Food Trends Understanding Customer Preferences in F&B

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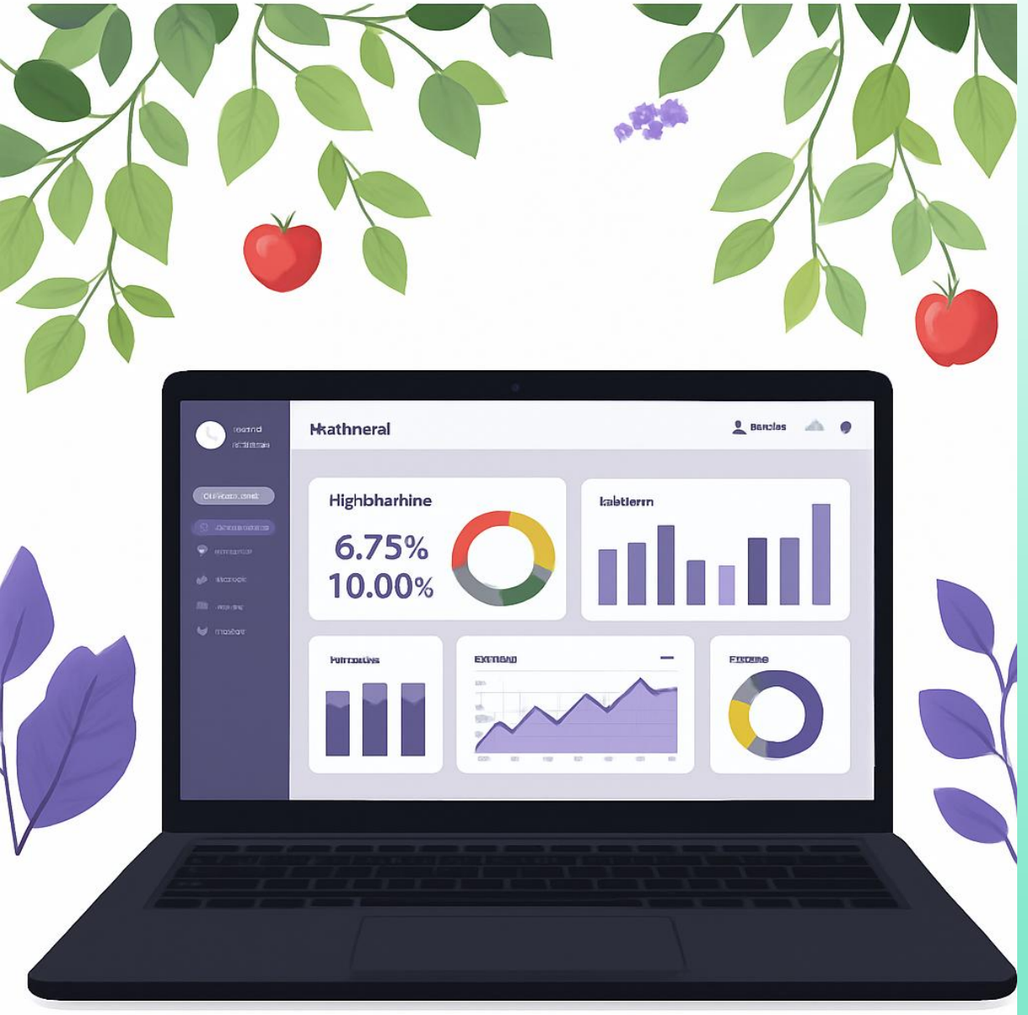

Project Objective

What We Analyzed

Consumer food habits, nutritional patterns, and dietary behaviors were examined through advanced data analytics and Power BI visualization. The study explored how demographic and lifestyle factors—including age, gender, body composition, activity level, and dietary preferences—shape food selections and nutritional intake across different meal types.

Our Impact

We uncovered critical relationships between key nutritional components (protein, fat, fiber, sugar, sodium, and calories) and meal preferences throughout the day. Interactive dashboards now empower food brands and health organizations with insights on pricing trends, customer satisfaction, and disease correlations.

This project bridges the gap between consumer preferences and healthy eating, enabling data-driven recommendations that promote balanced diets and better decision-making for individuals and organizations alike.

Technology Stack and Tools Used

Microsoft Excel

Primary data source storing demographic and nutritional data in structured .xlsx format

Power Query

Data cleaning engine for removing duplicates, fixing missing values, and standardizing formats

Power BI Desktop

Core platform for data modeling, visualization, and creating interactive dashboards with KPIs

DAX Expressions

Advanced analytics language for calculated fields, custom measures, and analytical KPIs

Project Execution Phases

01

Data Collection & Import

Gathered comprehensive dataset containing demographic, dietary, and nutritional details. Imported into Power BI and verified column consistency and data integrity.

02

Data Cleaning & Transformation

Leveraged Power Query Editor to remove duplicates, handle blanks, and engineer derived columns including BMI and Calorie-to-Protein Ratio for deeper analysis.

03

Data Modeling & Relationships

Established robust one-to-many relationships between tables and applied sophisticated DAX measures for calculating averages, ratios, and custom metrics.

04

Dashboard Design & Visualization

Created seven comprehensive dashboards featuring charts, slicers, KPIs, and interactive filters with consistent theme and professional layout design.

05

Testing & Documentation

Verified all DAX calculations, ensured responsive visual performance across devices, and prepared detailed final report with insights and visual documentation.

Dashboard Overview

Seven Powerful Dashboards for Comprehensive Food Intelligence

1. **Demographic Insights**
   Analyzes customer segmentation by age, gender, and diet type to identify and understand target consumer groups

2. **Dietary Preferences & Averages**
   Displays detailed nutrient averages and disease prevalence counts based on diet type and gender demographics

3. **Nutrients & Diseases**
   Explores critical links between nutrient intake patterns and health conditions using decomposition tree visualizations

4. **Breakfast Suggestions Analysis**
   Evaluates popular breakfast items with comprehensive price comparisons, nutrient values, and customer satisfaction ratings

5. **Lifestyle & Nutrition Impact**
   Studies calorie balance, BMI trends, and activity level impact on achieving personal nutrition goals

6. **Nutrition & Health Insights**
   Highlights gender-based calorie distribution patterns, BMI trends, and key health indicators across populations

7. **Value & Cost Analysis**
   Compares food costs against nutrient density and customer ratings to identify cost-effective, nutritious meal options

Challenges Faced and Solutions

Data Source Integration

Challenge: Import errors due to inconsistent data types across source files

Solution: Cleaned and reformatted all data using Power Query preprocessing techniques

Data Quality Issues

Challenge: Duplicates and non-standard values distorted visualization accuracy

Solution: Unified category naming conventions and systematically removed blank entries

Data Modeling Relationships

Challenge: Circular dependency errors disrupted data model integrity

Solution: Rebuilt optimized one-to-many relationships with correct primary and foreign keys

Complex DAX Measures

Challenge: Difficulty creating accurate and efficient KPI calculations

Solution: Simplified formulas using modular DAX design patterns and VAR functions for clarity

Dashboard Performance

Challenge: Slow load times due to excessive visual complexity

Solution: Optimized by consolidating visuals and simplifying DAX query structures

Key Learnings and Skills Acquired

Technical Skills

- Developed proficiency in Power BI Desktop for building analytical dashboards and comprehensive reports
- Mastered data cleaning and transformation using Power Query Editor for efficient data preparation
- Designed and implemented relational data models using Star Schema methodology for optimal analysis
- Advanced expertise in DAX functions for complex KPIs, ratio calculations, and sophisticated trend analysis
- Understood the critical importance of visual storytelling, strategic chart selection, and user interactivity design

Soft Skills

- Enhanced analytical thinking, critical reasoning abilities, and meticulous attention to detail
- Improved communication and presentation skills through effective data storytelling techniques
- Strengthened teamwork, cross-functional collaboration, and project management capabilities
- Learned effective time management strategies and task prioritization throughout the internship timeline

This internship provided a comprehensive foundation in business intelligence, combining technical expertise with professional development for a successful career in data analytics.

Conclusion and Impact

Project Achievements

Successfully transformed raw demographic and nutritional data into actionable business insights through sophisticated Power BI dashboards and advanced analytics techniques

Key Discoveries

Revealed how diet choices, lifestyle patterns, activity levels, and pricing strategies collectively influence customer satisfaction and nutritional balance across diverse populations

Industry Impact

Enabled data-driven decision-making in the Food & Beverage sector, promoting accessible healthy food trends and affordable nutrition options for consumers

Technological Innovation

Used Power BI to convert complex food and nutrition data into clear, actionable insights showcasing how analytics and visualization drive smarter business decisions in the F&B sector.

Health & Sustainability

Encouraged balanced and sustainable eating habits by identifying nutrient-rich, affordable, and health-conscious food trends that align with modern lifestyles.

Learning & Growth

Strengthened technical, analytical, and teamwork skills through hands-on experience in Power BI, data modeling, visualization, and insight storytelling.