Data-Driven Insights for Fast Food Sales

BDM Capstone Project (Secondary Route)

Name: Kapishankar Ashtankar

Roll No.: 21f3000371

Indian Institute Of Technology Madras

Business Overview (Secondary Route)

- Organization Name: Balaji Fast Food

- Business Type: Local fast-food outlet serving snacks and beverages

- Sales Model: Walk-in customers, no online platform

- Key Offerings: Cold Coffee, Sugarcane Juice, Frankie, Panipuri, Sandwiches, Aalopuri, Vadapav

- Project Route: **Secondary Data Route** (Dataset from Kaggle)

- Author Name: Rajat Surana

- Data Type: Secondary, pre-collected sales data.

- 1 year data (April 2022 - April 2023)

- Key Variables: Date, Item Name, Item Type, Item Price, Quantity, Transaction Amount, Transaction Type, Received By, Time of Sale

Business Problems

❖ Limited Sales Insights.

❖ Lack of predictive insights into future demand

❖ Limited Awareness of Sales Patterns

Data Cleaning and Preprocessing

❖ **Data Cleaning and Preparation:**

➢ Handled missing values, data type conversion, standardisation of categorical data

❖ **Analysis Process:**

➢ The analysis process included performing descriptive statistics, conducting exploratory data analysis through aggregation and grouping, creating visualizations to interpret patterns, and applying the Prophet model for time-series demand forecasting.

❖ **Visualization:**

➢ Various graphs such as bar charts, line charts, and forecasting plots were created using **Python (pandas, matplotlib, seaborn) and Facebook Prophet** as they effectively illustrate comparisons, trends, patterns, and future demand in sales data.
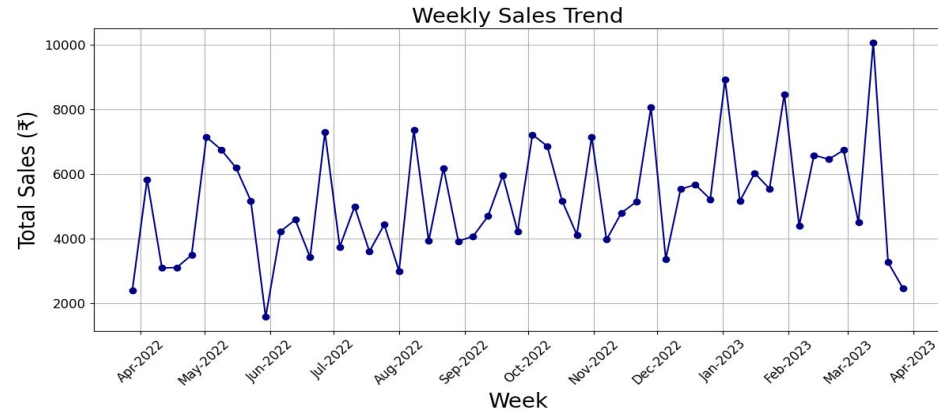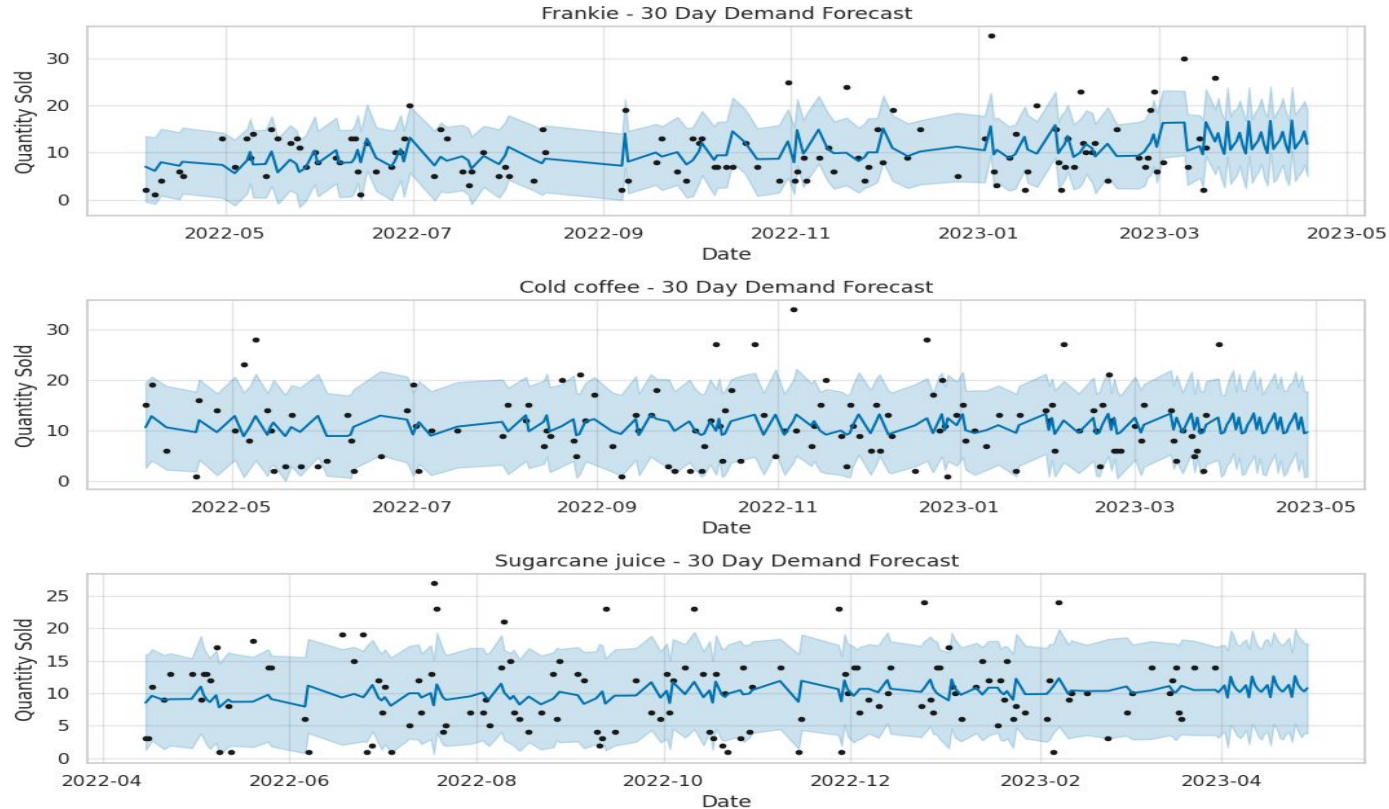
Results and Findings:

Sales Analysis:
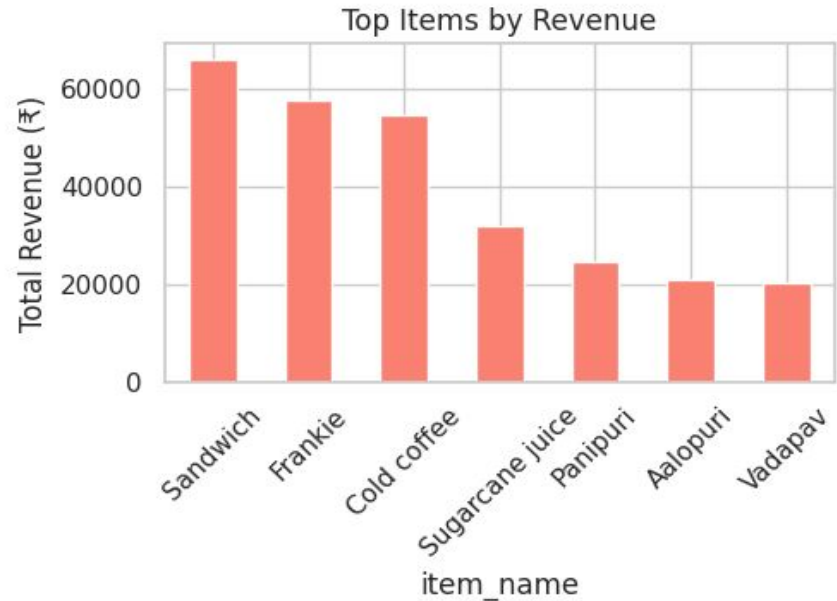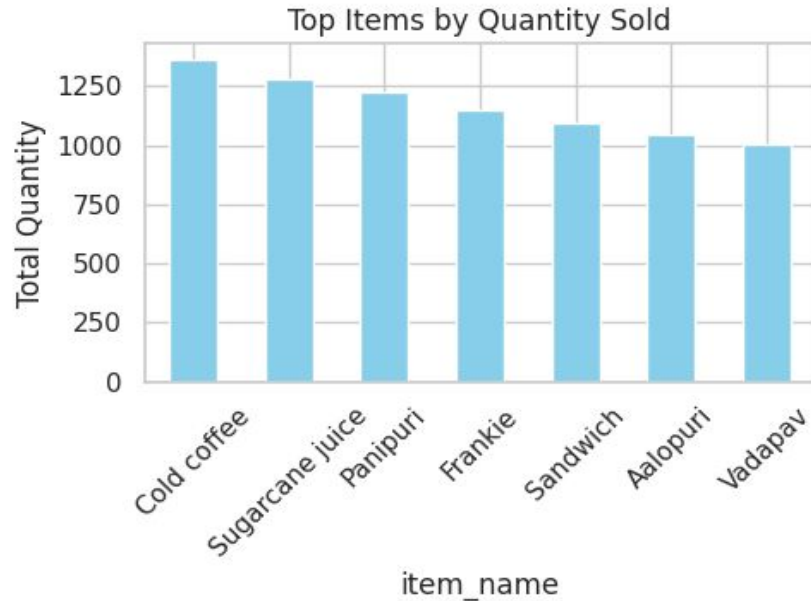
❖ Top 3 selling items are Frankie, cold coffee, sugarcane juice

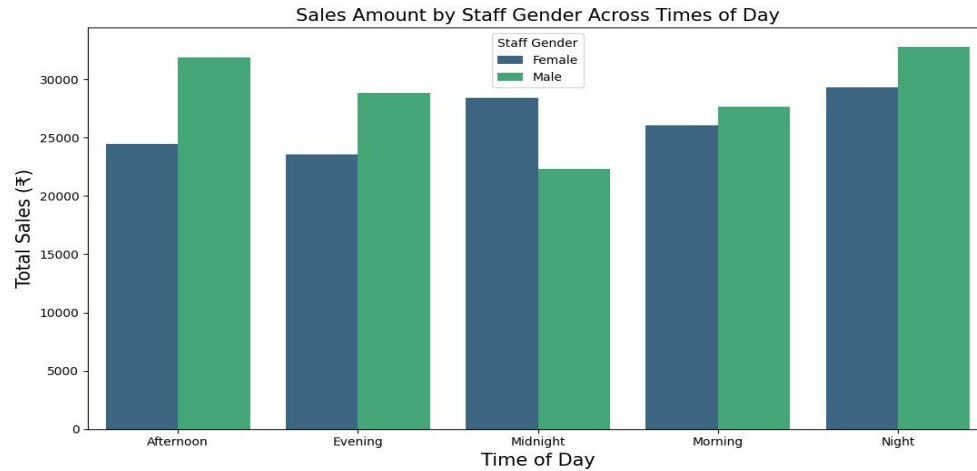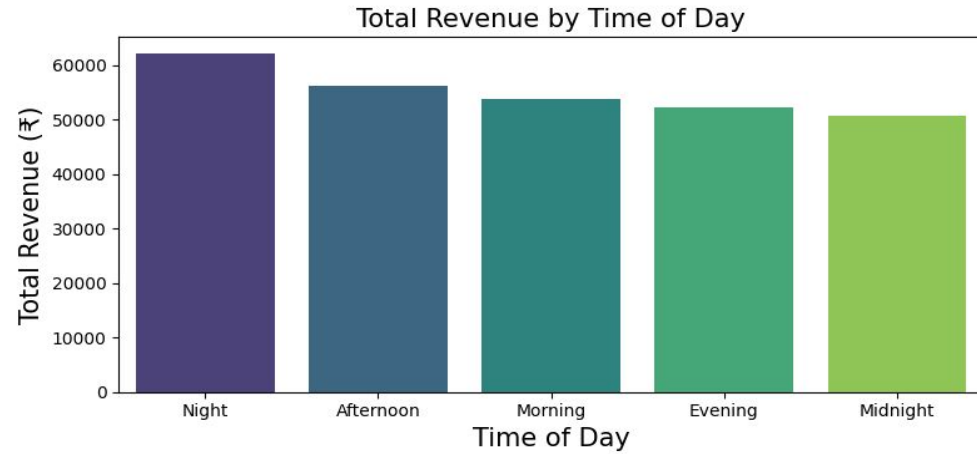# Sales Trends Over Time (weekly and monthly):

Forecasting Future Demands (30-day demand trends for Frankie, Cold Coffee, and Sugarcane Juice.)

30-Day Forecast for Top 3

Time of Sale vs. Revenue

Interpretation of Results:

- **Top Quantity Sold:** Cold Coffee, Sugarcane Juice, Panipuri

- **Top Revenue Items:** Sandwich, Frankie

- **Peak Sales Time:** Night > Afternoon > Morning

- **High Sales Months:** October, January

- **Staff Insight:** Males generates more overall revenue; females generate higher midnight revenue

- **Forecasting:**

  - Frankie: Increasing demand
  - Cold Coffee: High but fluctuating
  - Sugarcane Juice: Steady demand
- **Outcome:** Better planning for inventory, staffing, and promotions

Recommendations:

- **Inventory Prioritization:**
  Focus on Cold Coffee, Sugarcane Juice, and Frankie to avoid stockouts.

- **Menu Optimization:**
  Promote high-margin items (Sandwich, Frankie) via combos and pricing strategies.

- **Menu Planning:**
  Retain top-sellers, phase out low-sellers, introduce seasonal/limited offers.

- **Staff Scheduling:**
  Deploy more male staff during peak hours; female staff during low-traffic, high-value periods.

- **Campaign Timing:**
  Plan offers during high-demand months (October, January) to boost sales.