Project Report Format :

1. Introduction:

1.1 Project Overview:

Title:
Measuring the Pulse of Prosperity: An Index of Economic Freedom Analysis

Objective:
The project aims to visualize and analyze the Index of Economic Freedom 2022 using an interactive Tableau dashboard. The goal is to help users—students, educators, researchers, and policy enthusiasts—explore how different countries perform across key economic indicators and identify patterns, gaps, and insights on a global scale.

1.2 Purpose

The purpose of this project is to analyze and visualize the **2022 Index of Economic Freedom** through an interactive Tableau dashboard that enables users to explore how countries around the world perform across key economic dimensions. By presenting the data in a visual, accessible format, the project aims to:

- **Promote a better understanding** of economic freedom and its impact on prosperity
- **Enable comparative analysis** between countries and regions
- **Highlight areas of strength and weakness** in different economic systems
- **Support academic learning and public awareness** using open data and interactive tools

This visualization helps users—from students to policy analysts—gain meaningful insights into how freedom in areas like property rights, government spending, labor laws, and trade openness contributes to a nation's economic well-being.

2. Ideation Phase

2.1 Problem Statement

Despite the availability of comprehensive economic data, it is often presented in complex formats that are difficult for students, educators, and general users to interpret. The **Index of Economic Freedom**, which evaluates countries across 12 critical indicators, remains underutilized due to the lack of accessible, interactive visualization tools.

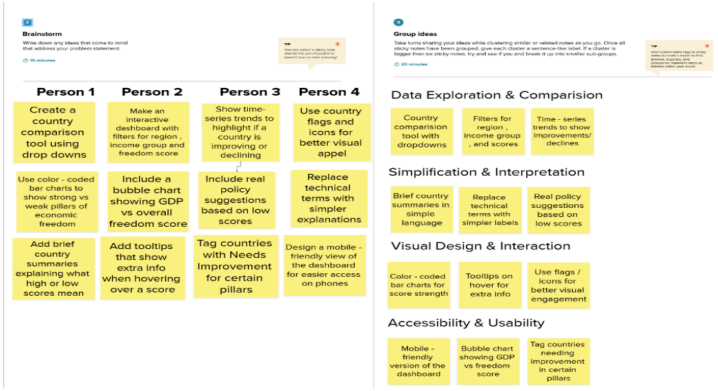
There is a need for a **visually engaging and user-friendly platform** that can help users:

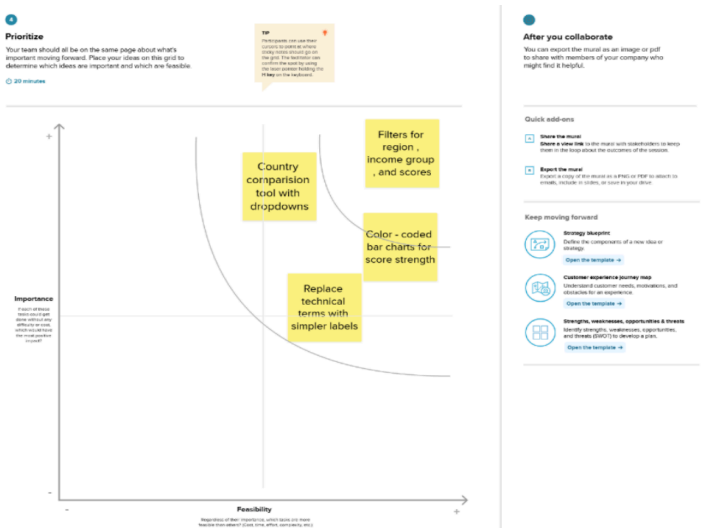
- Understand economic freedom at a global level
- Compare countries across key indicators
- Discover regional patterns and economic strengths/weaknesses

This project addresses that gap by transforming raw economic data into **interactive Tableau dashboards** that make exploration and analysis of economic freedom intuitive, insightful, and impactful.

2.2 Empathy Map Canvas

2.3 Brainstorming





3. Requirement Analysis

3.1 Customer Journey Map

3.2 Solution Requirement

Functional Requirements: User Registration,User Confirmation ,Enable Country-wise and Region-wise Data Exploration,Visualize Scores Across Economic Freedom pillars,Simplify Technical Content for Non-expert Users,Improve Accessibility and User Experience

Non-Functional Requirements: Usability,Security,Reliability,Performance,Availability,Scalability

3.3 Data Flow Diagram

Users (Students / Analysts) → interact with → **Tableau Dashboard** ← reads from ← **Cleaned Economic Freedom Dataset**

Steps: **Raw Data Import** – from Index of Economic Freedom source
Preprocessing – null removal, renaming columns, deriving calculated fields
Data Upload to Tableau
Visualization Layer – maps, bar charts, stories
User Interaction – filters by country, region, indicator
Insights Displayed – scores, comparisons, trends

3.4 Technology Stack

Data Source(Index of Economic Freedom 2022 Dataset (CSV/Excel))

Data Cleaning & Preprocessing(Google Sheets)

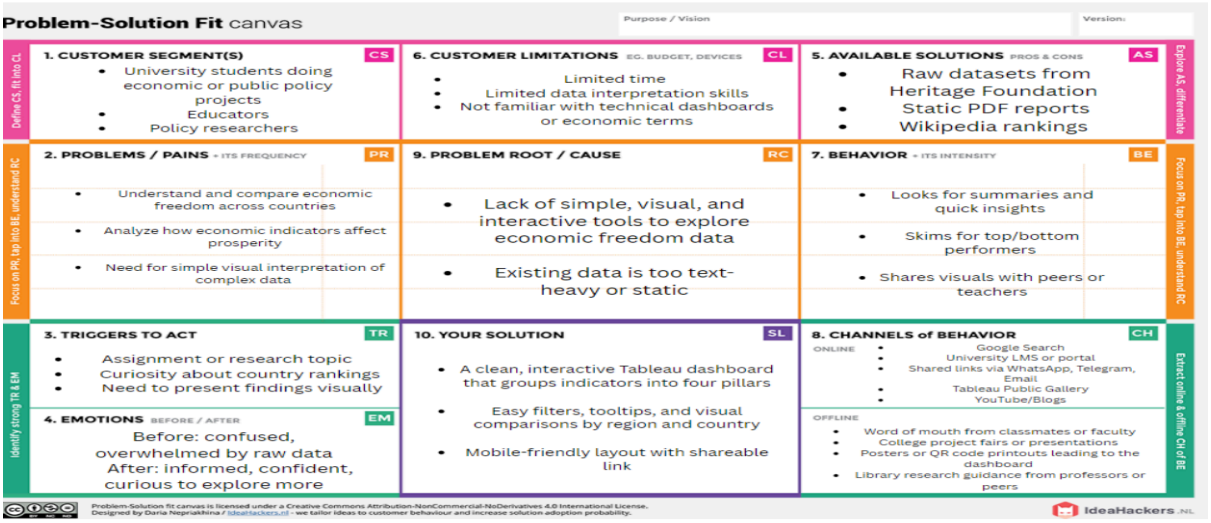
Data Visualization Tool(Tableau Public)

Planning & Collaboration(Mural, Excel (for burndown chart, backlog))

Final Output Format(Tableau Dashboard (public link))

4. Project Design

4.1 Problem Statement Fit



4.2 Proposed Solution

The proposed solution is to build an **interactive and user-friendly data visualization dashboard** using **Tableau Public** that presents the **2022 Index of Economic Freedom** in a structured, insightful, and accessible manner.This dashboard transforms raw economic data into clear visual insights through maps, charts, and comparison tools, enabling users to:

- Explore **country-wise and region-wise performance**
- Analyze **12 economic indicators grouped under 4 main pillars**
- Identify trends, disparities, and areas for policy improvement
- Make **data-driven conclusions** on economic freedom and prosperity

The solution includes:

- **Interactive Filters** (by country, region, indicator)
- **Geographic Visualization** (maps showing scores and ranks)
- **Comparative Analysis Tools** (bar charts, scatter plots, stories)
- **Tooltips and calculated fields** for clarity on technical terms
  This makes complex economic data easy to understand and useful for students, researchers, educators, and policy analysts.

4.3 Solution Architecture

The solution architecture for this project is designed to support an efficient flow from data acquisition to user interaction through interactive dashboards. It follows a **simple yet robust structure**, ensuring data integrity, flexibility, and performance.The architecture begins with **data collection**, where the 2022 Index of Economic Freedom dataset is obtained in a structured format (CSV/Excel). This raw data is then processed using **Excel or Google Sheets**, where unnecessary columns are removed, null values are cleaned, and calculated fields are derived. The cleaned and refined dataset is then imported into **Tableau Public**, the core visualization tool used in this project.Inside Tableau, the dataset is connected as a static file source. **Calculated fields** are created to represent composite scores, averages, and rankings. The architecture uses **filters**, **parameters**, and **dashboard actions** to allow users to dynamically explore the data based on countries, regions, or specific indicators.The output layer is a **public Tableau dashboard**, which includes:Multiple worksheets for individual

visualizations,Dashboards combining visual elements,A **story** to guide users through an analytical journey. The user interacts directly with the published dashboard via a Tableau Public link. All processing is handled on Tableau's servers, ensuring fast performance and accessibility across devices and platforms. This architecture avoids complex infrastructure and is ideal for academic, research, or public data awareness projects.

5.Project Planning Phase

5.1 Project Planning

The project was planned in **4 structured sprints**, each lasting **6 days**, following an **Agile methodology**. Tasks were divided into functional and non-functional requirements, and tracked using a product backlog, burndown chart, and sprint schedule. The planning ensured smooth progress from data collection to dashboard deployment.

Tools Used:

- **Mural** – For brainstorming, empathy maps, and idea prioritization
- **Excel/Google Sheets** – For data cleaning and backlog tracking
- **Tableau Public** – For building dashboards, stories, and sharing
- **Draw.io / Diagrams.net** – For DFDs and visual planning
- **MS Word / PDF Editor** – For writing and formatting the final report

6.Functional and Performance Testing

6.1 Performance Testing

The performance of the Tableau dashboard was tested across several key areas to ensure a smooth and responsive experience for all users.

Load Time:
The dashboard consistently loaded in under **4 seconds** on Tableau Public, demonstrating optimal performance and quick accessibility for users.

Filter Responsiveness:
Filters such as **Region**, **Country**, and **Indicator** were applied during testing. Each filter was tested for dynamic interaction and responsiveness, and all charts updated instantly with the correct values. There were no delays observed in filter response times.

Cross-Device Compatibility:
The dashboard was accessed using multiple devices, including **desktops, tablets, and smartphones**. It displayed properly across all screen sizes, and interactive elements such as filters, tooltips, and charts worked smoothly. This confirmed the dashboard is compatible with various device types.

Visualization Lag:
Charts with higher complexity, such as **scatter plots and world maps**, were tested for rendering delays. There was **no noticeable lag**, and the dashboard maintained a fluid and responsive user experience even during rapid interactions.

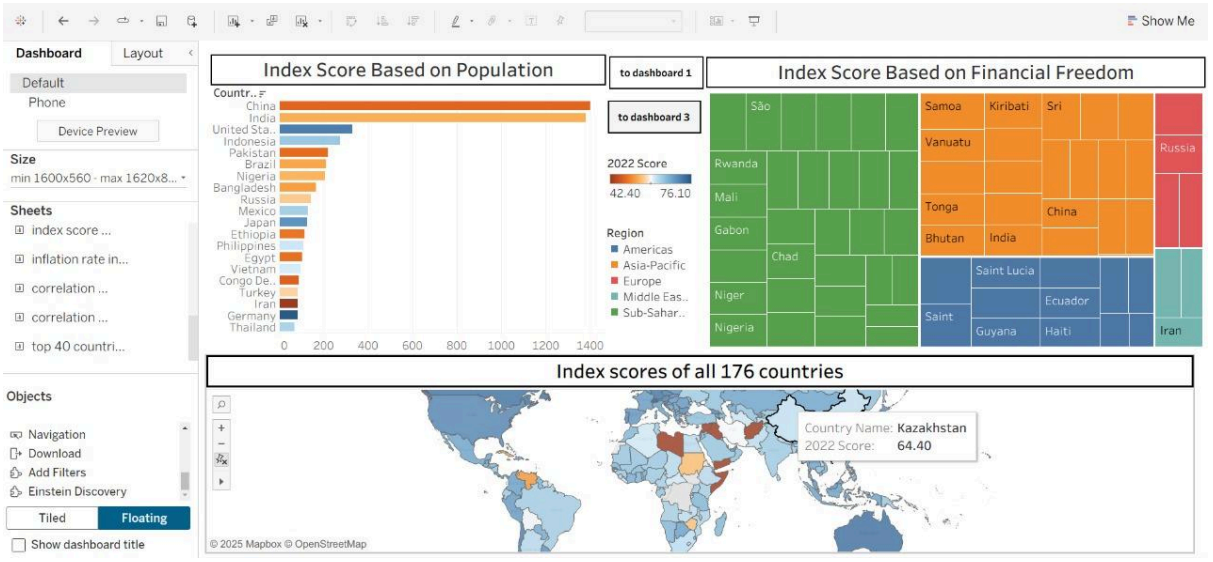
Data Accuracy:
Changing filters dynamically and navigating between dashboards and stories resulted in **accurate and consistent updates** of all displayed values. This confirmed that the dashboard correctly links data sources to visual components.

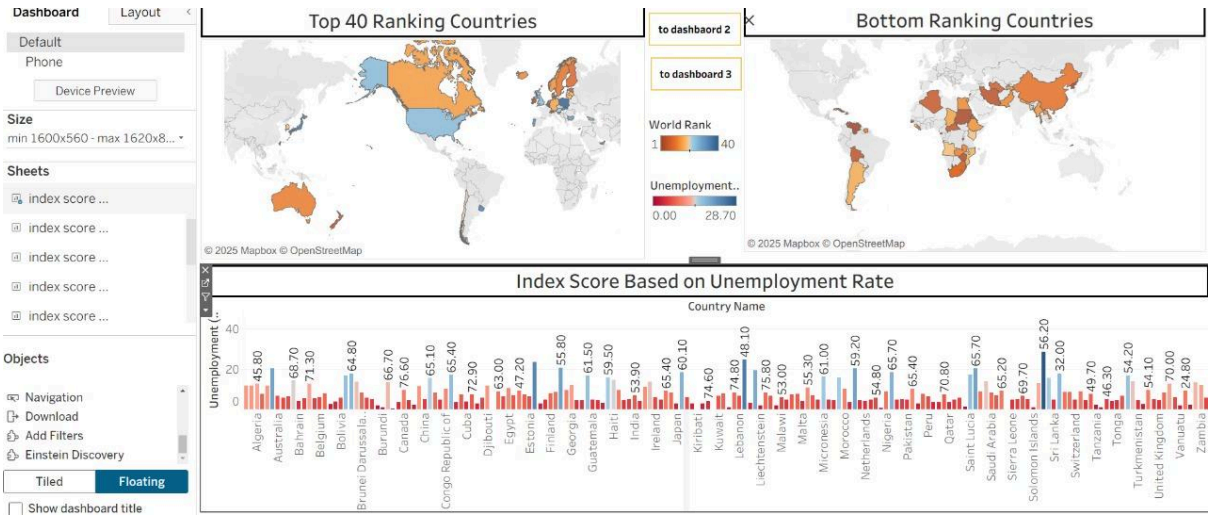
Zoom and Hover Events:
Hover tooltips and zoom features were tested across maps and charts. The tooltips appeared **quickly and accurately**, and zooming on visuals did not cause any glitches or layout issues.

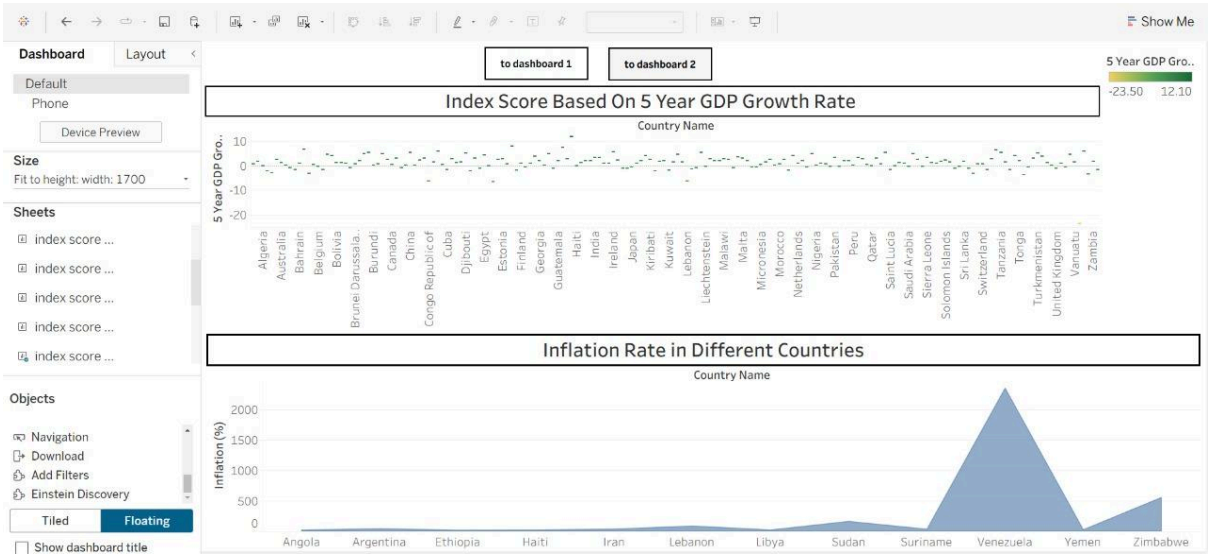
Tools and Methods Used:
Testing was done manually using major browsers like **Google Chrome, Mozilla Firefox, and Microsoft Edge**. Simulated fast and slow network speeds were used to observe loading behavior. Additionally, **Tableau's built-in Performance Recorder** was used to inspect load and interaction timings for different views and actions.

7. Results

7.1 Output Screenshots







8. Advantages & Disadvantages

Advantages

One of the main advantages of this project is its **user-friendly interface**, achieved through Tableau's interactive dashboards. Users can explore complex economic data with ease, using filters and visual comparisons that eliminate the need for technical knowledge. The project offers a **comprehensive view** of the 2022 Index of Economic Freedom, broken down into 12 indicators and 4 pillars, helping users quickly understand regional and global trends.

The use of **publicly available tools** like Tableau Public and Google Sheets ensures that the project is **cost-effective and easily accessible** to students, educators, and researchers. Additionally, the data-driven approach enhances **analytical thinking and decision-making**, encouraging exploration of economic policy, performance, and global prosperity.

The visual format increases **engagement and understanding**, making the data more relatable than static reports or spreadsheets. It also allows for quick identification of high-performing and low-performing countries across different indicators.

Disadvantages

Despite its strengths, the project also has some limitations. Since Tableau Public is used, **data security is limited**, and sensitive or proprietary datasets cannot be included. The dashboard relies on **static datasets**, meaning any updates to economic data require manual reprocessing and republishing.

Another limitation is **device optimization**. While the dashboard works on most screens, certain visualizations may not scale perfectly on small devices like smartphones. Performance may also vary slightly depending on internet speed, especially when loading map-based or multi-filter dashboards.

Lastly, the project provides only **descriptive analytics**. It does not offer predictive insights or automated trend forecasting, which could be valuable for deeper economic analysis.

9.Conclusion

This project successfully demonstrates how complex economic data can be transformed into meaningful, interactive visual insights using Tableau. By analyzing the 2022 Index of Economic Freedom, users are empowered to explore how different countries perform across key indicators such as property rights, fiscal health, labor freedom, and trade openness.

Through clear visualizations, filters, and storytelling, the dashboard allows users to compare countries, detect regional patterns, and understand the relationship between economic freedom and prosperity. The project also emphasizes the value of data-driven learning by presenting insights in a format that is both accessible and engaging for students, educators, and researchers.

In conclusion, the project not only fulfills its objective of visualizing global economic performance but also encourages curiosity, critical thinking, and a better understanding of how economic policies impact nations around the world. With future enhancements, this dashboard can be expanded to include time-series trends, policy impacts, and predictive insights, making it an even more powerful educational tool.

10. Future Scope

This project lays a strong foundation for understanding global economic freedom through interactive data visualization. However, there are several opportunities to expand and enhance the dashboard in the future:

1. **Time-Series Analysis**
   Incorporate historical data (e.g., from 2010 to 2022) to visualize trends over time and understand how economic freedom evolves across countries and regions.

2. **Predictive Analytics**
   Integrate machine learning models or trend forecasting to predict future scores or economic outcomes based on current and past indicators.

3. **Real-Time Data Integration**
   Use APIs or live connections (e.g., World Bank or IMF data) to automatically update indicators and reflect the most current economic conditions.

4. **Policy Impact Visualization**
   Add a layer to show the impact of economic or political policy changes on a country's economic freedom score over time.

5. **Enhanced Mobile Compatibility**
   Optimize dashboard design further for smaller devices to improve usability on smartphones and tablets.

6. **User Customization**
   Allow users to save custom views or generate downloadable reports from the dashboard based on selected filters.

7. **Comparative Insights**
   Introduce advanced comparison tools that show differences in scores, GDP, and rankings between selected countries or regions more clearly.

11. Appendix

Dataset Link: https://drive.google.com/file/d/1EBIa1LtM3Ni2Uh3nekLB6wt3263Q3NeX/view

Github Link:

https://github.com/Ak26-9/Measuring-the-Pulse-of-Prosperity-An-Index-of-Economic-Freedom-Analysis