Project Report

Project id: LTVIP2025TMID49899

Project name: Measuring the Pulse of Prosperity: An Index of Economic

Freedom Analysis

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1. INTRODUCTION

1.1 Project Overview: Measuring the Pulse of Prosperity – An Index of Economic Freedom Analysis

This project aims to analyze the economic freedom of countries using data from the Heritage Foundation's Index of Economic Freedom. It involves collecting, processing, visualizing, and publishing insights derived from various economic indicators such as GDP, inflation, financial freedom, and unemployment.

Objectives:

- Classify countries based on economic freedom scores.
- Identify top and bottom-performing nations.
- Analyze correlations between economic indicators like inflation, unemployment, and growth.
- Build a data-driven dashboard and story for public and policy consumption.

Key Activities:

- 1. Data Collection: Heritage.org, CSV/Excel files, databases.
- 2. Data Preprocessing: Cleaning, normalization, metadata generation.
- 3. Data Analysis: Calculation of economic scores, correlation analysis, ranking.
- 4. Visualization: Dashboards in Tableau for top 40 rankings, economic trends, and factor-based insights.
- 5. Storytelling: A narrative-driven story that explains the findings visually.
- 6. Publishing: Web integration using embedded Tableau visualizations.

Deliverables:

- Dynamic Tableau dashboard with filters and KPI metrics.
- Visual story showing trends in economic freedom and GDP.
- Sprint-based task breakdown with estimations and team assignments.
- Published report with user-friendly export options.

1.2 Purpose

The primary purpose of this project is to conduct an in-depth analysis of global economic freedom using structured data from the Index of Economic Freedom. This initiative aims to measure how economic policies, market openness, and regulatory efficiency influence a country's ability to foster growth, stability, and prosperity. By combining key economic indicators such as GDP growth, unemployment rate, inflation, and financial freedom, the project classifies countries into distinct freedom categories—Free, Mostly Free, Moderately Free, and Mostly Unfree—to simplify comparison and interpretation. The goal is to transform complex economic data into meaningful insights through interactive visualizations and dashboards, enabling policy makers, economists, business analysts, and the public to better understand the economic health of nations.

2. IDEATION PHASE

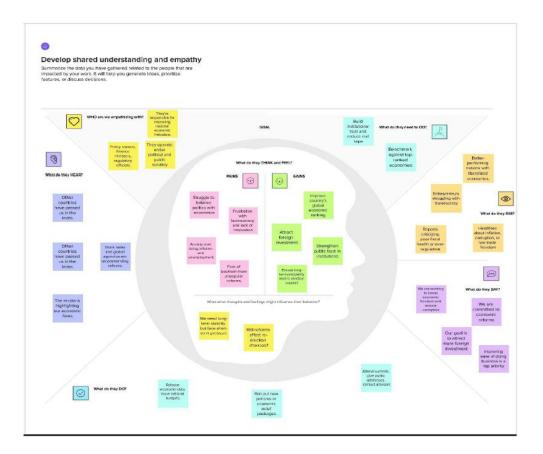
2.1 Problem Statement



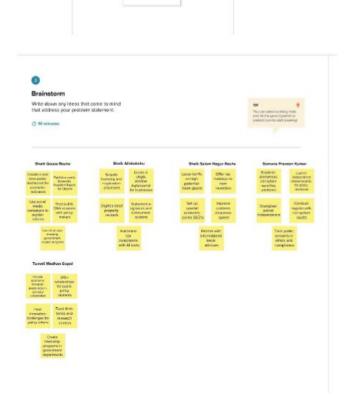


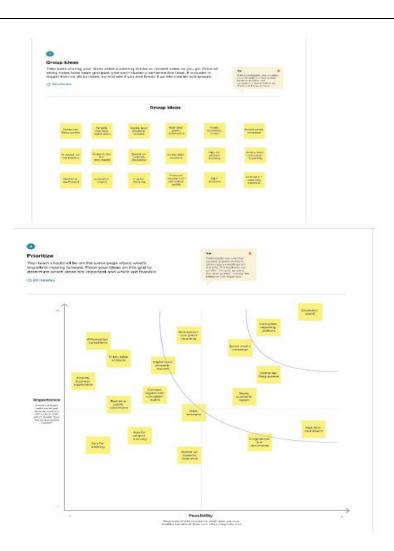
Problem	I am	I'm trying to	But	Because	Which makes me feel
Statement (PS)	(Customer)				
PS-1	An investor	An investor	Investors	We rank low	Under pressure
	Promoter	promoter	are	in economic	
			hesitant	freedom	
PS-2	A policy	Boost my	He	There is too	Pressured and
	maker	county's	reforms	much	frustrated
	aiming to	economic	take time	bureaucracy	
	improve	freedom	and face	and fear of	
	economic	score	resistance	political	
	conditions			backlash	
PS-3	Α	Attract more	We are	Oue	Disappointed and
	government	foreign	not seen	economic	under pressure
	official	investors	as	freedom is	
	focused on		investor	low and	
	investment		friendly	there's	
				corruption	
PS-4	A policy	Suggest	Leaders	They fear	powerless
	advisor	better	resist	political	
		regulations	change	backlash	
PS-5	A finance	Stabilize the	Inflation	Policies	anxious
	officer	economy	keeps	aren't being	
			rising	enforced	
				well	
PS-6	A trade	Increase	Barriers	Outdated	Stuck
	officer	global trade	are still in	laws and	
			place	processes	
PS-7	A tax	Create fair	Tax	There's	Disappointed
	planner	tax systems	evasion is	weak	
			common	enforcement	
PS-8	A public	Assure	People	Past	Helpless
	communica	citizens of	don't	promises	
	tor	progress	trust data	weren't kept	
PS-9	A reformer	Improve our	Reforms	There's too	Frustrated
		economy`s	face	much red	
		global rank	delays	tape	
PS-10	A budget	Allocate	Growth is	Corruption	disheartened
	planner	funds for	too slow	delays	
		development		projects	

2.2 Empathy Map Canvas



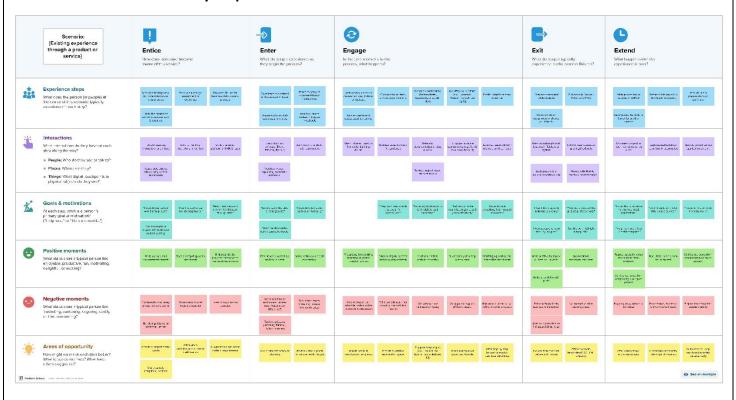
2.3 Brainstorming





3. REQUIREMENT ANALYSIS

3.1 Customer Journey map



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 collection	Collect the dataset or create the dataset
FR-2	Database /Spreadsheet Connection	Understand the dataset Import Dataset into the database Connect Tableau Desktop to Database server.
FR-3	Visualizing and analysing data	Understand the Data and the Business Questions Based on the Business questions develop the different visualizations
FR-4	Dashboard	Develop the Dashboard Build an interactive dashboard for comparing countries and regions Allow dynamic filtering by category, year, or indicator
FR-5	Story	Develop the Storyboard Add a visual data story summarizing key insights Highlight patterns, top countries, and interesting shifts in scores
FR-6	Publishing to the Tableau Public & Web Application Integration	Developed Visualizations, Dashboard and story will be published to Tableau Public Account. Once it is published, we will get the shareable links Develop a web application using HTML, CSS or Using Bootstrap Integrate the Visualizations, Dashboard and Story with the Web Application

Non-functional Requirements:

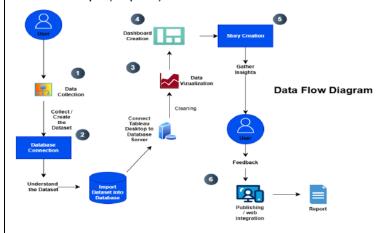
Following are the non-functional requirements of the proposed solution.

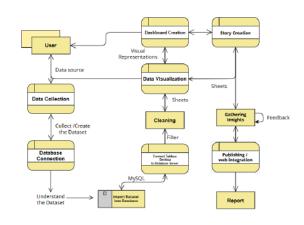
FR No.	Non-Functional Requirement	Description
NFR-1	Usability	The system should have an intuitive and accessible interface for non-technical users such as policy analysts and students. Clear visual design and tooltips should guide user actions.
NFR-2	Security	The platform should ensure secure handling of uploaded data using HTTPS encryption. User accounts (if implemented) must use secure login protocols.
NFR-3	Reliability	The system should consistently process, analyze, and display data without crashing. In case of failure, the system should recover the latest state.
NFR-4	Performance	Visualizations should load within 2–3 seconds for datasets of up to 200 countries. Data operations like filtering or scoring must respond instantly.
NFR-5	Availability	The solution should be accessible 24/7 with 99.9% uptime, ensuring minimal disruption during usage.
NFR-6	Scalability	The system should handle larger datasets (e.g., 10 years of data across 200+ countries) without performance degradation.
NFR-7	Maintainability	The backend codebase should be modular, clean, and well-documented for easy future updates or integration with new data sources.
NFR-8	Compatibility	The system should work seamlessly across all major web browsers (Chrome, Firefox, Safari) and be mobile responsive.
NFR-9	Exportability	Users must be able to export visualizations and filtered datasets in standard formats (PDF, Excel, PNG).

3.3 Data Flow Diagram

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

Example: (Simplified)

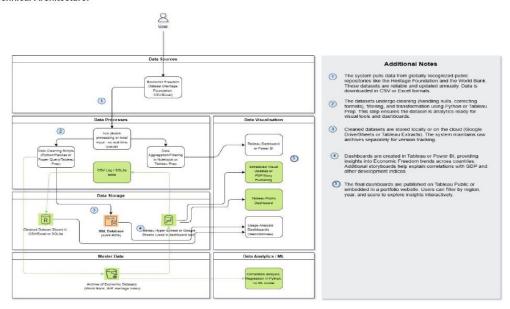




Example: Level 0 DFD

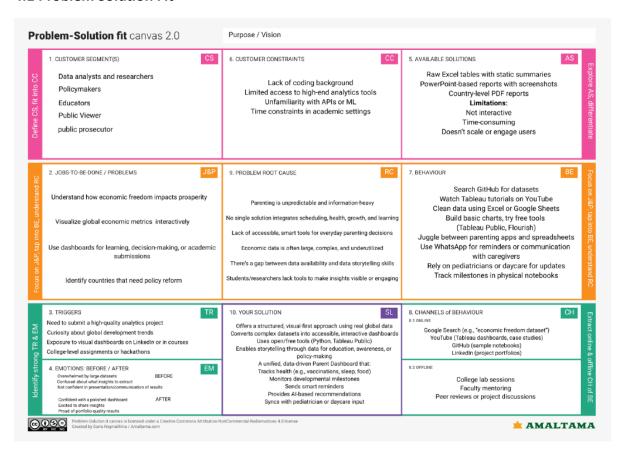
3.4 Technology Stack

Technical Architecture:



4. PROJECT DESIGN

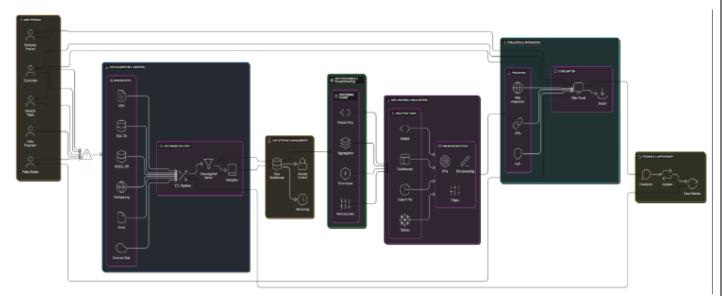
4.1 Problem Solution Fit



4.2 Proposed Solution

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Despite the availability of economic freedom data, most users (students, analysts, policymakers) lack the tools to explore, visualize, and understand how it correlates with national prosperity. The data exists but is difficult to access, interpret, or use for meaningful insights.
2.	Idea / Solution description	Develop an interactive dashboard using the Index of Economic Freedom dataset that enables users to explore global trends, compare countries, and analyze the impact of freedom scores on GDP per capita and related economic indicators. The solution uses Tableau and Python to clean, process, and visualize the data in a user-friendly format.
3.	Novelty / Uniqueness	Unlike static economic reports, this project offers an open, interactive, and visual-first platform. It uniquely combines multiple indicators (freedom, trade, property rights, GDP) into a dynamic tool with filters, storytelling, and region/year-based analysis — all accessible through Tableau Public.
4.	Social Impact / Customer Satisfaction	The solution improves public awareness of economic policy impacts, supports student research, and helps educators demonstrate real-world economics. It satisfies users by offering a clean, simple, yet insightful interface that translates complex data into actionable knowledge.
5.	Business Model (Revenue Model)	The dashboard can be offered for free to the public, while institutions can pay for premium reports or integrations. Revenue may also come from academic licensing or partnerships with research bodies.
6.	Scalability of the Solution	The solution can be expanded by adding more indicators, years, or countries. It can also be adapted to other platforms like Power BI or embedded into educational and policy websites.

4.3 Solution Architecture



This solution architecture represents a comprehensive data pipeline that begins with data acquisition from multiple structured and unstructured sources, followed by an ETL process that handles cleaning, validation, and metadata generation. The cleaned data is stored securely in a centralized data warehouse with access control and versioning. It then moves through a transformation layer where it is aggregated, enriched, and normalized for analysis. The processed data is visualized through

dashboards and custom visualizations using tools like Tableau, and is published via web integrations and APIs for stakeholder consumption. A feedback loop ensures continuous updates and data refreshes, enabling informed decision-making for diverse user personas such as economists, analysts, and policymakers.

5. PROJECT PLANNING & SCHEDULING

5.1 Project Planning

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	Downloading The Dataset	1	High	Shaik Gouse Basha
Sprint-1	Working With Dataset	USN-2	Understand The Data	3	High	Shaik Gouse Basha
Sprint-1		USN-3	Import Dataset into Database and connect Tableau Desktop to Database server	2	Low	Shaik Allahbakshu
Sprint-2	Data Visualization	USN-4	2022 Economic freedom score	2	High	Shaik Salam Nagur Basha
Sprint-2		USN-5	Top 40 ranking countries in the index	2	High	Somana Praveen Kumar
Sprint-2		USN-6	Bottom ranking countries in the index	2	Medium	Tumati Madhan Gopal
Sprint-2		USN-7	Index score based on unemployment rate	3	High	Tumati Madhan Gopal
Sprint-2		USN-8	Index score based on financial freedom	3	High	Shaik Gouse Basha
Sprint-2		USN-9	Index score based on population	2	High	Shaik Salam Nagur Basha
Sprint-2		USN-10	Index score based on 5 year on GDP growth rate(%)	2	High	Shaik Allahbakshu

Sprint	Functional	User Story	User Story / Task	Story Points	Priority	Team
	Requirement (Epic)	Number		1	_	Members
Sprint-2		USN-11	Inflation rate in different countries	2	Medium	Somana
						Praveen
						Kumar
Sprint-2		USN-12	Correlation between inflation and	2	High	Somana
			unemployment			Praveen
						Kumar
Sprint-2		USN-13	Top 40 countries by GDP growth rate	3	High	Shaik Salam
						Nagur Basha
Sprint-2		USN-14	Correlation between GDP(PPP) and monetary	2	High	Shaik
			freedom			Allahbakshu
Sprint-3	Dashboard	USN-15	Creating The Dashboard	3	High	Shaik Gouse
						Basha
Sprint-3	Story	USN-16	Creating The Story Board	3	High	Shaik
						Allahbakshu
Sprint-4	Publishing and Web	USN-17	Publishing dashboard and reports to tableau	2	High	Somana
	Integration		public			Praveen
						Kumar
Sprint-4		USN-18	Integrating with Web with Embed code	5	Low	Shaik Gouse
						Basha

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	6	2 Days	18 Jun 2025	19 Jun 2025	6	19 Jun 2025
Sprint-2	21	4 Days	20 Jun 2025	23 Jun 2025	21	23 Jun 2025
Sprint-3	6	2 Days	23 Jun 2025	24 Jun 2025	6	24 Jun 2025
Sprint-4	7	2 Days	24 Jun 2025	25 Jun 2025	7	25 Jun 2025

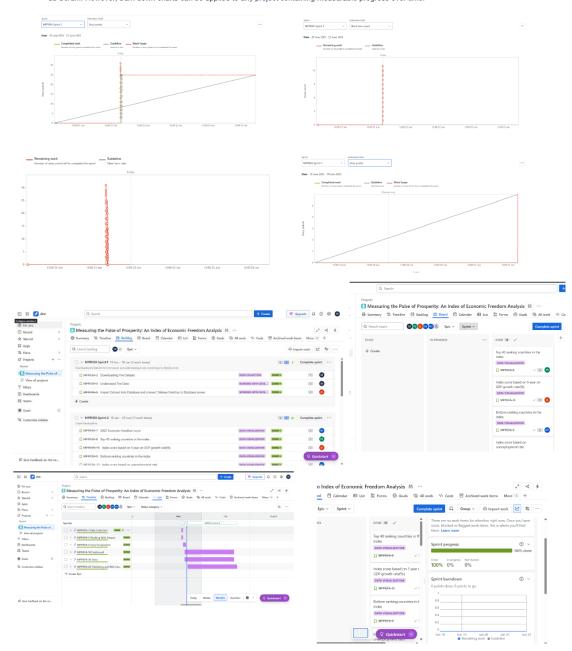
Velocity:

Velocity Table:

Sprint	Total Story Points	Duration (days)	Velocity (AV)
Sprint-1	1 + 3 + 2 = 6	2 days	6 ÷ 2 = 3.0 pts/day
Sprint-2	21	4 days	21 ÷ 4 = 5.25 pts/day
Sprint-3	3 +3 =6	2 days	6 ÷ 2 = 3.0 pts/day
Sprint-4	2 + 5 = 7	2 days	7 ÷ 2 = 3.5 pts/day

Burndown Chart:

A burn down chart is a graphical representation of work left to do versus time. It is often used in agile software development methodologies such as Scrum. However, burn down charts can be applied to any project containing measurable progress over time.



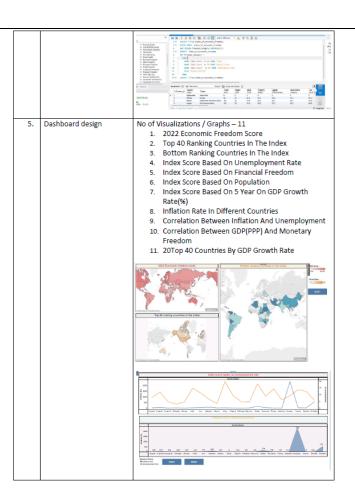
6. FUNCTIONAL AND PERFORMANCE TESTING

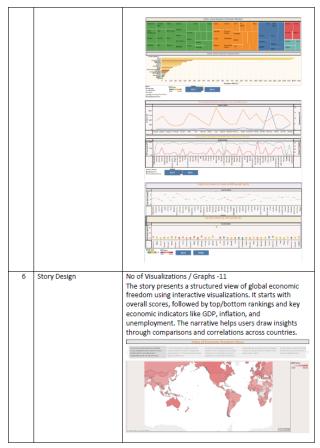
6.1 Performance Testing

S.No.	Parameter	Screenshot / Values
1.	Data Rendered	The dataset used in this project is based on the Index of Economic Freedom, primarily sourced from the Heritage Foundation, supplemented with data on GDP, unemployment, inflation, FDI, and public debt. It contains 177 rows, each representing a country, and approximately 32 columns capturing various economic and governance indicators. (**) Country Name and Region (e.g., Asia-Pacific, Europe, Sub-Sasharan Africa) (**) World Rank and Region (e.g., Asia-Pacific, Europe, Sub-Sasharan Africa) (**) World Rank and Region Rank (**) 2022 Economic Freedom Score – the main index measuring economic liberty on a scale of 0 to 100. (**) Property Rights, Judicial Effectiveness, Government Integrity – used to assess the rule of law. (**) Tax Burden, Government Spending, Fiscal Health – used to measure government size and financial discipline. (**) Business Freedom, Labor Freedom, Monetary Freedom – showing regulatory efficiency. (**) Trade Freedom, Investment Freedom, Financial Freedom – ssessing open markets. (**) Economic Indicators: 1. Population (Millions) 2. GDP (Billions USD) 3. GDP Growth Rate (%) 4. GDP per Capita (PPP) 5. Unemployment Rate (%) 6. Inflation Rate (%) 7. Public Debt (% of GDP) 8. FDI Inflows (Millions USD)

2.	Data Preprocessing	Handling Missing and Invalid Values: The dataset was thoroughly examined for missing, null, c zero values. Numerical fields such as GDP growth, inflatis and public debt were cleaned using mean or median imputation, while missing categorical fields were assigne neutral defaults such as "Unknown" or 0 where applicable Completely unusable records were renowed to maintain data quality. 2. Column Renaming and Standardization: All column names were standardized for consistency and readability. For example, 2022 score was renamed to freedom_score, and GDP (Billions) was converted to gdp, billion_usl, inconsistent formats, such as percentag strings, were converted to numeric types. 3. Feature Engineering: A new column called freedom_category was created to classify each country based on its economic freedom score. Single effined thresholds, countries were categorized as Free (2 80), Mostyl Free (70–73), Moderately Free (60–639), or Mostly Unfree (-60), Additional calculated field were generated to support filtering and segmentation.
3.	Utilization of Filters	In the Index of Economic Freedom dashboard, multiple interactive filters were implemented to provide a dynamic active filters empower usua spolloy makers, economists, and analysts to extract meaningful insights tailored to specific interests or regio contexts. 1. Region filter • Yupe: Dropdown or checkbox filter • Field Used: Region • Purpose: Allows users to focus on a specific geographical area, such as Asia-Pacific, Europe, Sub-Saharan Africa, Middle East, or Americas. • Use Case: Helps compare economic freedom indicators within a region and spot regional polic patterns or anomalies.

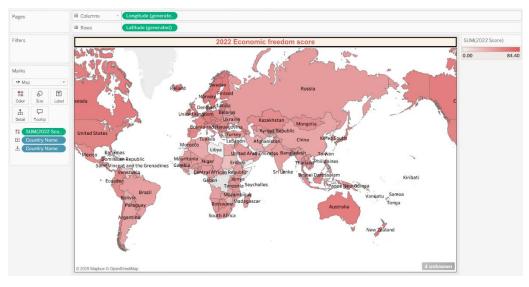
		2. GDP per Capita Filter	
		Type: Slider or grouped range (Low/Medium/High)	
		Field Used: GDP per Capita (PPP)	
		Purpose: Filters countries based on economic prosperity	
		levels.	
		Use Case: Study if higher GDP per capita correlates with	
		higher freedom scores.	
		3. Unemployment Rate Filter	
		Type: Slider filter	
		 Field Used: Unemployment (%) 	
		 Purpose: Helps analyze which freedom categorie 	
		or regions are facing higher or lower employmen	
		challenges.	
		Use Case: Understand how economic freedom m	
		impact job markets.	
		4. Inflation Rate Filter	
		Type: Numeric range filter	
		Field Used: Inflation (%)	
		Purpose: Enables comparison of inflation control	
		among countries with varying freedom scores.	
		Use Case: Reveal monetary policy strength across	
		regions or freedom categories.	
		5. GDP Growth Rate Filter	
		Type: Numeric slider	
		 Field Used: GDP Growth Rate (%) 	
		 Purpose: Allows users to focus on fast-growing o 	
		struggling economies.	
		 Use Case: Determine how freedom levels influen 	
		economic growth.	
		6. World/Region Rank Filter	
		Type: Numeric range	
		 Fields Used: World Rank, Region Rank 	
		 Purpose: Isolate top or bottom performers globa 	
		or regionally.	
		 Use Case: Benchmark high performers or identify 	
		countries needing policy reform.	
		j	
4.	Calculation fields Used	The freedom category is a derived field that classifies	
		countries into four groups—Free, Mostly Free, Moderate	
		Free, and Mostly Unfree—based on their Economic	
		Freedom Score. This categorization simplifies the analysis	
		by grouping countries with similar economic conditions,	
		helping users quickly compare economic performance,	
		identify patterns, and focus on regions needing policy	
	1	improvements.	



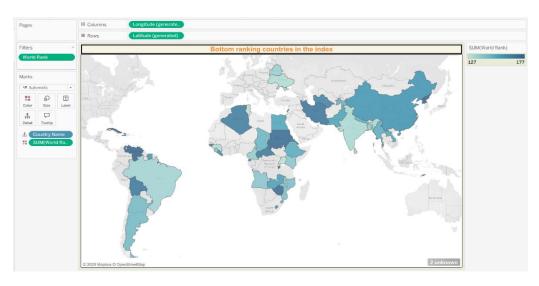


7. RESULTS

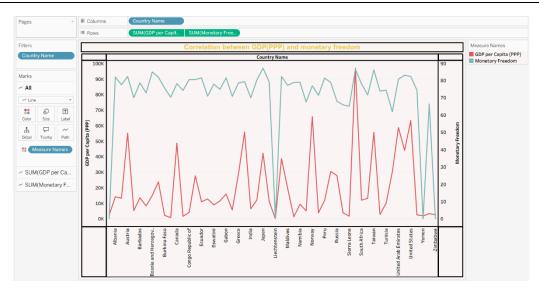
7.1 Output Screenshots

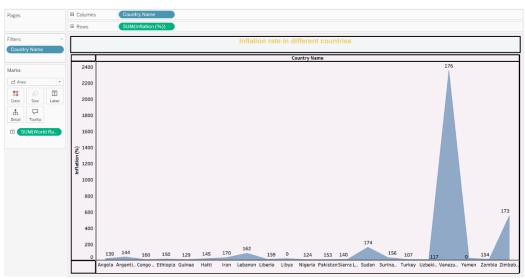


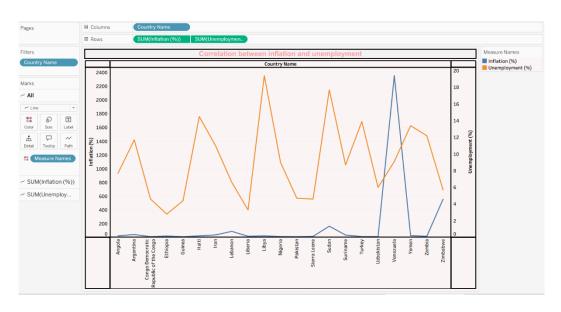


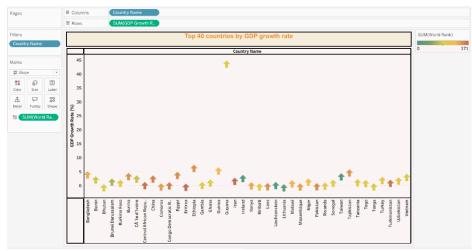


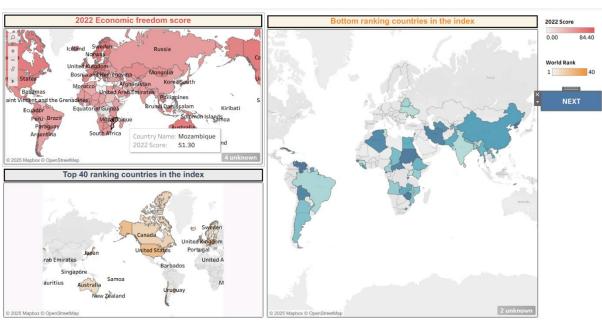




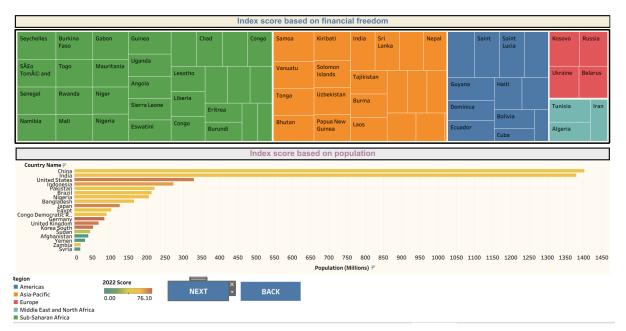


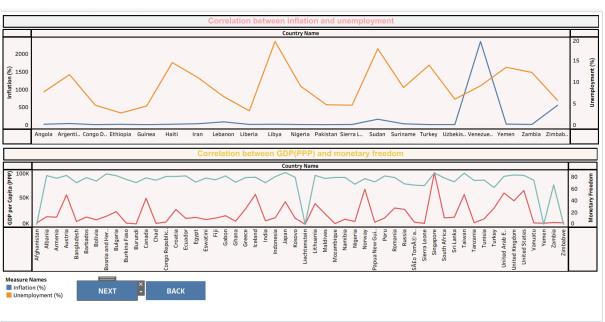


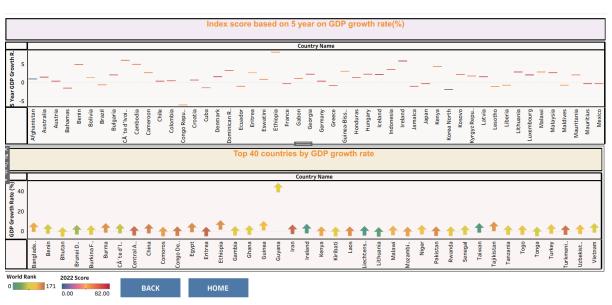


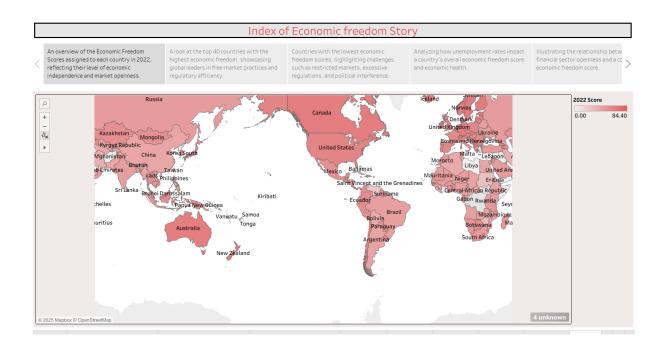












8. ADVANTAGES & DISADVANTAGES

Advantages:

1. Data-Driven Insights

Provides factual, evidence-based understanding of global economic conditions.

2. Interactive Visualization

Makes complex economic data easy to explore and interpret through dashboards and stories.

3. Supports Policy Decisions

Helps policy makers and economists identify key areas for improvement and reform.

4. Comparative Analysis

Enables benchmarking of countries based on multiple economic indicators.

5. Public Accessibility

Through web integration, the insights are accessible to a broader audience beyond just experts.

Disadvantages:

1. Data Limitations

Reliance on available datasets might exclude certain regions or the most recent updates.

2. Interpretation Bias

Visualizations can be misinterpreted without proper economic background or context.

3. **Dynamic Economic Factors**

Economic freedom and indicators are subject to rapid change, which may affect the long-term accuracy of insights.

4. Tool Dependency

The project's output depends on tools like Tableau and external data sources, limiting offline accessibility.

9. CONCLUSION

This project successfully provides a comprehensive analysis of global economic freedom by integrating data from the Index of Economic Freedom with key economic indicators such as GDP, inflation, and unemployment. Through systematic data processing, visualization, and storytelling, it enables stakeholders policy makers, economists, business analysts, and the public to gain valuable insights into the economic health and governance of nations. The interactive dashboard and story-driven visualizations simplify complex data, allowing users to identify patterns, compare countries, and support informed decision-making. Ultimately, this project bridges the gap between raw economic data and actionable knowledge, contributing to a deeper understanding of what drives prosperity worldwide.

10. FUTURE SCOPE

The project holds strong potential for future enhancements and real-world applications. In the future, the model can be expanded to include real-time economic data feeds, allowing for dynamic updates and more current insights. Integration with AI-based forecasting models can help predict future trends in economic freedom based on policy changes and global events. Additional economic indicators such as trade balance, foreign investments, and debt-to-GDP ratio can be incorporated to provide a more holistic view of national economic performance. Moreover, the dashboard can be extended to support mobile access, multilingual interfaces, and geo-mapping features, making it even more user-friendly and globally accessible. These improvements would further empower stakeholders to make timely, data-backed economic decisions.

11. APPENDIX

Source Code(Embed code)

```
}
    .tableauPlaceholder {
      width: 100%;
      height: 80vh;
      margin-bottom: 50px;
    }
  </style>
</head>
<body>
<!-- Header -->
  <h2>Index of Economic Freedom - Dashboard</h2>
<!-- Dashboard Embed -->
  <div class='tableauPlaceholder' id='vizDashboard' style='position: relative'>
    <noscript>
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        <img alt='Dashboard 1'
src='https://public.tableau.com/static/images/In/Index of Economic freedom Dasashboard/Dashboard1/1\_rss.png'
style='border: none' />
      </a>
    </noscript>
    <object class='tableauViz' style='display:none;'>
      <param name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' />
      <param name='embed_code_version' value='3' />
      <param name='site_root' value='' />
      <param name='name' value='IndexofEconomicfreedomDasashboard/Dashboard1' />
      <param name='tabs' value='no' />
      <param name='toolbar' value='yes' />
      <param name='static image'</pre>
value='https://public.tableau.com/static/images/In/IndexofEconomicfreedomDasashboard/Dashboard1/1.png' />
      <param name='animate_transition' value='yes' />
      <param name='display_static_image' value='yes' />
      <param name='display_spinner' value='yes' />
      <param name='display_overlay' value='yes' />
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      <param name='language' value='en-GB' />
    </object> </div>
```

```
<h2>Index of Economic Freedom - Story</h2>
  <div class='tableauPlaceholder' id='vizStory' style='position: relative'>
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        <img alt='Index of Economic freedom Story'
src='https://public.tableau.com/static/images/In/IndexofEconomicfreedomStory/Story1/1_rss.png' style='border: none'
/>
      </a>
    </noscript>
    <object class='tableauViz' style='display:none;'>
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      <param name='embed_code_version' value='3' />
      <param name='site_root' value='' />
      <param name='name' value='IndexofEconomicfreedomStory/Story1' />
      <param name='tabs' value='no' />
      <param name='toolbar' value='yes' />
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value='https://public.tableau.com/static/images/In/IndexofEconomicfreedomStory/Story1/1.png' />
      <param name='animate_transition' value='yes' />
      <param name='display_static_image' value='yes' />
      <param name='display_spinner' value='yes' />
      <param name='display_overlay' value='yes' />
      <param name='display_count' value='yes' />
      <param name='language' value='en-GB' />
    </object>
  </div>
  <script type='text/javascript'>
    function initViz(id) {
      var divElement = document.getElementById(id);
      var vizElement = divElement.getElementsByTagName('object')[0];
      vizElement.style.width = '100%';
      vizElement.style.height = (divElement.offsetWidth * 0.75) + 'px';
      var scriptElement = document.createElement('script');
      scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
      vizElement.parentNode.insertBefore(scriptElement, vizElement);
    } initViz('vizDashboard'); initViz('vizStory'); </script> </body> </html>
```

Dataset Link

https://drive.google.com/file/d/1EBIa1LtM3Ni2Uh3nekLB6wt3263Q3NeX/view?usp=sharelink

GitHub & Project Demo Link

https://drive.google.com/file/d/1tS88CyDA37KwuOJGzsOBWnAYJWl03yj9/view?usp=drive_link_

Embed code link:

https://gousie.github.io/tableau-embed-site/