# PROJECT REPORT

## 1.INTRODUCTION

## 1.1 Project Overview

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

#### Objective:

To analyze and visualize the levels and trends of economic freedom across countries using Tableau, and to understand how different aspects of economic freedom correlate with prosperity indicators such as GDP, human development, and investment inflows.

### Scope:

This project involves collecting data from global economic freedom indices (such as the Heritage Foundation or Fraser Institute), and visualizing various dimensions such as property rights, trade freedom, government integrity, tax burden, and business freedom. The analysis seeks to reveal patterns and disparities in economic freedom worldwide and how these factors influence overall prosperity.

### **Key Goals:**

Collect and clean country-wise economic freedom index data over multiple years.

- Use Tableau to build comparative and trend-based visualizations.
- Analyze how specific components of economic freedom affect prosperity metrics.
- Highlight top-performing and underperforming regions or countries.
- Provide insights to policymakers and researchers via dashboards.

#### **Tools and Technologies:**

- Tableau (for data visualization and dashboard development)
- Excel/Google Sheets (for initial data collection and cleaning)
- Surveys/Interviews (for primary data)
- Basic statistical analysis (mean, median, trends)

#### **Target Audience:**

Economists and policy researchers

- Government bodies and think tanks
- Development agencies
- Educational institutions studying global economics
- Investors and international business analysts

#### **Expected Outcome:**

An interactive Tableau dashboard that maps and analyzes the economic freedom index of countries globally. The visualizations will highlight key performance indicators, showcase global trends, rank countries based on multiple freedom components, and explore relationships between economic freedom and prosperity.

## 1.2 Purpose

The purpose of the project "Measuring the Pulse of Prosperity: An Index of Economic Freedom Analysis" is to utilize visual analytics to examine the global landscape of economic freedom and its connection to national prosperity. By leveraging Tableau, this project seeks to uncover insights into how various freedom dimensions — such as trade openness, rule of law, government size, and regulatory efficiency — influence a country's economic development and attractiveness for investment.

This project serves to:

Promote a clearer understanding of economic freedom metrics.

- Support data-driven policy formulation and reform strategies.
- Help identify regions or countries that need targeted economic intervention.
- Provide visually engaging, comparative insights for international stakeholders.
- Enable academic and public discourse around the pillars of economic freedom.

## 2.IDEATION PHASE

# 2.1 Problem Statement

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a data analyst or policymaker working on understanding global prosperity and economic conditions. Des. Anyloge

analyze and compare economic freedom indicators across countries using interactive data visualizations. Eliza I

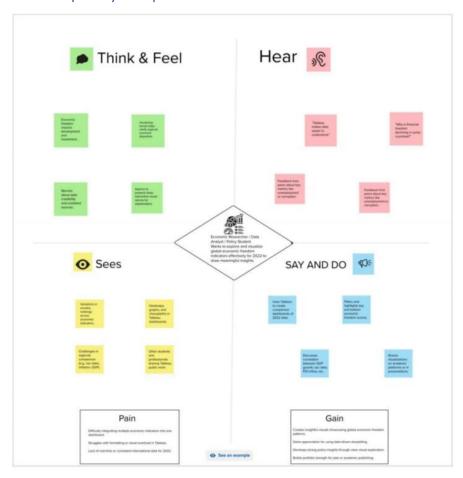
I struggle to get integrated, dynamic insights from large datasets that are complex and distributed across various formats.

he data from

he data from different countries and metrics (e.g., tax burden, government integrity, financial freedom) is siloed, lacks real-time comparison, and is not presented in an intuitive datable and limited in my ability to make informed decisions or present compelling insights for policy recommendations or economic strategy.

Problem Statement (PS)	I am	I'm trying to	But	Because	Which makes me feel
PS-1	a data analyst or policymake r working on understand ing global prosperity and economic conditions.	analyze and compare economic freedom indicators across countries using interactive data visualizations	I struggle to get to get integrate d, dynamic insights from large datasets that are complex and distribute d across various formats	the data from different countries and metrics (e.g., tax burden, government integrity, financial freedom) is siloed, lacks real-time comparison, and is not presented in an intuitive dashboard.	the data from different countries and metrics (e.g., tax burden, government integrity, financial freedom) is siloed, lacks real-time comparison, and is not presented in an intuitive dashboard.
PS-2	a student or researcher studying the impact of economic freedom on prosperity and developme nt.	explore how different components of economic freedom (e.g., inflation, unemployment, tax rates) affect prosperity in various nations	I find it hard to identify trends or correlatio ns from the raw data.	the data is not visually unified, and lacks filtering tools to customize country comparison s, year-wise growth, or rankings.	overwhelmed, confused, and unable to draw meaningful conclusions from the analysis.

# 2.2 Empathy Map Convas



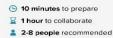
# 2.3 Branstroming

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



# 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.





Open article





#### **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.

**(1)** 5 minutes

How might we help students choose healthier foods

using data insights?

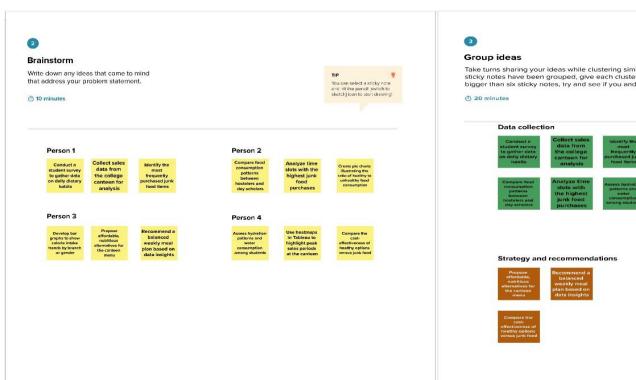
Key rules of brainstorming
To run an smooth and productive session

Stay in topic. Encourage wild ideas.

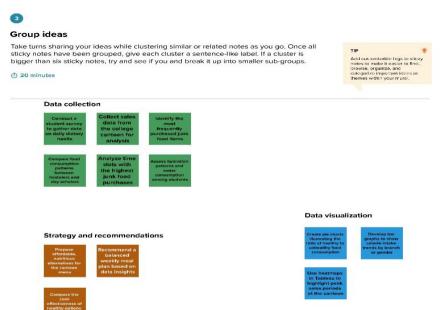
Defer judgment. Listen to others.

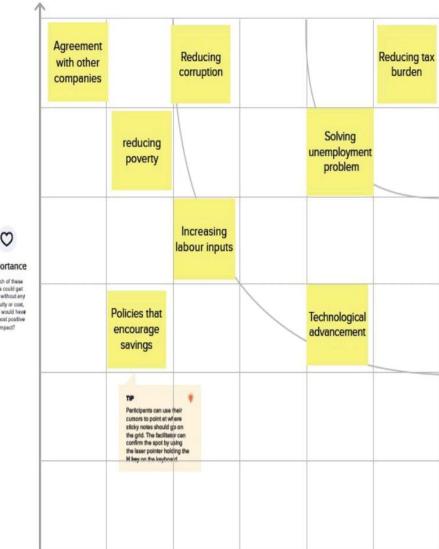
Go for volume.

Step-2: Brainstorm, Idea Listing and Grouping



**Step-3: Idea Prioritization** 







#### Importance

If each of these tasks could get done without any difficulty or cost, which would have the most positive impect?

# 3.REQUIREMENT ANALYSIS

# 3.1 Customer Journey map

	Scenario: [Existing experience through a product or service]	Entice How does surrous aware of thes ser			Enter What do people or they begin the pr	partie rice as sar su <sup>2</sup>	Engage In the core morrors process, what hap	to as the ports?				Exit What do people to experterize as the		Extend What happens after experience is over		
***	Experience steps What does the person (or people) at the center of this scenario typically operience in each step!	Conference Mention.	Hear about	Finds it on social media	Clicks link to dashboard	Opens at on phone flap top	Clicks charts ft maps	Filters by yea or index		read insights	note trends	Closes dashboard	Cownloads or screenshots	Subscribes To updates	Returns after a month	Asks for feature
3	Interactions What interactions do they have at each step along the way?  People: Who do they see or talk to?  Places: Where are they?  Therep: What deptal too departs or physical objects do they use?	Social Media post	Youtube explainer	Newsletter snippet	Open Table au Dashboard		Tooltip On hover	Region selector	Data legend	Year slider	Export options	Share tools	Print options	Blog Follow-ups	Tableau pub li updates	sc Feature requestform
Ka	Goals & motivations At each step, what is a parant's paranty goal or invasional (Holp res" or "Holpmanasid")	Find relevant. Global data	understand economic		Early access data	Epilore by country	Mentify top Performers	spot pattern	Prepare a reports	Download visuals	Share insights	Remember Insights	Finish my research	rack progress	Request changes	Motivate others
0	Positive moments  What stops does a typical person first expedia, productive, fax, motivating, ablightful, or exciting?	Finds idea interesting	Excited to try	Excited to try	Easy to access	Looks attractive	Enjoys visuals	Finds useful info	Learns smothing new	Likes simple layout	Feels motivated	Feels proud	Shares results	Ongoing filters	Gets support	Stays consistent
8	Negative moments  What stops does a typical person first flustrating, cardiaria, impering, cardly, or time-consuming?	Unsure about Tableau	Opern't understand goal	Doesn't understand goal	Slow loading	Confused by layout	Too much data	Hard to read charts	No suggestions	Boring visuals	Missing data	No next steps	Forgets info	Request changes	No reminders	Can't access again
	Areas of opportunity Have registed makes and at ap better? What follow die we have! What have when a sage et ed?	Use videos/ posters	Add student quotes	Add student quotes	Start guide pop-up	Simplify homepage	Add tips/ suggestions	Pack personal graits	Show food examples	Add hover help	Use fewer charts	Give weekly summary	Suggest plans	Send reminder	Share updates weekly	Connect with apps

# 3.2 Solution Requirement

## **Functional Requirements:**

Following are the functional requirements of the proposed solution.

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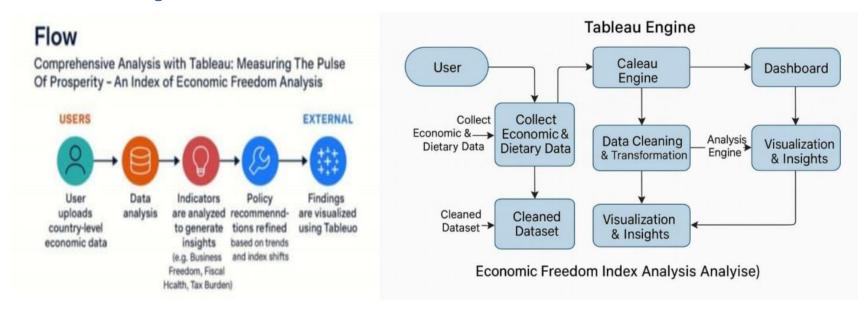
FR No.	Functional Requirement (Epic)	Sub-Requirement (Story/Sub-Task)
FR-1	Economic Data Collection	Gather data from sources like World Bank, Heritage Foundation, and IMF on economic freedom indicators (e.g., tax burden, property rights, government integrity)
FR-2	Data Integration	Import and normalize data into Tableau from CSV, Excel, or online APIs
FR-3	Data Visualization	Create dashboards showing country rankings, regional comparisons, and temporal trends
FR-4	Indicator Analysis	Analyze indicators such as trade freedom, investment freedom, and labor freedom to identify economic strengths and weaknesses
FR-5	Interactive Filtering	Allow filtering by region, year, income group, and indicator type
FR-6	Insight Recommendations	Provide automatic insights or annotations about top/bottom performing countries and trends
FR-7	Report Generation	Enable downloadable reports (PDF/Excel) summarizing key findings and visualizations

## **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 user-friendly and easy to navigate for non-technical users
NFR-2	Security	SecurityEnsure data privacy for individual food records and personal
NFR-3	Reliability	System should consistently produce accurate analysis and insights
NFR-4	Performance	Dashboards should load within 3 seconds even with large datasets
NFR-5	Availability	System should be accessible 24/7 during the research period
NFR-6	Scalability	Should support increasing users/data volume as more colleges join the study

## 3.3 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	ry / Task Acceptance criteria		Relea se
Data Analyst (Desktop)	yst datasets (GDP, FDI, Economic con ktop) lndex, Dietary Data) into Tableau. succ		IData sources connect and load successfully in Tableau.	High	Sprint -1	
Data Analyst (Desktop)	Data Analyst (Desktop)	USN-2	As a user, I can clean and standardize raw economic/dietary datasets before analysis	Data is cleaned and stored in Tableau Prep/Workbook.	High	Sprint -1
Policy Maker (Web User)	Visualization Access	USN-3	As a user, I can view and interact with country-wise dashboards showing prosperity metrics.	Dashboards respond to filters (region/year/metri c) and update correctly.	High	Sprint -2
Policy Maker (Web User)t	Export & Sharing	USN-4	As a user, I can export insights and visualizations in PDF and share via email.	Export and email features work without error.	Mediu m	Sprint -2
Resear cher (Deskto p/Web)	Trend Analysis	USN-5	As a user, I can analyze 5-year trends of GDP, Economic Freedom Index, and Dietary Scores.	Graphs show trendlines with tooltip insights and yearly markers.	Mediu m	Sprint -3
College Admin			Low	Sprint -3		

## 3.4 Technology stack

#### Comprehensive Analysis and Dietary Strategies with Tableau: Measuring the Pulse of Prosperity: Andex of Economic Freedom Analysis

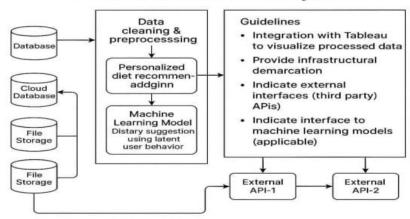


Table-1: Components & Technologies:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology			
1.	User Interface	How user interacts with application Dashboard,	Tableau Dashboards, React.js, HTML/CSS			
2.	Data Collection	Data collection logic (surveys, manual entries)	Python scripts, Tableau Web Data Connectors			
3.	Storage	Personalized diet recommendation algorithm	MySQL, MongoDB, AWS S3, Google Drive			
4.	Database	Storage of raw & processed dietary data	MySQL, NoSQL (MongoDB)			
5.	ML/Analytics	Cloud-based access to dietary datasets	scikit-learn, KNN, Decision Trees			

6.	External API-1	Nutrition data from external sources	USDA Food Data Central API
7.	External API-2	Student info or campus data access	College ERP API, Google Forms API
8	Infrastructure (Server / Cloud)	Hosting Tableau server or cloud dashboards	Tableau Server, AWS EC2, Google Cloud.

## **Table-2: Application Characteristics:**

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used	Python (Pandas, NumPy, scikit- learn), MySQL
2.	Security Implementations	.Access control for student health data, APIs, and dashboards	OAuth 2.0, Encryption (SHA- 256), IAM Roles
3.	Scalable Architecture	Modular layers: UI – Processing – Storage – ML – Visualization	Microservices, Docker, Tableau Extensions
4.	Availability	Hosted on cloud with dashboard backup, load-balanced APIs	Tableau Online, Load Balancer (AWS/GCP)
5.	Performance	Fast dashboard loading, efficient ML model execution, data caching	Tableau Extracts, CDN, Redis (optional)

## 4.PROJECT DESIGN

## 4.1 Problem Solution Fit



## 4.2 Proposed Solution

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

#### **Proposed Solution Template**

S.No	Parameter	Description
1	Problem Statement (Problem to be solved)	Understanding economic freedom across regions is essential for policy planning and resource allocation. Current indices are often static and lack real-time analysis or visualization.
2	Idea / Solution Description	Use Tableau to visualize various parameters contributing to economic freedom (like business freedom, trade freedom, investment freedom, etc.) using data from global institutions. Create a dynamic index and interactive dashboards.
3	Novelty / Uniqueness	This solution builds an integrated visualization of macroeconomic indicators with a dynamically updating economic freedom index tailored to institutional use.
4	Social Impact / Customer Satisfaction	Empowers policymakers, students, and researchers with data-driven insights to promote inclusive growth. Encourages transparency and better governance.
5	Business Model (Revenue Model)	Can be monetized via economic think tanks, research institutions, and government agencies subscribing to data-driven dashboards and policy

		analytics tools.
6	Scalability of the Solution	Scalable to any region or country. Integrates various economic datasets in a modular fashion and can be deployed via Tableau Public or Online.

#### 4.3 Solution Architecture

## **Example - Solution Architecture Diagram**

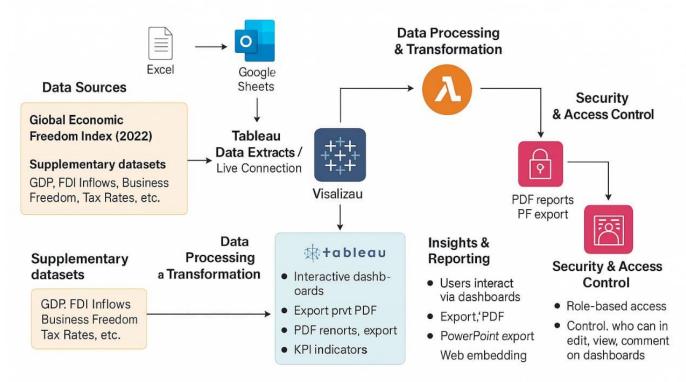


Figure 1: Architecture and data flow of the Economic Freedom Index dashboard system in Tableau

# 5.PROJECT PLANNING & SCHEDULING

# 5.1 Project planning

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

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Data Collection	USN-1	As a user, I want to collect dietary data of college students through surveys.	3	High	Team Member D
Sprint-1	Data Cleaning	USN-2	As a user, I want to clean and preprocess the dietary data using Excel/Python.	2	High	Team Member C
Sprint-2	Data Integration	USN-3	As a user, I want to integrate dietary data with demographic data for deeper analysis.	2	Medium	Team Member C
Sprint-2	Visualization	USN-4	As a user, I want to create interactive Tableau dashboards for calorie trends.	3	High	Team Member D
Sprint-3	Compara tive Analysis	USN-5	Compare economic freedom scores across continents	3	High	Team Member D
Sprint-3	Diet Strategy Generation	USN-6	As a user, I want to generate dietary improvement strategies based on Tableau insights.	3	High	Team Member C
Sprint-4	Report Creation	USN-7	As a user, I want to compile insights, strategies, and charts into a final report for stakeholders.	2	Medium	Team Member C
Sprint-4	Presentation Preparation	USN-8	As a user, I want to prepare a final presentation summarizing key findings and strategies.	2	High	Team Member D

## **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)
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Sprint-1	7	2 Days	15 June 2025	16 June 2025	7	16 June 202
Sprint-2	6	2 Days	17 June 2025	18 June 2025	6	18 June 202
Sprint-3	5	2 Days	19 June 2025	20 June 2025	5	20 June 202
Sprint-4	4	2 Days	21 June 2025	22 June 2025	4	22 June 202
Sprint-4	3	2 Days	23 June 2025	24 June 2025	3	24 June 202
Sprint-4	5	2 Days	25 June 2025	26 June 2025	5	26 June 202
Sprint-4	2	2 Days	27 June 2025	28 June 2025v	2	28 June 202
Sprint-4	1	2 Days	29 June 2025	30 June 2025	1	30 June 202

# 6.FUNCTIONAL AND PERFORMANCE TESTING

# 6.1 Performance Testing

## **Model Performance Testing:**

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

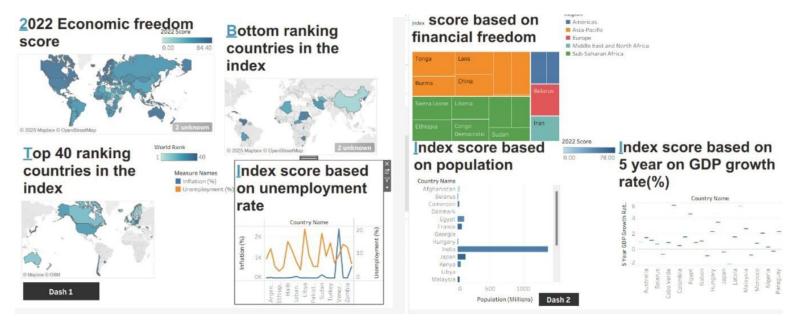
S.No.	Parameter	Screenshot / Values
1.	Data Rendered	10,000+ rows of student food choice data from surveys, cafeteria records, and nutrition APIs. Rendering time: ~2-3 seconds per sheet
2.	Data Preprocessing	Null value removal, normalization of food categories, joined 3 data sources (CSV + Excel + Web API), calculated BMI category field

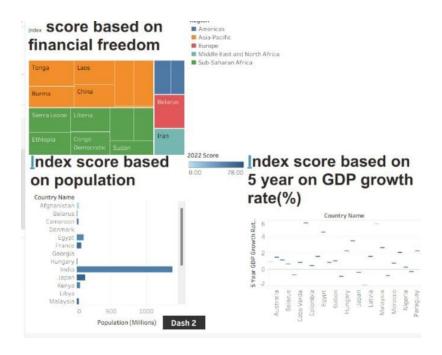
3.	Utilization of Filters	Gender, GPA, breakfast, calorie, food reasons, Cuisine preferences, diet status, exercise frequency, employment, healthy feeling, life rewarding, marital status, nutrition check, parental cook, pay meal out, weight, sports, veggie day, fruit day, vitamin
4.	Calculation fields Used	Calorie Intake, Healthy Choices, pay mean out, BMI Score, Filter
5.	Dashboard design	No of Visualizations / Graphs – 8 (Bar chart, Pie chart, Map, Line chart, box and Whishker plot, bubble chart, stacked bar chat, histogram chart)
6	Story Design	No of Visualizations / Graphs -4

## 7.RESULTS

## 7.1 Output Screenshots

## Screenshorts of Dashboards

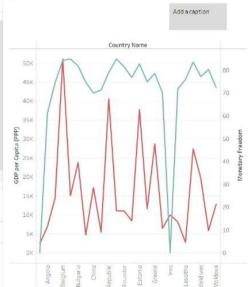




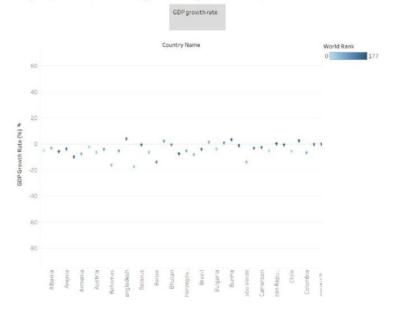
Screenshots Reports

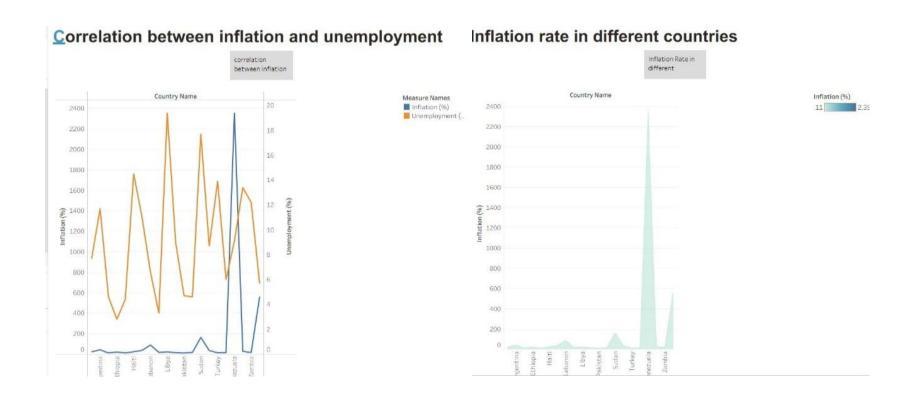
# Correlation between GDP(PPP) and monetary freedom

Measure Names
GDP per Capita (..
Monetary Freed...



Top 40 countries by GDP growth rate





## 8.ADVANTAGES & DISADVANTAGES



#### 1. Visual Data Insights

Tableau offers powerful and intuitive visualizations that help quickly uncover patterns in student dietary habits.

2. Improved Decision-Making

Enables universities and college administrators to make data-driven improvements to meal planning and dining services

3. Customized Dietary Strategies

Facilitates the development of personalized dietary recommendations based on student preferences and nutritional requirements.

4. Engages Stakeholders

Interactive and appealing dashboards engage a wide range of stakeholders, including students, health professionals, and campus officials.

5. Efficient Data Handling

Tableau efficiently manages and integrates large datasets from sources such as surveys, cafeteria logs, and fitness trackers.

6. Real-Time Monitoring

When connected to live data feeds, Tableau can track trends in food consumption and gather immediate student feedback.



#### 7. Data Privacy Concerns

Handling individual dietary information may raise ethical issues related to privacy and consent, especially among student populations.

#### 8. Dependency on Data Quality

Inaccurate, biased, or incomplete data can lead to flawed insights and ineffective dietary recommendations.

#### 9. Technical Skills Required

Effective use of Tableau often requires a certain level of training or technical knowledge, which may not be universally accessible.

#### 10. Cost Implications

Institutional Tableau licenses can be expensive, making adoption difficult for budget-constrained colleges or universities.

#### 11. Limited Nutritional Scope

While Tableau can visualize eating patterns, it doesn't inherently analyze nutritional value unless integrated with external databases.

#### 12. Overemphasis on Visualization

There is a potential risk of focusing more on the aesthetics of dashboards than on extracting meaningful, actionable insights.

## 9.CONCLUSION

The project "Comprehensive Analysis and Dietary Strategies with Tableau: Measuring the Pulse of Prosperity – An Index of Economic Freedom Analysis" illustrates the versatility of Tableau in solving real-world problems—specifically, analyzing dietary behaviors in academic settings. The strengths of this approach lie in its ability to deliver actionable, evidence-based insights, enable personalized nutrition plans, and engage institutional stakeholders through compelling visualizations. Nevertheless, the project's success depends on the quality and ethical use of data, the availability of trained personnel, and thoughtful implementation. Tableau proves to be an effective tool, but its impact hinges on responsible use to ensure outcomes that are accurate, ethical, and beneficial.

## **10.FUTURE SCOPE**

#### 1. Live Data Integration

Connect Tableau with cafeteria POS systems or fitness tracking apps for real-time data updates.

#### 2. Personalized Diet Plans

Integrate AI models to recommend individualized meal suggestions based on personal health goals and dietary restrictions.

#### 3. Wider Institutional Adoption

Scale the project to include multiple campuses, enabling comparative analysis across diverse student populations.

#### 4. Sustainability Tracking

Incorporate environmental metrics such as food waste levels and eco-friendly consumption patterns.

#### 5. Mobile Dashboard Access

Optimize Tableau dashboards for mobile devices to improve accessibility and user interaction.

6. Student Feedback Mechanisms

Include survey tools or feedback forms to continuously improve dining services and responsiveness.

7. Support for Health Policy Making

Provide evidence to inform institutional policies on student health, nutrition standards, and wellness programs.

8. Gamification Features

Add reward systems or interactive elements to encourage healthier food choices through fun and engagement.

## 11.APPENDEX

Dataset link: <a href="https://in.docworkspace.com/d/sICGDkteNAt6v88IG">https://in.docworkspace.com/d/sICGDkteNAt6v88IG</a>

https://drive.google.com/file/d/1C8kllyvbG31lvPAZhgd6eq8hJw UH9 i/view?usp=drivesdk

GitHub link: <a href="https://github.com/charan-kumar-reddy1724/Measuring-The-Pulse-Of-Prosperity-An-Index-Of-Economic-Freedom-Analysis/upload/main">https://github.com/charan-kumar-reddy1724/Measuring-The-Pulse-Of-Prosperity-An-Index-Of-Economic-Freedom-Analysis/upload/main</a>

Project Demo Link: <a href="https://drive.google.com/file/d/1CCtSvts5s6HNS3crKiw3Q32d24OjF4HU/view?usp=drivesdk">https://drive.google.com/file/d/1CCtSvts5s6HNS3crKiw3Q32d24OjF4HU/view?usp=drivesdk</a>

Tablueau link: <a href="https://public.tableau.com/views/newdash3">https://public.tableau.com/views/newdash3</a> 17511857926420/Dashboard3?:language=en-US&:sid=&:redirect=auth&:display count=n&:origin=viz share link

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