Tableau Project Report

Project Design Phase

3.a. Problem-Solution Fit

To design an effective Tableau-based solution, it's essential to understand the core problem from multiple dimensions:

- Student Health Decline: Increased reliance on processed foods and poor meal planning contribute to issues like obesity, fatigue, and chronic illnesses among students.
- Nutritional Impact on Performance: Numerous studies indicate a strong correlation between proper nutrition and academic success, including better test scores, memory retention, and mood stability.
- Lack of Institutional Tools: Most educational institutions lack real-time data analytics tools to monitor student dietary health or correlate it with academic outcomes.

Goal: Validate that addressing student nutrition through data insights is a viable and impactful solution to improve health and learning outcomes.

3.b. Proposed Solution

The solution proposes the development of an interactive Tableau dashboard that integrates:

- Student dietary and health records (BMI, food logs, medical history)
- Academic performance metrics (GPA, attendance, engagement)
- Survey inputs from students, parents, and educators
- Government and WHO nutrition guidelines

Features:
- Personalized nutrition recommendations per student
- Correlation analysis between diet and academic scores
- Alerts for at-risk students based on diet deficiencies
- Visualizations for policy makers: school-wide health reports, meal plan effectiveness, and intervention impact

3.c. Solution Architecture

This phase outlines the overall design and data pipeline of the Tableau solution.

Data Sources:

- Student health databases

- Academic performance systems (e.g., SIS)

- Food intake surveys or apps

- External APIs (e.g., nutrition databases, WHO dietary standards)

Data Pipeline:

1. Data Extraction: Pull raw data from multiple sources including spreadsheets, databases, and APIs.

2. Data Cleaning & Transformation (ETL):

   - Remove inconsistencies, handle missing values

   - Normalize food and health data for comparison

   - Map nutrition data to academic metrics

3. Data Storage:

   - Store in a centralized relational database or data warehouse

   - Use tools like Google BigQuery, AWS RDS, or Excel sheets for smaller implementations

4. Tableau Integration:

   - Connect Tableau to the processed data

   - Build interactive dashboards and reports with filtering by age, school, diet type, performance metrics

5. User Interface:

   - Role-based dashboards: Students, Nutritionists, Teachers, Admin

   - Exportable PDF and Excel reports

   - Mobile and desktop accessibility