

# Food Delivery Cost and Profitability Analysis Report

## Introduction

This report provides an in-depth analysis of the costs and profitability associated with food delivery operations. The focus is on understanding the distribution of costs, revenue, and profit to identify areas for improvement and suggest strategies for achieving profitability.

## Data Adjustments

### Date and Time Conversion

- **Order Date and Time** and **Delivery Date and Time** columns have been converted to a datetime format.

### Discounts and Offers Conversion

- **Discounts and Offers** column has been converted to a consistent numeric value.
- A new column, **Discount Amount**, has been calculated based on the Discounts and Offers column, representing either percentage discounts or fixed amounts.
- **Discount Percentage** has been added to represent the discount rate or fixed amount discount directly.

### Monetary Values Formatting

- All monetary values have been formatted for suitable calculations.

## Cost and Profitability Analysis

### Costs Considered

- **Delivery Fee:** The fee charged for delivering the order.
- **Payment Processing Fee:** The fee for processing the payment.
- **Discount Amount:** The discount provided on the order.

## Total Cost Calculation

The total cost for the platform per order includes delivery fees, payment processing fees, and discounts. This data has been aggregated to understand the overall cost structure.

## Revenue Calculation

The revenue for the platform is mainly derived from the **Commission Fee**.

## Net Profit Calculation

Net profit is calculated by subtracting the total costs (including discounts) from the revenue generated through commission fees.

## Overall Metrics

- **Total Orders:** 1,000
- **Total Revenue (from Commission Fees):** 126,990 INR
- **Total Costs:** 232,709.85 INR (including delivery fees, payment processing fees, and discounts)
- **Total Profit:** -105,719.85 INR

The analysis indicates that the total costs associated with the food delivery operations exceed the total revenue generated from commission fees, resulting in a net loss. It suggests that the current commission rates, delivery fees, and discount strategies might not be sustainable for profitability.

## Visualizations

### Histogram of Profits per Order

- The histogram shows a wide distribution of profit per order, with a noticeable number of orders resulting in a loss (profits below 0).
- The red dashed line indicates the average profit, which is in the negative territory, highlighting the overall loss-making situation.

### Pie Chart of Total Costs

- The pie chart illustrates the breakdown of total costs into delivery fees, payment processing fees, and discount amounts.

- Discounts constitute a significant portion of the costs, suggesting that promotional strategies might be heavily impacting overall profitability.

### Bar Chart of Total Revenue, Total Costs, and Total Profit

- The bar chart compares total revenue, total costs, and total profit.
- It visually represents the gap between revenue and costs, clearly showing that the costs surpass the revenue, leading to a total loss.

### New Strategy for Profits

#### Analysis of Profitable Orders

To find a sweet spot for offering discounts and charging commissions, we analyzed the characteristics of profitable orders more deeply. Specifically, we looked for:

- **New Average Commission Percentage** based on profitable orders.
- **New Average Discount Percentage** for profitable orders, which could serve as a guideline for what level of discount still allows for profitability.

#### Recommended Adjustments

Based on the analysis of profitable orders, we found a new set of averages that could represent a “sweet spot” for commission and discount percentages:

- **New Average Commission Percentage:** 30.51%
- **New Average Discount Percentage:** 5.87%

#### Visualization of Profitability Comparison

The visualization compares the distribution of profitability per order using actual discounts and commissions versus the simulated scenario with recommended discounts (6%) and commissions (30%).

- The actual profitability distribution shows a mix, with a significant portion of orders resulting in losses (profit < 0) and a broad spread of profit levels for orders.
- The simulated scenario suggests a shift towards higher profitability per order. The distribution is more skewed towards positive profit, indicating that the recommended adjustments could lead to a higher proportion of profitable orders.

## Summary

The cost and profitability analysis of the food delivery operations indicates that current strategies are leading to significant losses. By adjusting the commission rate closer to 30% and reducing discount rates to around 6%, there is potential to improve overall profitability. This strategy aims to balance attractive offers for customers while ensuring sustainable profitability for the platform.