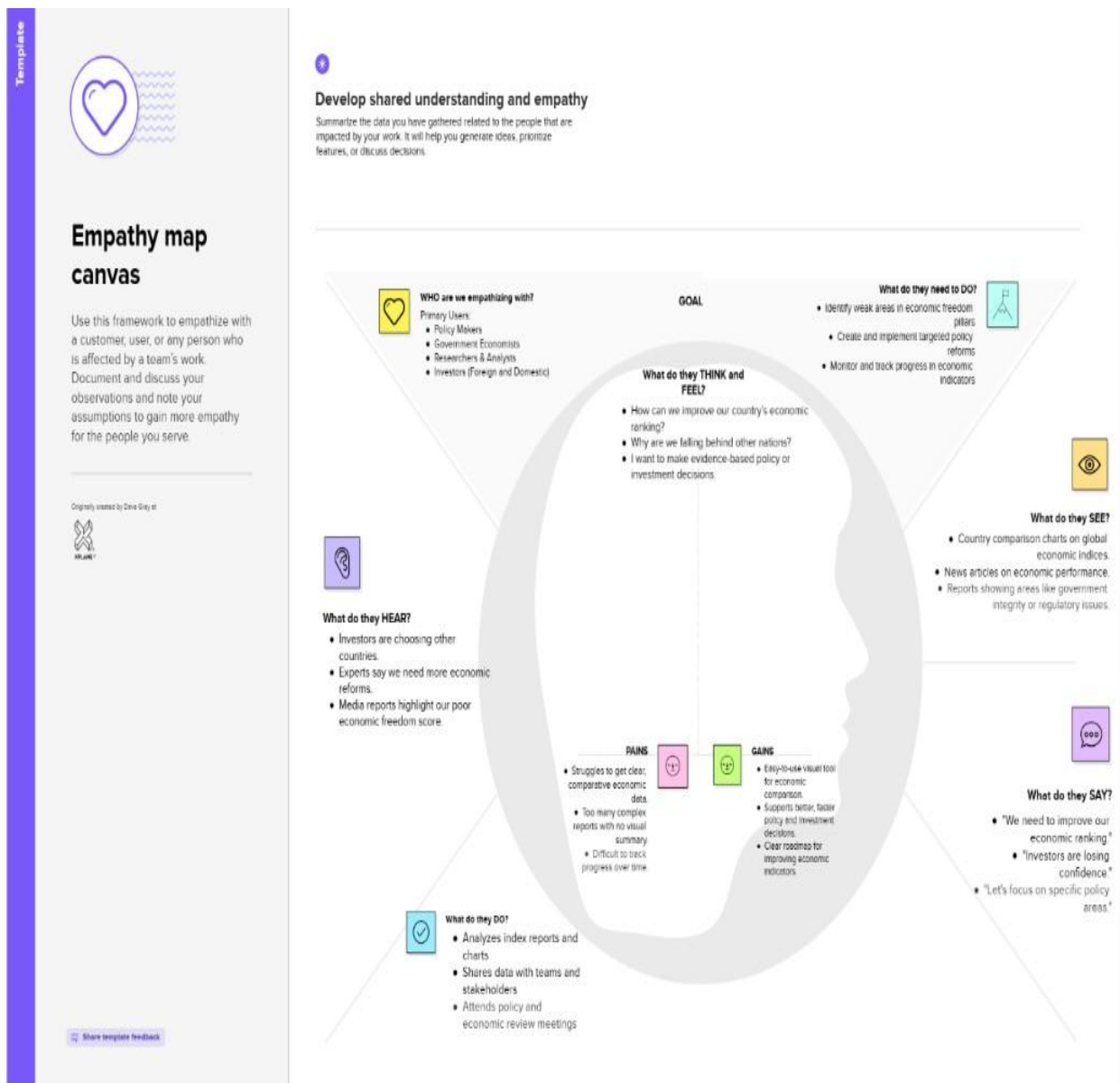
2. IDEATION PHASE

2.1 Problem Statement

I am	I'm trying to	But	Because	Which makes me feel
I am A student researcher or policy analyst.	I'm trying to Understand how economic freedom impacts national prosperity.	But There are many complex indicators and varying country performances	Because Economic freedom is measured across multiple pillars and not all countries perform consistently across them	Which makes me feel Overwhelmed and uncertain about drawing clear, actionable insights

PS-1	Policy maker / <u>Government</u> official	Improve economic policy decisions	Lack of consolidated and easy- <u>tounderstand</u> data on economic freedom pillars	Lack of consolidated and easy- <u>tounderstand</u> data on economic freedom pillars	Frustrated and uncertain
PS-2	Researcher / Economist	<u>Analyze</u> factors affecting economic growth	Data comparison between countries <u>is</u> complex	Economic freedom indicators are scattered and unstandardized	Overwhelmed and delayed


2.2 Empathy Map Canvas



2.3 Brainstorming


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


Template




Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

 10 minutes to prepare


 1 hour to collaborate

 2-8 people recommended

●

Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

 10 minutes

A

Team gathering

"We'll be analyzing the Index of Economic Freedom (2022) to uncover how key freedoms—like property rights, tax policies, and market openness—impact prosperity. Be ready to brainstorm policy ideas, visual insights, and country comparisons."

B

Set the goal

The goal is to explore how economic freedom—measured across 12 factors—affects a country's prosperity. We'll identify which factors most significantly contribute to or hinder development and suggest improvements.

C

Learn how to use the facilitation tools


Use sticky notes, graphs, maps, and comparison tables to document insights. Platforms like **Miro**, **Jamboard**, or **Google Slides** can be used for collaboration.

[Open article](#) →

1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

 5 minutes


PROBLEM


How might we analyze the Index of Economic Freedom to understand which economic policies best drive national prosperity and reduce poverty?


2


Key rules of brainstorming


To run a smooth and productive session


 Stay in topic.

 Encourage wild ideas.

 Defer judgment.

 Listen to others.

 Go for volume.


 If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

 10 minutes

Person 1

Country scorecards showing performance in all 4 pillars (Rule of Law, Government Size, Regulatory Efficiency, Open Markets)

Person 2

Compare countries side-by-side based on changes in economic freedom scores and corresponding GDP/ per capita growth

Person 3

Policy suggestions tailored to countries falling behind in specific pillars (e.g., reduce tax burden, improve judicial efficiency)

Person 4

Highlight "rising economies" based on improvement trends in economic freedom over the last 5 years


TIP

You can select a sticky note and hit the pencil (switch to sketch) icon to start drawing!

3

Group ideas

- **Interactive world map** showing country-level Index of Economic Freedom scores and changes over time.
- **Simple comparison graphs** for each country showing trends across the 4 pillars (e.g., tax burden vs. GDP growth).
- **Set alerts or tags** for countries with rapidly improving or declining economic freedom metrics.
- **Explain economic trends** in plain terms (e.g., "A drop in government integrity led to investor withdrawal in Country X").
- **Cluster countries** into categories: "Top Performers," "Improving Nations," "Declining Economies," and "Reform-Ready States."

 20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Step-3: Idea Prioritization



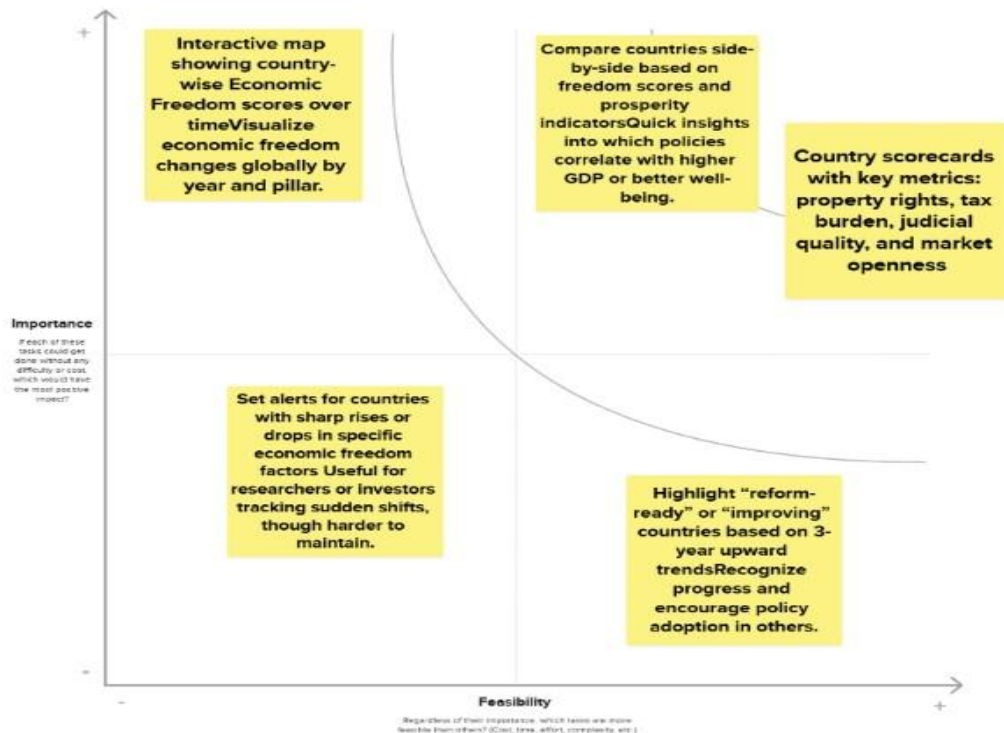
Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

TIP

Participants can use their cursor to click or where copy notes should go on the grid. The facilitator can confirm the spot by using the laser pointer moving the H key on the keyboard.



3. REQUIREMENT ANALYSIS

3.1 Customer Journey map

	Entice	Enter	Engage	Exit	Extend
Steps	Learns about the program	Decides to participate and regis-	Participates in the prosperity survey	Finishes surv- and dets results or a thank you	Learns about next steps, othef programs
Interactions	Receive outreach via social dis contacts or	Signs up online or via community help desks	Receives appointment reminders	Receive a debrief certificative participation	Help me feel that my opinion Haters
Things	Brockures poster's via social posts	Online registration forms, helpfin	Questionnaires tablets, phones	Forgetting our schedule anxiety	Help me get ready and not forget
Goals & monvts	Prepares for survey interview!	Heme, 87cal-government office	At home community hall	Sharing personal experien ces	Help me know that my time was valuable
Positive mementos	Braicives for any city and forget	Survey then thrown adi stepy taffel	Help me staw know that my time was valual	Concerns about privacy question/fatigue	Overload of follow ups provide opents
Oppor-mandes to improve-	skenctism and knev fair try indent	Compross, for empathve & confidentiality	Shark action about tmacyl with prncipants	Concerns on about privacy question/fatigue	Provide opt-out options

3.2 Solution Requirement

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Upload	Upload Economic Freedom Index CSV files Upload GDP and HDI datasets
FR-2	Data Preprocessing	Data cleaning and formatting using Python Handling missing or null values

FR-3	Visualization	Create country-wise comparative dashboards Implement correlation visualizations between freedom & GDP Add dynamic filters for year, region, and economic tier
FR-4	Insight Extraction	Identify top/bottom performing nations Show pattern-based insights via story dashboards
FR-5	Export Options	Export dashboards to PDF or PNG Allow download of filtered datasets

Non-functional Requirements:

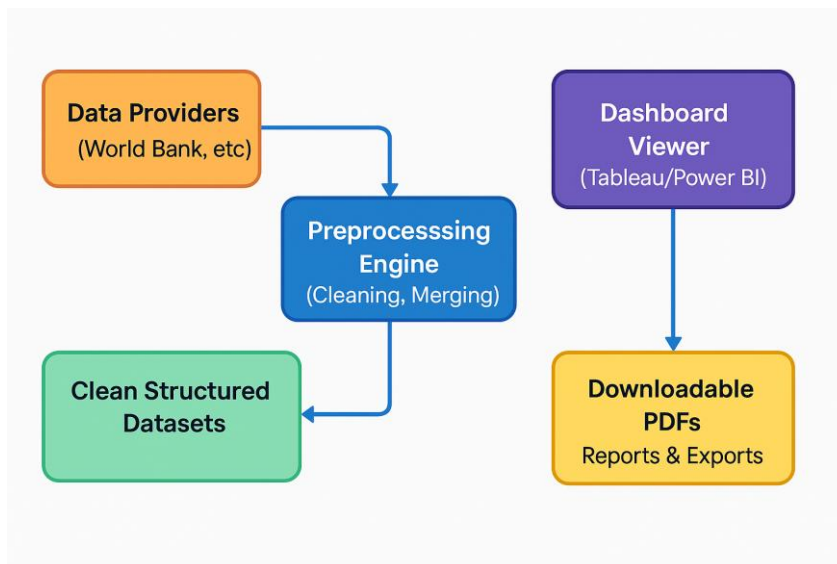
Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	Dashboards should be intuitive and easy to interpret for all stakeholders
NFR-2	Security	File upload/download permissions, view-only access on dashboards
NFR-3	Reliability	Data visualizations should render correctly across all filters
NFR-4	Performance	Dashboards should load within 3 seconds on average
NFR-5	Availability	Published dashboards must be accessible 24/7

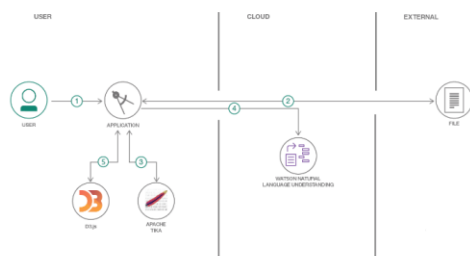
NFR-6	Scalability	New datasets should be easily ingestible without structural changes
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3.3 Data Flow Diagram

User Stories



Flow



1. User configures credentials for the Watson Natural Language Understanding service and starts the app.
2. User selects data file to process and load.
3. Apache Tika extracts text from the data file.
4. Extracted text is passed to Watson NLU for enrichment.
5. Enriched data is visualized in the UI using the D3.js library.

4. PROJECT DESIGN

4.1 Problem Solution Fit

Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Policymakers, economists, development researchers, and students interested in national or regional prosperity metrics.	6. CUSTOMER CONSTRAINTS CC <ul style="list-style-type: none">• Lack of access to updated or credible datasets.• Limited knowledge of data analysis tools.• Budgetary or resource limitations for deeper studies.	5. AVAILABLE SOLUTIONS AS <ul style="list-style-type: none">• The Heritage Foundation Index.• World Bank Ease of Doing Business reports.• Academic publications (but often not user-friendly or accessible for all).	Explore AS, differentiate
	2. JOBS-TO-BE-DONE / PROBLEMS J&P <ul style="list-style-type: none">• Need to understand what drives prosperity and freedom in economies.• Need to compare economic freedom across countries to guide reforms	9. PROBLEM ROOT CAUSE RC <ul style="list-style-type: none">• Limited awareness of the components driving economic freedom.• Difficulty accessing comparative insights across countries.• Reliance on outdated or anecdotal data.	7. BEHAVIOUR BE <ul style="list-style-type: none">• Direct: Reading official reports, using data dashboards.• Indirect: Watching explainer videos, reading summaries, attending seminars/webinars.	
Focus on J&P, tap into BE, understand RC	3. TRIGGERS TR <ul style="list-style-type: none">• Concerns over economic stagnation or inequality.• Interest in global rankings and their correlation with development.• Academic projects or research questions.	10. YOUR SOLUTION SL <ul style="list-style-type: none">• An interactive or data-driven analysis of the Index of Economic Freedom using real datasets.• Visualizations and rankings that make insights clear and actionable.	8. CHANNELS OF BEHAVIOUR CH 8.1 ONLINE Reports, dashboards, data portals (e.g., World Bank, Heritage.org).	Extract online & offline CH of BE
	4. EMOTIONS: BEFORE / AFTER EM Before: Frustrated, uncertain about which economic policies correlate with growth. After: Informed, confident in data-based comparisons, inspired to explore policy reform or further research.		8.2 OFFLINE Lectures, conferences, printed reports, classroom discussions.	
Identify strong TR & EM				

4.2 Proposed Solution

Proposed Solution Template:

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

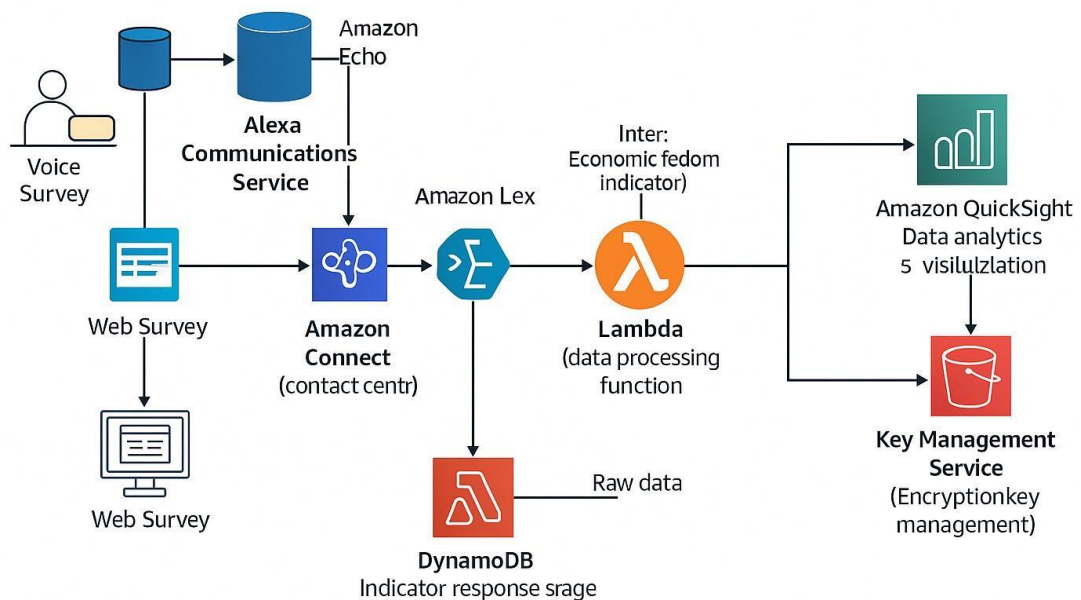
S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Despite the availability of macroeconomic data, policymakers and researchers lack a clear, accessible method to evaluate how economic freedom correlates with prosperity.
2.	Idea / Solution description	The project analyses the Economic Freedom Index using data visualization and comparative analysis tools. It offers clear dashboards, insights, and recommendations across countries
3.	Novelty / Uniqueness	While reports exist, this solution provides an interactive, comparative, and visually rich platform combining multiple data dimensions useful for academia and policy

4.	Social Impact / Customer Satisfaction	Informed citizens, better policy decisions, and transparency in economic governance. This tool helps identify reforms needed to enhance freedom and economic performance.
5.	Business Model (Revenue Model)	Can be offered as a freemium tool for students/researchers, with advanced insights and country reports available via subscription for institutions, think tanks, or NGOs.
6.	Scalability of the Solution	Can be extended to include regional/state-level indices, time-series trends, or integration with other indicators (e.g., Human Development Index, Corruption Perception Index).

4.3 Solution Architecture

Example: [\(Simplified\)](#)

Measuring the Pulse of Prosperity: An Index of Economic Freedom Architecture



5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

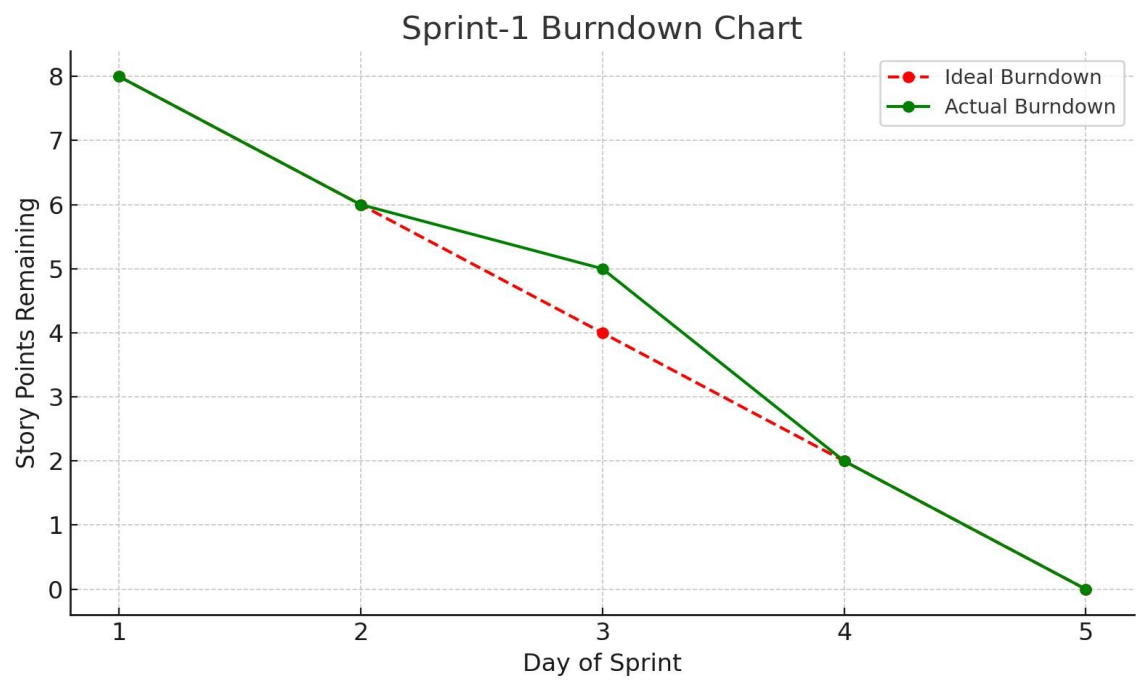
Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority
Sprint-1	Data Analysis & Visualization	USN-1	As a Policymaker, I want to view a world map showing economic freedom scores by country, so that I can quickly identify regions with high or low economic prosperity and potential policy impact areas.	2	High
Sprint-1	Data Analysis & Visualization	USN-2	As an Economic Researcher, I want to filter economic data by specific years and countries, so that I can conduct in-depth analysis on historical trends and compare performance across different nations.	2	High
Sprint-1	Data Analysis & Visualization	USN-3	As an Investor, I want to see the top 40 and least ranked countries based on their economic index, so that I can identify potential investment opportunities or risks in various markets.	2	High
Sprint-2	Data Ingestion & Management	USN-4	As a User, I want to upload new economic datasets (e.g., CSV, Excel), so that I can incorporate the latest information into the analysis and update the index	3	Medium
Sprint-2	Data Analysis & Visualization	USN-5	As an Economic Researcher, I want to view correlations between economic freedom and indicators like unemployment rate and GDP growth, so that I can understand the multifaceted impacts of economic policies.	4	High
Sprint-3	Reporting & Export	USN-6	As a User, I want to export visualizations (e.g., charts, maps) as image files, so that I can easily include them in presentations or reports.	4	Medium
Sprint-3	User Management & Authorization	USN-7	As an Administrator, I want to manage user accounts and roles, so that I can access levels to sensitive data and functionalities.	3	High

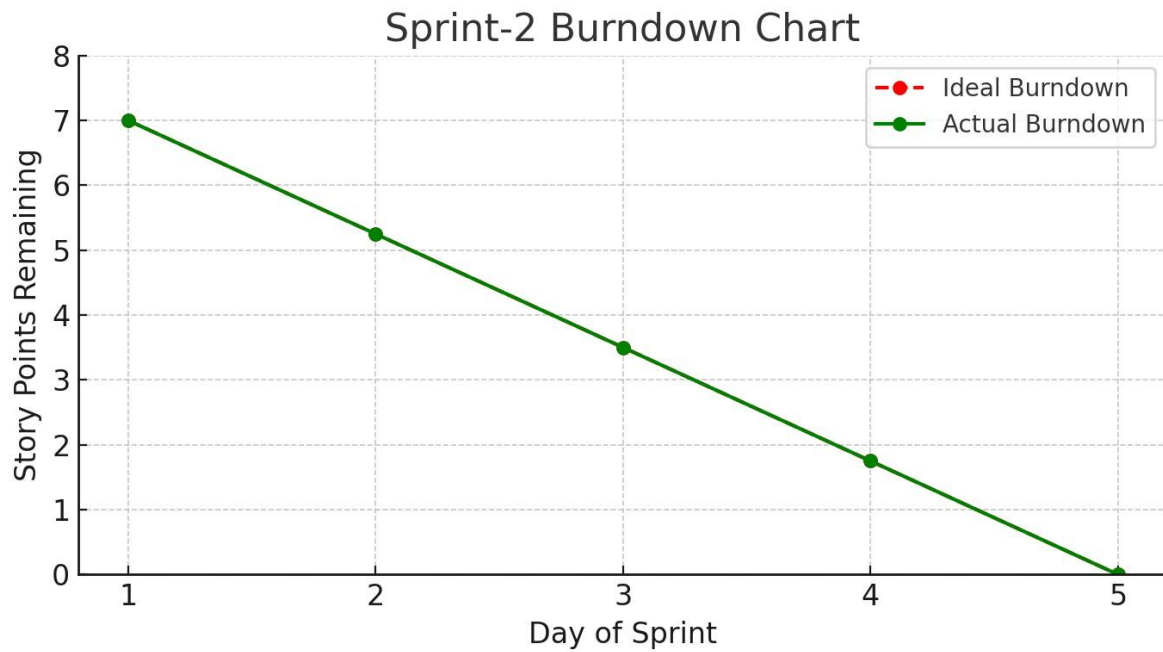
Project Tracker, Velocity & Burndown Chart:

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	6	5 Days	16 June 2025	21June 2025	6	21 June 2025
Sprint-2	7	5 Days	21June 2025	25 June 2025	7	25 June 2025
Sprint-3	7	5 Days	25 June 2025	30 June 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 = sprint duration/velocity =15/10=1.5

Burndown Chart:





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 N O	Parameter	Screenshot / Values
1.	Data Rendered	<p>The dashboard renders comprehensive country-level economic data including:</p> <ul style="list-style-type: none"> - Economic Score/Index - Country ID and Country Name - 5-Year GDP Growth Rate - Business Freedom, Corporate Tax Rate (%), FDI Inflow (Millions), Financial Freedom, Fiscal Health, GDP (Billions), GDP Growth Rate (%), GDP per Capita (PPP), Government Integrity, Government Expenditure (%) of GDP,

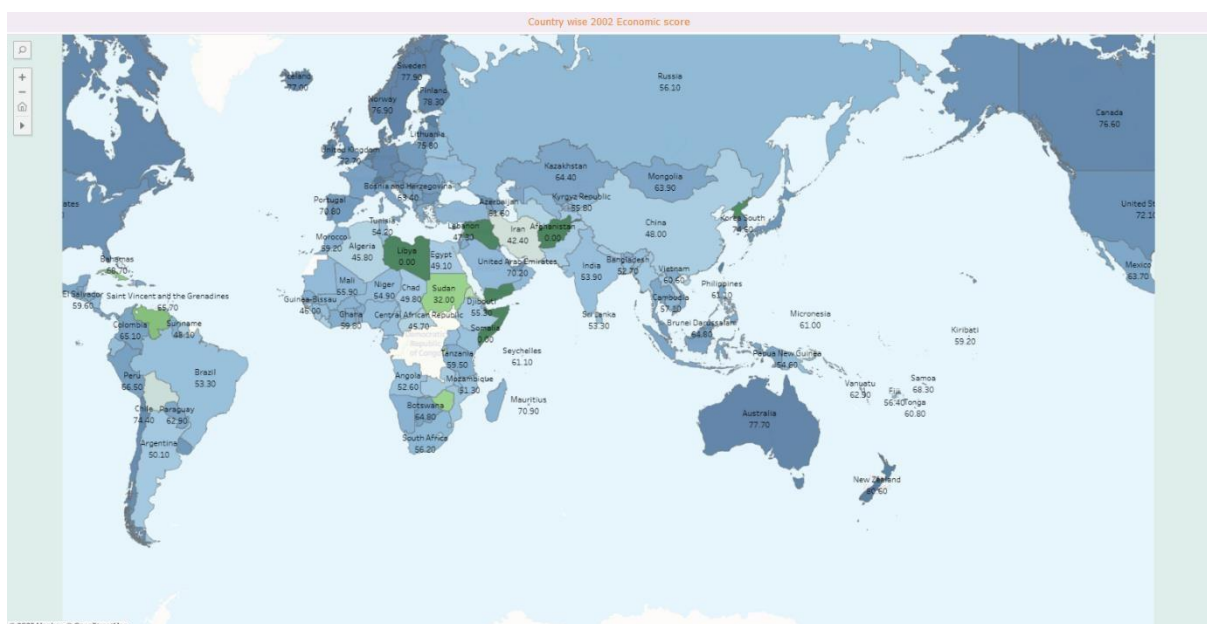
		<p>Government Spending, Income Tax Rate (%), Inflation (%), Index of Population, Unemployment (%).</p> <p>-The data appears to cover multiple years, showing trends and comparisons across a wide range of countries.</p>
2.	Data Preprocessing	<p>Preprocessing likely involved:</p> <ul style="list-style-type: none"> - Data Cleaning: Handling missing values, correcting inconsistencies, and standardizing country names. - Data Transformation: Aggregating data to specific years or regions, potentially calculating the composite Economic Freedom Index from its constituent components. - Geographic Data Preparation: Ensuring country names are recognized by Tableau for mapping. - Feature Engineering: Creating calculated fields such as "5 Year GDP Growth Rate" or specific "Economic Score" components if not directly present in the raw data.
3	Utilization of Filters	<p>The dashboard extensively uses filters and interactive elements:</p> <ul style="list-style-type: none"> - Country Name Filter: Allows users to select specific countries for focused analysis. - Measures Filter: To select different economic indicators (e.g., Inflation, Unemployment, GDP) for visualization and Correlation <p>Year Slider/Filter: To change the year for which the data is displayed on the map and other charts.</p>

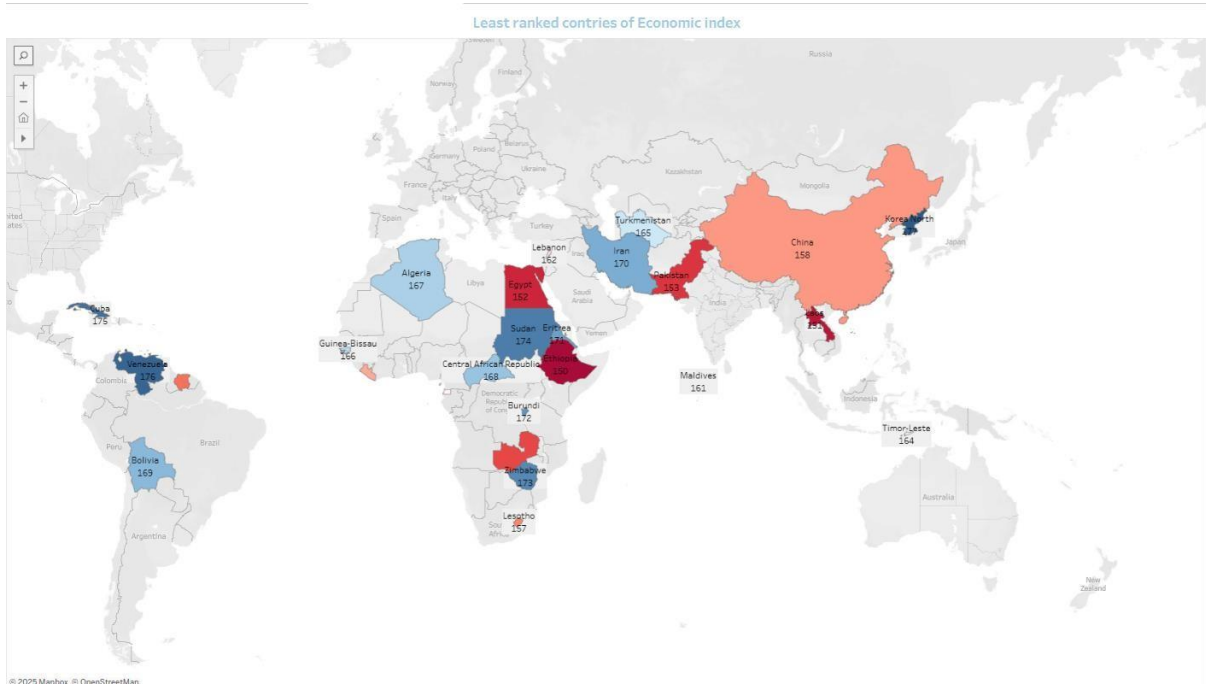
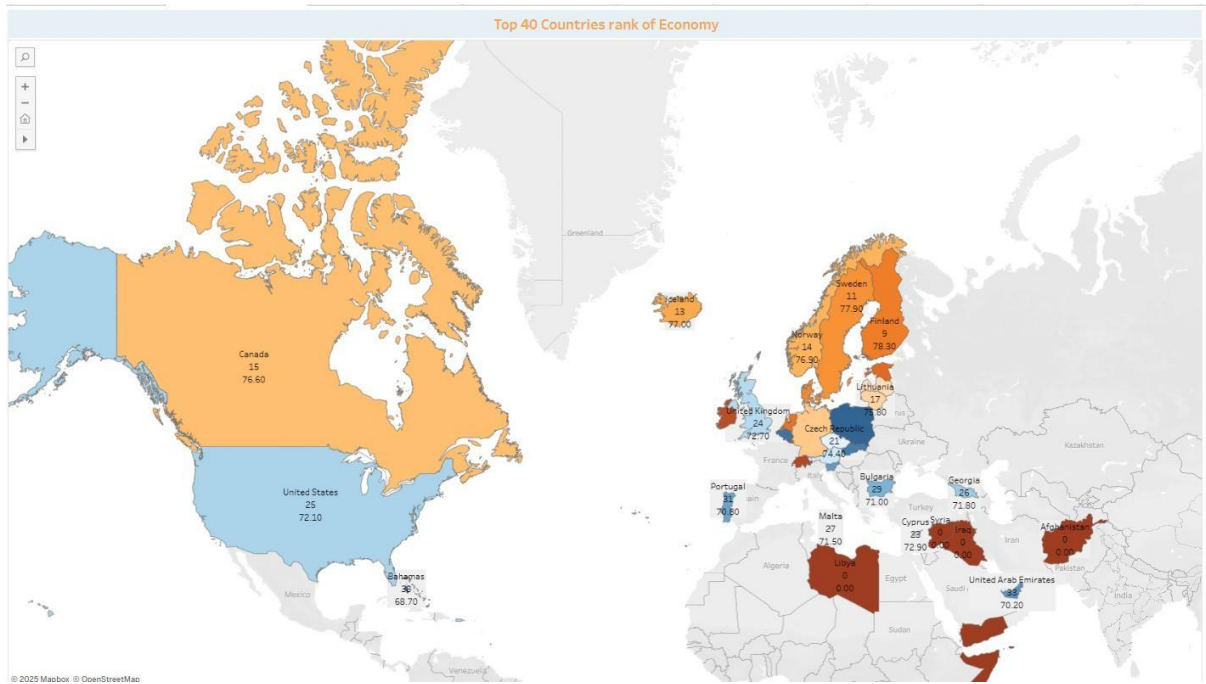
		<p>- Interactive Map Selection: Clicking on countries on the map appears to filter other related views</p>
4	Calculation fields Used	<p>Based on the metrics and visualizations, the following calculated fields are likely used:</p> <ul style="list-style-type: none"> - Economic Score/Index: A composite score derived from various sub-indicators of economic freedom. - 5 Year GDP Growth Rate: Likely a calculation based on GDP values over a five-year period. - Rankings: Calculated fields to determine and display the "Top 40 countries rank of Economy" and "Least ranked countries of economic index." - Region Groupings: Possibly a calculated field to group countries into broader regions for high-level analysis.
5	Dashboard design	<p>No of Visualizations / Graphs –</p> <p>The primary dashboard ("Dashboard 1" / "Global Rankings & Financial Freedom Impact Dashboard") contains at least 5 distinct visualizations/sections</p> <ul style="list-style-type: none"> - Choropleth Map (e.g., "Visualizing Economic Freedom and Instability Around the World") - Correlation Chart (e.g., "Correlation of Countries Based on Inflation & Unemployment") - Horizontal Bar Chart (e.g., "Index of Population") - "Insights Overview" Text Box - "Top 40 Countries rank of Economy" bar/map chart - "Countries Less Than 25 of Economy Index" (potentially a tree map or similar chart)
6	Story Design	<p>No of Visualizations / Graphs –</p>

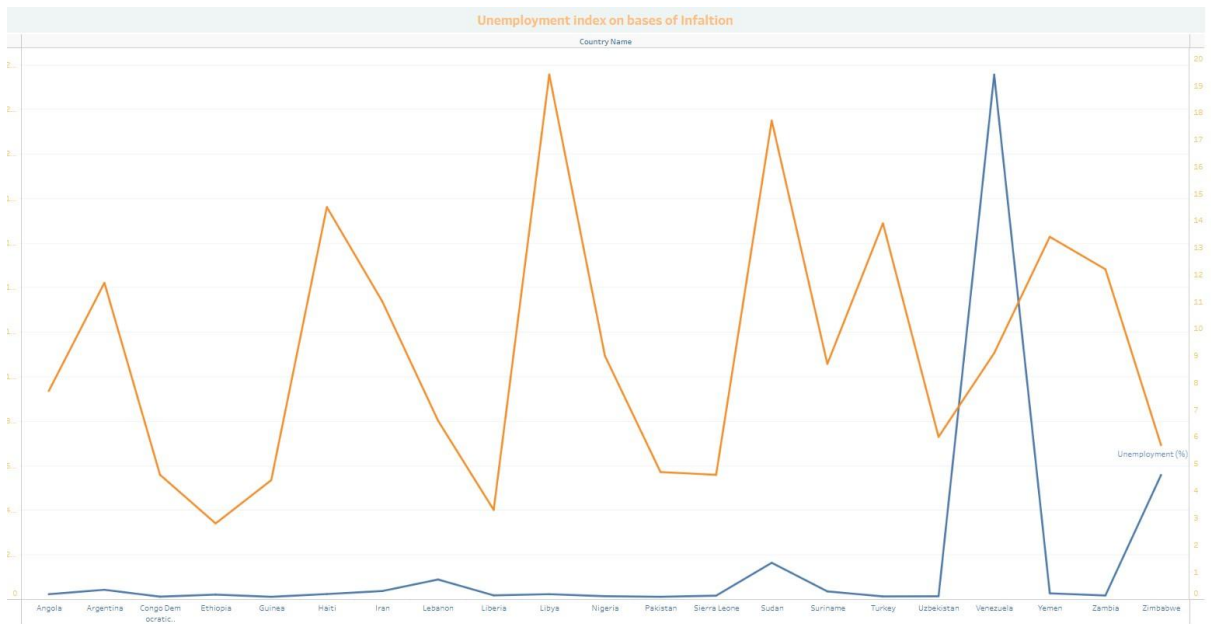
		<p>The "Story" section ("Journey Through the 2002 Global Economy") explicitly shows 5 story points/pages, each potentially containing one or more visualizations:</p> <ul style="list-style-type: none"> - Story Point 1: World Map of Economic Score. - Story Point 2: Top 40 Countries Rank. - Story Point 3: Least Ranked Countries. - Story Point 4: Correlation of Countries Based on Inflation & Unemployment. - Story Point 5: Index of Population. - Story Point 6: Financial Freedom of Countries. - Story Point 7: Index of 5 yrs GDP Rate.
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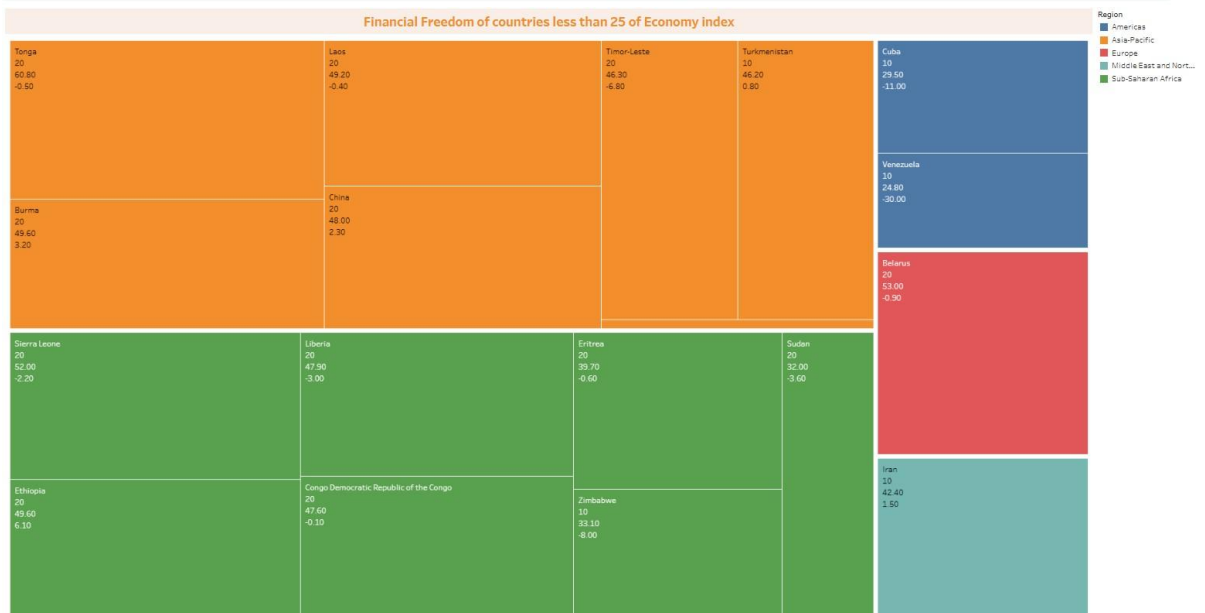
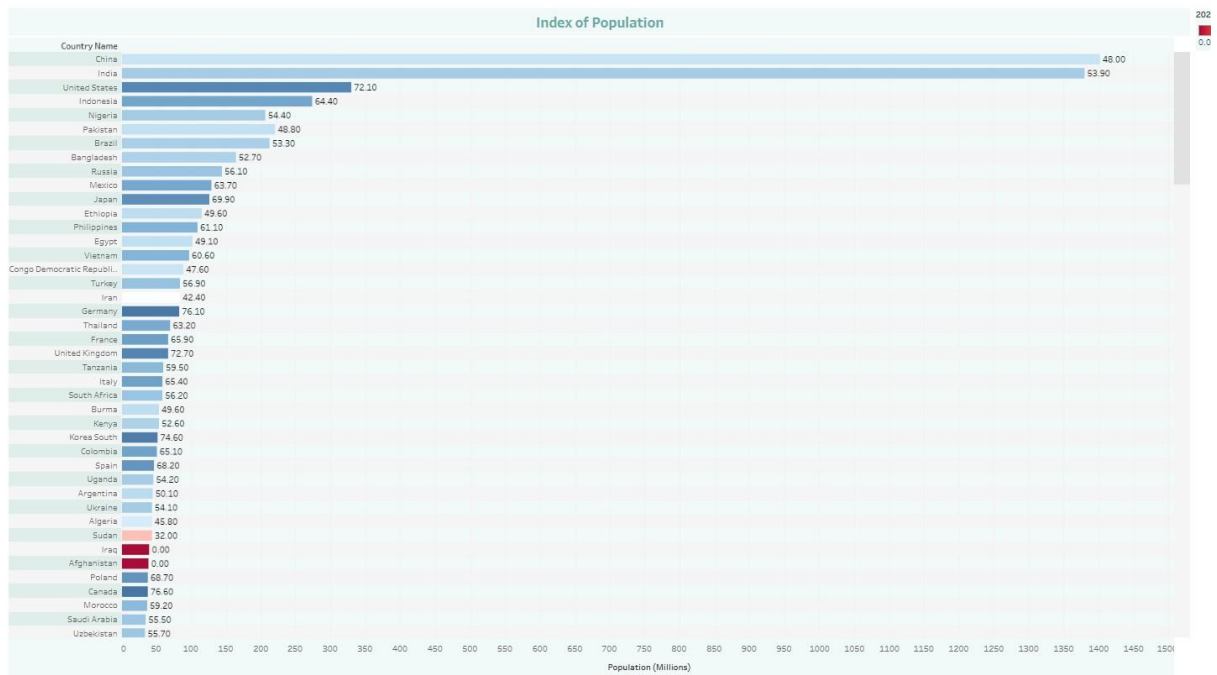
7. RESULTS

7.1 Output Screenshots





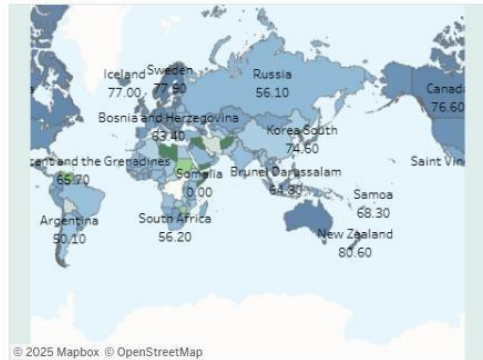




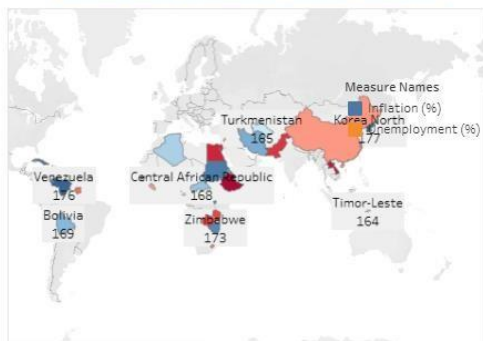
Visualizing Economic Freedom and Instability Around the World

NXT DASBO...

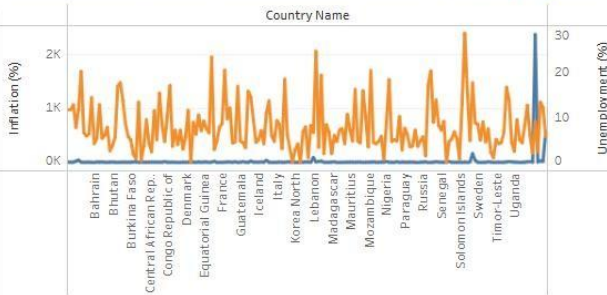
Country wise 2002 Economic score



Least ranked contries of Economic index



Correlation of Countries Based on Inflation & UnEmployment



Index of Population



INSIGHTS OVERVIEW :

[- Countries like the **United States, Sweden, and Australia** scored high in economic freedom and stability.

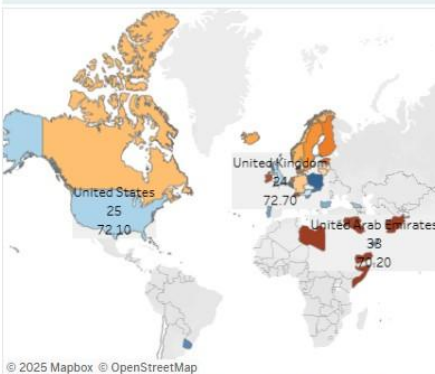
[- **Venezuela, Algeria, and Central African Republic** show poor economic index scores due to high inflation and unemployment rates

[- **China, India, and the U.S.** lead in population, influencing their economic impact and policy priorities

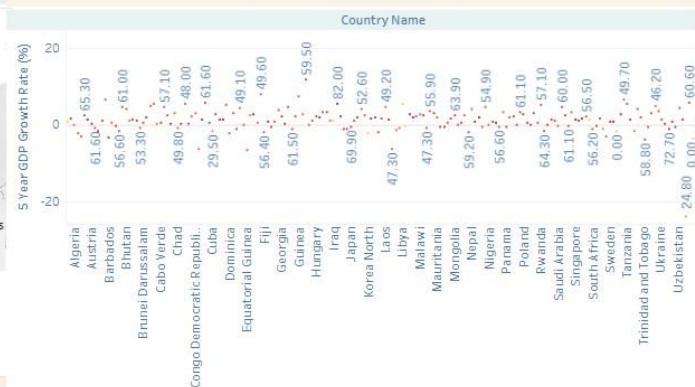
Global Rankings & Financial Freedom Impact Dashboard

TO STORY

Top 40 Countries rank of Economy



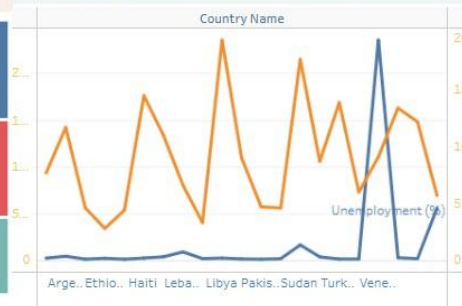
index of 5 yrs GDP Rate



Financial Freedom of countries less than 25 of Economy index



Unemployment index on bases of Inflation



INSIGHTS OVERVIEW :

- Top 40 countries are identified by economic index, with higher rankings seen in North America and parts of Europe and Asia.
- 5-year GDP growth trends reveal uneven growth - some nations show strong improvement, while others face economic slowdown.
- Inflation and unemployment trends show strong interdependency, especially in countries with economic instability

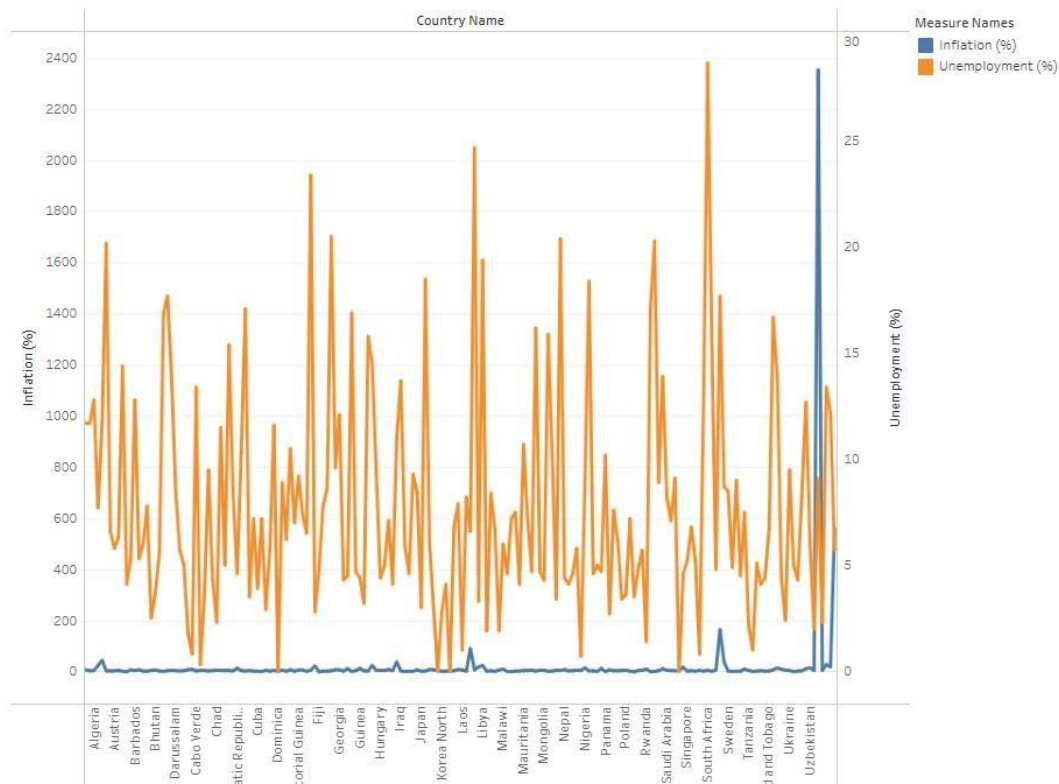
Journey Through the 2002 Global Economy

<

 A Visual comparison of 5-year GDP growth rates for various countries. The horizontal bar chart makes it easy to identify countries with strong and weak economic performance.

 A line chart visualizes the trends for each indicator across several countries, revealing potential patterns and correlations.

 >



8. ADVANTAGES & DISADVANTAGES

Advantages

- Data-Driven Insights**
 Empowers users to make informed decisions using real-time, evidence-based economic indicators.
- Interactive Visualization**
 User-friendly dashboards allow for filtering by year, country, and economic subindices, making analysis accessible to non-technical users.
- Multi-Stakeholder Utility**
 Useful to policymakers, researchers, investors, and students alike, each gaining insights specific to their objectives.
- Customizable & Scalable**
 The modular architecture allows easy integration of new datasets, indicators, or visualization layers.

5. Open-Source & Cost-Efficient

Built using open-source tools like Python, Plotly, and Streamlit, reducing development and deployment costs.

Disadvantages

1. Data Source Dependency

The analysis is limited to the scope and accuracy of available datasets like those from the Heritage Foundation or World Bank.

2. Limited Real-Time Updates

Economic freedom indices are not updated frequently, which may affect relevance for real-time policy decisions.

3. Technical Barriers for Non-Digital Users

Despite being user-friendly, some stakeholders without digital literacy may find the platform less accessible.

4. Infrastructure Limitations

Hosting and processing large datasets or high user traffic could require scaling the cloud infrastructure, leading to additional costs.

9. CONCLUSION:

The project “Measuring the Pulse of Prosperity: An Index of Economic Freedom Analysis” successfully demonstrates the power of data analytics and visualization in transforming static economic data into meaningful, actionable insights. By leveraging open-source tools and interactive dashboards, the platform bridges the gap between complex economic indicators and user-friendly interpretation.

This solution empowers policymakers, researchers, and investors to explore global economic trends, identify policy gaps, and make evidence-based decisions. The integration of filtering, correlation analysis, and exportable visualizations enhances the usability and adaptability of the system across various domains.

Through this initiative, we’ve laid a scalable foundation for deeper exploration of how economic freedom shapes prosperity—enabling smarter governance, more informed investment, and a clearer understanding of global economic landscapes.

10. FUTURE SCOPE

- Integration of Real-Time Economic Indicators
Future versions of the platform can incorporate APIs for real-time data (e.g., GDP updates, inflation, employment) to enhance the system's relevance for ongoing policy and market analysis.
- Expanded Dataset Coverage
The project can be extended to include regional/state-level data, enabling microeconomic analysis within countries and more localized policymaking insights.
- Machine Learning-Based Forecasting
Implementing predictive models can help forecast future economic freedom scores or prosperity indicators based on historical patterns and current inputs.
- User Personalization and Notifications
Future iterations could allow user accounts with saved filters, email alerts for new reports, or policy shifts relevant to selected countries.

