

# **Efficiency-Driven Menu Optimization & Workforce Management of A2Z Food Court**

**A Mid-term Submission for the BDM capstone Project**

**Submitted By**

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# **Title - Efficiency-Driven Menu Optimization & Workforce Management of A2Z Food Court**

## **1. Executive Summary**

A2Z Food Court, a unit of A2Z Facility Management Services (A2Z FMS), is a B2C organization located in Viraj Khand, Gomti Nagar, Lucknow. Operating daily from 7:00 AM to 10:00 PM, the food court serves a variety of categories, including Breakfast, Thali, Snacks, and Beverages. Over the past year (October 2023–September 2024), it generated total revenue of ₹3,807,159.27, with September being the highest-earning month at ₹6,03,142.65. The food court employs 25 staff members and caters to a diverse customer base.

The sales data analysis revealed clear seasonal trends. Revenue peaked during the mid-year months (June–September), driven by festivals and vacations, while October–December saw a decline in sales. Meals emerged as the most consistent and high-performing category throughout the year, contributing significantly to revenue with items like Veg Paneer Paratha (₹918,434.44) and Special Thali (₹339,318.20). In contrast, low-performing items like Energy Drink (₹32) and V. Coffee (₹57.15) added minimal value to overall revenue.

Using ABC analysis, menu items were classified into three categories based on their revenue contribution. Category A items contributed 79.8% of total revenue from only 19.2% of total items sold, highlighting their importance to business success. Category B items provided moderate contributions (15% of revenue), while Category C accounted for 52.5% of total items but only 5.2% of revenue, indicating low profitability.

Trend analysis further identified opportunities to optimize inventory and marketing strategies by focusing on high-demand periods and promoting underperforming categories like Beverages and Snacks during slower months. These insights will help A2Z Food Court enhance profitability, improve operational efficiency, and achieve sustainable growth.

## 2. Proof of Originality of the Data

- **Organization's Name:** A2Z Food Court, a unit of A2Z Facility Management Services (A2Z FMS)  
**GSTIN:** 09ABDFA9341E1ZJ
- **Organization's Location:** Viraj Khand, Gomti Nagar, Lucknow, UP, 226010
- **Type of Organization:** B2C(Business-to-Consumer)
- **Founder:** Mr. Pradeep Panwar with his 2 co-founders
- **Founder's Phone No.:** +918376851111
- **No. of Employes:** 25
- **Working Time:** 7:00 AM to 10:00 PM (15 hours)
- **Categories Available:** Breakfast, Open, MRP Item, Thali, Snacks & Starters
- **Proof of Originality:** [Data, Letter & Video Proof](#)



## 2. Metadata

The data collection process for A2Z Food Court involved gathering information from the **Pet Pooja App** which provides various types of data. I specifically selected the data relevant to my problem statement. It took me approximately one month to collect the necessary data. The dataset covers a one-year period (from October 1, 2023, to September 30, 2024). Additionally, the co-founder provided the monthly purchase data. After compiling the raw data into an Excel file, I carefully cleaned, organized, and structured it to prepare for the subsequent analysis phase.

### Dataset Dimensions:

#### 1) Item-wise Sales Data:

The dataset consists of **100 rows** and **8 columns**. Each row corresponds to a particular item's total quantity sold and total revenue generated over the course of a year, grouped by 3-month intervals. This results in 4 columns for the total quantities sold and 4 columns for the total revenue generated for that item.

Item Name	Total Quantity(Oct-Dec23)	Total Amount (Oct-Dec23)	Total Quantity(Jan-Mar24)	Total Amount (Jan-Mar24)	Total Quantity (Apr-Jun24)	Total Amount (Apr-Jun24)
Chai	6187	58900.25	3676	34995.52	1291	12290.32
Aloo Parantha	796	37905.52	420	20000.4	59	2809.58
Water Bottle	3309	56087.55	2355	39299.7	4864	79088.64
Pyaj Pakori	196	9333.52	203	9666.86	19	904.78
Chole Puri	1189	45300.9	673	25641.3	84	3200.4
Coffee	475	9048.75	247	4705.35	5	95.25
Paneer Parantha	144	12342.24	69	5913.99	4	342.84
Student Milk	14	359.94	4	102.84	2	51.42
Staff Normal Thali	585	22288.5	433	16516.34	981	41355.46
Sabji Roti	186	7086.6	77	2933.7	16	609.6
Normal Thali	677	51580.63	314	23923.66	7	533.33
Veg Maggi	510	19431	326	12420.6	198	7543.8
Staff Thali	516	24571.92	563	26810.06	1551	75239.02
Dall Roti	32	1219.2	44	1676.4	19	723.9

1. **Item Name:** Types of items available on the Food Court's Menu.
2. **Total Quantity:** Number of quantities sold during the given 3-month interval.
3. **Total Amount:** Revenue generated during the given 3-month interval from that particular item.

#### 2) Daily Sales Data:

The dataset consists of **367 rows** and **2 columns**. Each row represents a specific date and the revenue generated on that particular day.

Date	Revenue(Rs.)
2023-10-01	7675.03
2023-10-02	8732.16
2023-10-03	13807.56
2023-10-04	13174.1
2023-10-05	15614.46
2023-10-06	13027.67
2023-10-07	16249.06
2023-10-08	7294.76
2023-10-09	17702.94
2023-10-10	14461.38
2023-10-11	13154.83
2023-10-12	11119.51
2023-10-13	13652.21
2023-10-14	14257.3

1. **Date:** The date for which the entry is maintained.
2. **Revenue (Rs.):** Revenue generated on that particular Date.

### 3) Purchase Data:

The dataset consists of **13 rows** and **2 columns**. Each row represents a specific month and the purchases made during that month.

Month	Transactions
October	14,27,512.91
November	11,58,101.04
December	12,87,704.58
January	12,81,623.85
February	7,46,546.50
March	15,81,473.01
April	4,34,820.54
May	5,63,305.67
June	3,03,205.14
July	3,19,348.65
August	4,20,508.48
September	1,13,087.00

## 4. Descriptive Statistics

### Pre-Processing:

I performed several steps, including replacing null values with zeroes, properly filling in the blanks, deleting unnecessary columns, and correcting the date formats.

Please note that the above screenshots provide only a small glimpse of how the data appears. To view the complete dataset, you can use the link provided above.

- **Items Count:** There are total of 99 unique items which Food court serves.
- **Total Sales:** From October 2023 to September 2024, the total revenue generated was ₹3,807,159.27.
- **Maximum Sales:** From October 2023 to September 2024, V. Paneer Paratha generated the highest revenue, amounting to ₹918,434.44, followed by Special Thali with ₹339,318 and Water Bottle with ₹252,690.80.
- **Minimum Sales:** During the same period, Energy Drink recorded the lowest revenue, amounting to ₹32, followed by V. Coffee with ₹57.15 and V. Sabzi Roti with ₹114.30.
- **Range:** The difference between the highest and lowest total revenue across all items is ₹918,402.44.
- Revenue peaks in September at ₹6,03,142.65, making it the highest-earning month of the year. The mid-year period (June–September) accounts for the busiest months, driven by festivals or vacations.
- Meal's category shows consistent growth throughout the year, contributing significantly to total revenue.
- The Revenue Correlation Matrix reveals a strong correlation (0.996) between Apr-Jun24 and Jul-Sep24, indicating consistent revenue patterns across these quarters.
- The Quantity vs. Revenue Correlation Matrix shows a moderate to strong relationship (0.604–0.772) in earlier quarters, where higher quantities sold directly influenced revenue growth.

## 5. Detailed Explanation of Analysis Process

### 1. ABC Analysis

#### **Objective:**

The primary goal of the ABC analysis is to classify menu items based on their contribution to total revenue. This allows A2Z Food Court to focus on high-revenue items, optimize inventory management, and allocate resources efficiently.

#### **Process:**

##### **Categorization:**

1. **Category A:** High-value items that dominate revenue generation (e.g., Veg Paneer Paratha, Special Thali). These items contribute 79.8% of total revenue while accounting for only 19.2% of the total items sold.
2. **Category B:** Medium-value items with moderate revenue contributions (e.g., Samosa, Chili Paneer). These represent 28.3% of the total items and contribute 15% to the revenue.
3. **Category C:** Low-value items with minimal impact on revenue (e.g., V. Coffee, Energy Drink). Despite comprising 52.5% of the total items, they contribute only 5.2% to the revenue.

##### **Data Collection and Analysis:**

- The analysis involved sorting items by their cumulative percentage contribution to revenue and classifying them into A, B, or C categories based on thresholds ( $\leq 80\%$  for A,  $\leq 95\%$  for B,  $> 95\%$  for C)

#### **Justification:**

ABC analysis provides actionable insights into prioritizing high-revenue products while identifying low-performing ones that require intervention or elimination. By focusing on Category A products, A2Z Food Court can maximize profitability and customer satisfaction while optimizing inventory management for Categories B and C. This structured approach helps allocate resources where they matter most, ensuring sustainable growth and operational efficiency for the business.

### 2. Trend Analysis



**Objective:**

To identify time-based sales patterns, such as seasonal demand fluctuations, peak sales months, and variations in category-wise performance across different quarters. This analysis aims to optimize inventory management, enhance operational efficiency, and align marketing strategies with customer behavior.

**Process:****1. Time Series Decomposition:**

- The sales data was analyzed by breaking it down into daily, weekly, and monthly trends. Key metrics such as monthly revenue and daily sales with a 7-day rolling average were visualized to identify short-term fluctuations and long-term patterns.

**2. Daily Sales with Rolling Average:**

- A rolling average was applied to smooth short-term fluctuations and highlight the overall upward trend throughout the year. This helped identify specific days with lower footfall or spikes in sales due to events or holidays.

**3. Category-Wise Analysis Across Quarters:**

Items were categorized into Meals, Snacks, Beverages, Desserts, Miscellaneous, and Uncategorized groups. Quarterly trends for each category were plotted to understand their performance over time. For example, Meals showed consistent growth across all quarters, while Beverages and Desserts displayed declining trends.

**4. Visualization Tools Used:**

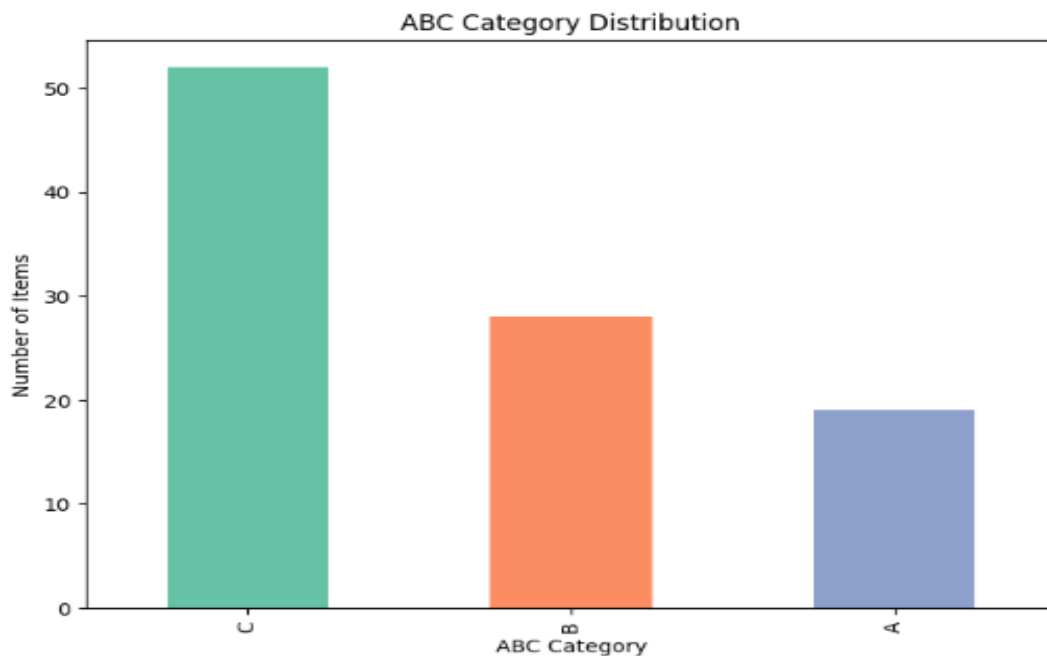
Line plots and rolling averages were created using Python libraries such as Matplotlib and Seaborn to visualize trends effectively. Category-wise performance was further analyzed using grouped data and transposed for plotting trends over four quarters.

**Justification:**

Trend analysis is a practical approach for identifying seasonal patterns in customer behavior and sales performance without relying on complex forecasting models. By understanding demand peaks (e.g., September) and troughs (e.g., October–December), A2Z Food Court can align inventory levels with customer needs while optimizing stock management during high-demand

periods. Additionally, category-wise insights ensure that marketing efforts are targeted effectively to boost underperforming segments like Beverages or Snacks while maximizing revenue from high-performing ones like Meals. This method provides actionable insights that support strategic decision-making for sustainable growth and profitability at A2Z Food Court.

## 6. Result and Findings



### 1. Category A Insights:

- Items like Veg Paneer Paratha (₹918,434.44 from 8,036 units), Special Thali (₹339,318.20 from 10,638 units), and Veg Fried Rice (₹183,587.86 from 3,541 units) are key drivers of profitability. These items should be prioritized for promotions, inventory stocking, and prominent menu placement.

### 2. Category B Insights:

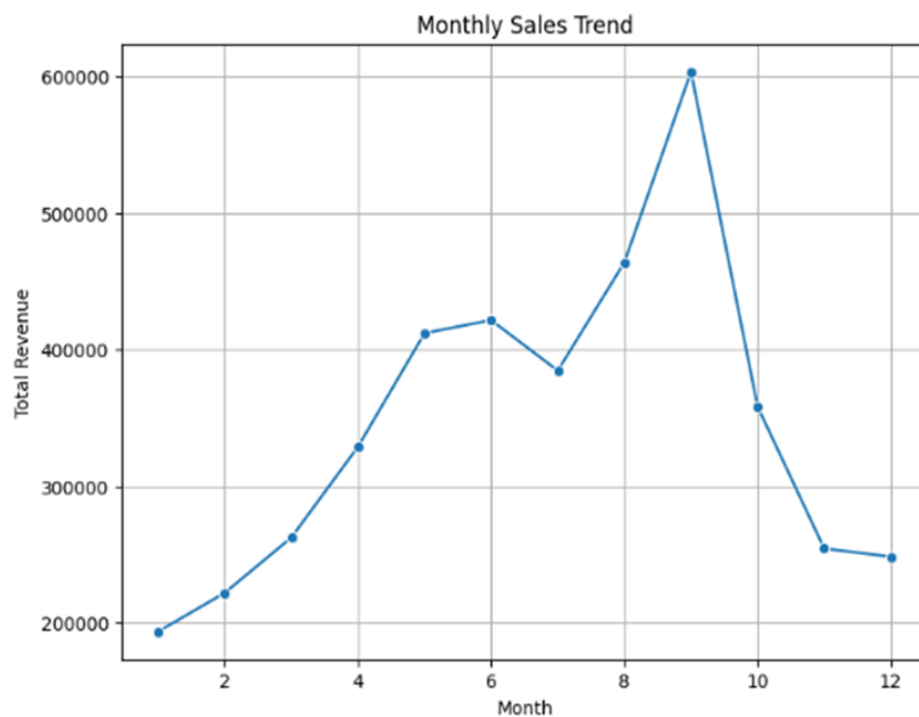
- Medium-performing items like Samosa (1,200 units) and Chili Paneer (790 units) provide steady sales but require moderate attention. These items can be promoted during specific periods or bundled with Category A products to boost their appeal.

### 3. Category C Insights:

- Low-performing items like V. Coffee (4 units), Energy Drink (3 units), and Maza (3 units) add minimal value to overall revenue. These products should either be re-evaluated for better promotion or removed from the menu to reduce operational inefficiencies.

#### 4. Revenue Contribution:

- Category A: 79.8% of total revenue from only 19.2% of total items sold.
- Category B: 15% of total revenue from 28.3% of total items sold.
- Category C: 5.2% of total revenue from 52.5% of total items sold.



#### 1. Seasonal Demand Trends:

- Revenue peaked in September (₹6,03,142.65), followed by August and June, indicating that mid-year is the busiest period due to festivals or vacations. However, revenue declined sharply from October to December, highlighting a seasonal drop in customer spending.
- **Category Wise Distribution**

- a. Meals emerged as the most consistent category throughout all quarters, driven by items like Special Thali and V. Dal Roti, which cater to working professionals and families.
- b. Beverages and Desserts showed declining trends over time, suggesting seasonal demand or shifting preferences toward other categories.
- c. Snacks underperformed in later quarters but present opportunities for growth through promotions tied to festive seasons.
- d. Uncategorized items like Water Bottle and Roti showed a fluctuating yet rising trend, reflecting emerging customer preferences.