Food Delivery Company Analysis

Data analysis project using python and its libraries

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Introduction

Abstract

This study analyses a food delivery company's performance based on data collected in January 2024. The analysis aims to provide insights into the company's cost structure, profitability, and the effectiveness of its restaurant partnerships.

Objectives

- Analyse the costs of the company and suggest ways to reduce them.
- Evaluate the profitability of the firm over the span of that month.
- Analyse the restaurant structure of the food delivery company and provide suggestions.

Analysis

Cost Analysis

In our initial data assessment, spanning January 2024 with 1000 unique order entries, we converted the currency from Indian Rupee to Bahraini Dinar (BD). This conversion process is reversible by omitting or not executing part 4.3.2 of the code.

From these 1000 orders, the company's revenue amounted to 571.455 BD, while its total costs reached 1047.194 BD, resulting in a net loss of 475.739 BD. It's important to note that this profit calculation only considers the variable costs provided in the dataset, namely the Delivery Fee, Payment Processing Fee, and Discount Amount. Due to the lack of complete insight into the company's cost and revenue structure, including non-operational income and overheads, the actual profit may differ from the calculated value. Nevertheless, based on the data from January, the company incurred a loss of 475.739 BD, leading to a profitability ratio from orders of -0.833.

To analyse the reasons behind this January loss, we first examined the costs incurred by the firm. Our analysis revealed the following:

- Approximately 75% of the costs from orders are attributed to discounts and promotions.
- Around 13% of the costs stem from payment processing fees.
- The remaining 12% accounts for the delivery fee.

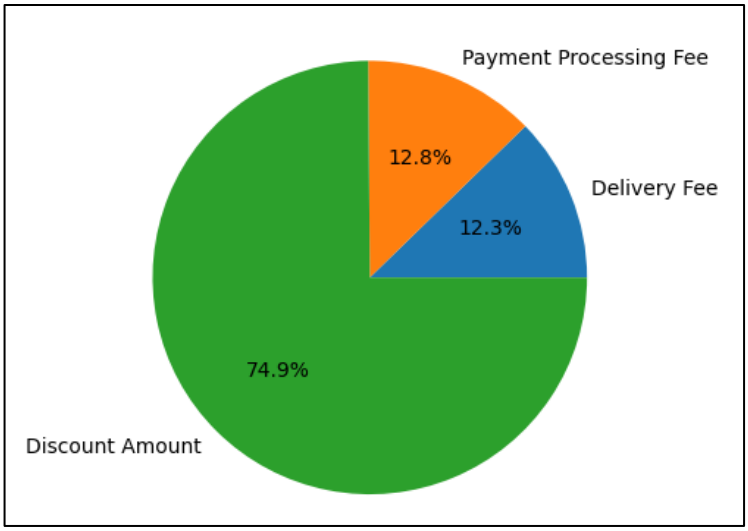

Figure 1: Firm's cost breakdown

As a result, most of the company's costs are driven by the discounts and promotions it offers. While the quantitative analysis may indicate a loss, other factors related to the company's marketing department are not fully clarified in the data, as these costs could be considered part of their marketing budget.

To gain a deeper understanding of the firm's cost, revenue, and profit dynamics, we will conduct a time-series analysis, which will provide valuable insights into these metrics.:

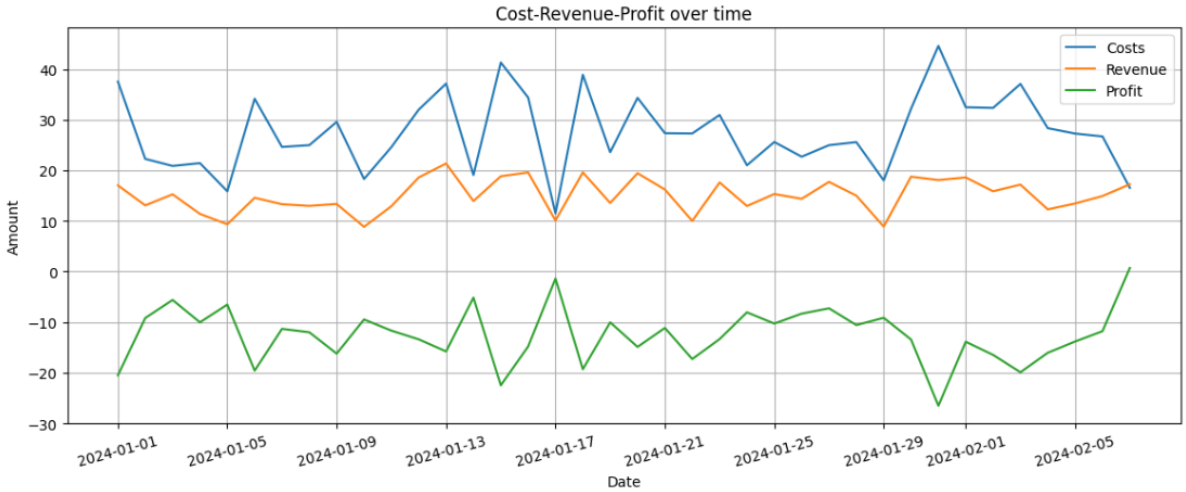

Figure 2: Cost, Revenue and Profit of the firm over January

During January, the firm's profit consistently remained below zero, indicating a loss, with one exception on February 7th when it reached 0.707 BD. A significant reduction in costs was observed on January 17th, accompanied by a relatively smaller decrease in revenues, resulting in a positive change in profit. On this day, the firm offered fewer

discounts, which, despite reducing the number of orders, significantly lowered costs, offsetting the decline in orders.

Further analysis reveals that the company's profitability is heavily impacted by its promotional strategies. While discounts and promotions may attract more customers and increase sales volume, they also lead to higher costs and reduced profit margins. This highlights the need for the company to carefully evaluate the effectiveness of its promotions and find a balance between attracting customers and maintaining profitability.

Moreover, the analysis indicates that the company's cost structure may not be sustainable in the long run. With daily costs exceeding revenues, the company is operating at a loss on a regular basis. This raises concerns about the company's financial health and the need to explore cost-saving measures and revenue-boosting strategies.

In conclusion, the company's profitability is hindered by its high costs, particularly those related to discounts and promotions. To improve profitability, the company should consider revising its promotional strategies, reducing costs, and finding new revenue streams.

Restaurant Analysis

We begin by analysing the number of orders per restaurant to identify the most popular offerings in the food delivery app. The graph below illustrates this distribution:

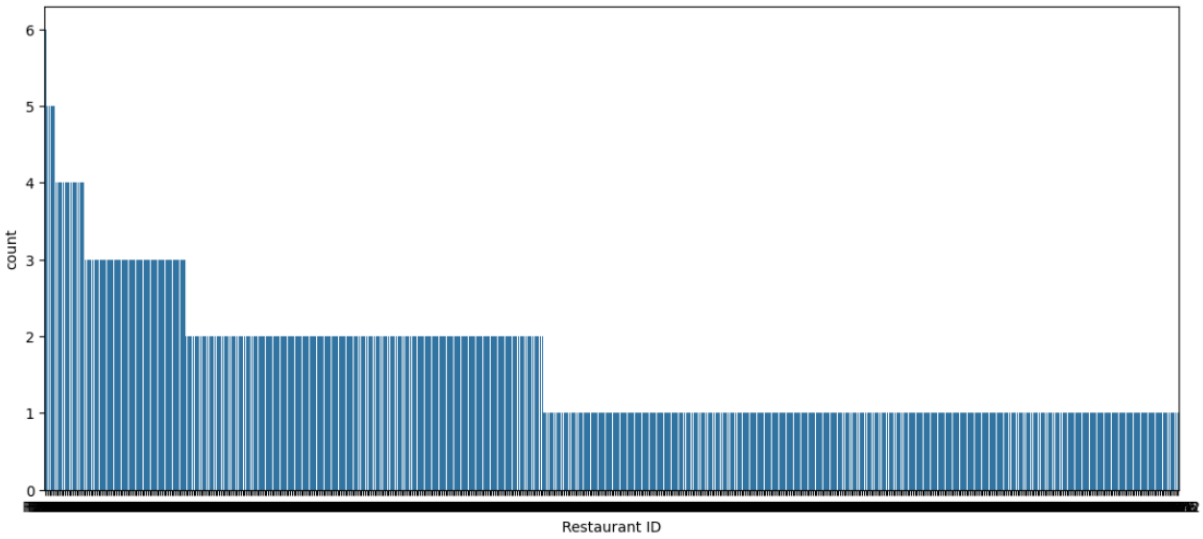

Figure 3: Number of orders per restaurant

Although the chart lacks clarity due to the labelling of the x-axis, with each label representing the ID of a different restaurant, it still provides valuable insights. The analysis reveals that the app accommodates 621 restaurants. The chart indicates that most restaurants received only 1 or 2 orders during the month. This observation is supported by a simple calculation, as shown in the table below:

count	Number of restaurants	percentage
1	348	56.04
2	196	31.56
3	55	8.86
4	16	2.58
5	5	0.81
6	1	0.16

A total of 87.6% of restaurants received only 1 or 2 orders throughout the entire month. This trend could be concerning for the future, as some of these restaurants might opt to leave the platform due to low order volumes and switch to a competitor. Additionally, this data suggests that recurring ordering is concentrated within a small group of restaurants, as only 77 out of the 621 restaurants, or 12.4%, received 3 orders or more during the entire month.

Further analysis reveals that the top five restaurants, in terms of the number of orders, are listed in the table below. Unexpectedly, only one of these restaurants is profitable for the delivery firm. This indicates that scale, or the volume of orders, is not the sole determinant of profitability, as even the most frequently ordered restaurants are not contributing to the company's profits.

	Restaurant ID	count	Profit
0	R2317	6	-1.259775
1	R2804	5	-0.719550
2	R2726	5	-1.819800
3	R2523	5	0.218025
4	R2016	5	-3.446775

On the other hand, the top profitable restaurants are the following:

	Restaurant ID	count	Profit
37	R2915	3	1.119600
11	R2570	4	1.106325
60	R2250	3	0.949725
142	R2925	2	0.886050
78	R2778	2	0.871875

Therefore, it appears that there is no clear relationship between the number of orders and profitability for the delivery firm.

To further solidify our analysis, we can examine the profit per order for each restaurant. The table below presents the average profit per order, sorted in descending order, for the top 10 restaurants in the app:

	Restaurant ID	count	Profit	Profit per order
0	R2063	1	0.81000	0.81000
1	R2453	1	0.76950	0.76950
2	R2728	1	0.66150	0.66150
3	R2732	1	0.62415	0.62415
4	R2356	1	0.62100	0.62100
5	R2898	1	0.61200	0.61200
6	R2545	1	0.60750	0.60750
7	R2341	1	0.60300	0.60300
8	R2431	1	0.59850	0.59850
9	R2369	1	0.56700	0.56700

A notable pattern emerges, which is that the most profitable restaurants are consistently those that received only one order. This finding supports the idea that

scale, or the volume of orders, is not the key driver of profitability in this context. To enhance profitability, the delivery app should prioritize promoting these highly profitable restaurants to a wider audience, as they have demonstrated the ability to generate substantial profit margins from a single order.

Conclusion

the analysis of the delivery app's performance in January reveals significant losses, primarily attributed to the costs associated with discounts and promotions. These losses appear to be consistent throughout the month, indicating a systematic issue that requires a strategic decision to address, as it is likely to persist.

Additionally, the data highlights that most restaurants on the platform receive a low number of orders per month, which could signal a potential risk for the app. Furthermore, while certain restaurants are popular in terms of order volume, they are not the most profitable for the delivery app. This suggests that the app is not effectively leveraging its scale to achieve economies of scale and maximize profitability.

Further research

To build up on this analysis, it would be valuable to conduct research on other areas such as but not limited to:

1. Customer behaviour and Loyalty Programs
2. Competitive Landscape
3. Operational Efficiency
4. Customer Feedback and Satisfaction
5. Diversification of Revenue Streams

By conducting research in these areas, the delivery app can gain a deeper understanding of its market position, customer needs, and opportunities for growth. This information can inform strategic decisions and help the company improve profitability and sustainability in the long run.

Credits and Resources

Special thanks to Roman Nikiforov for providing the dataset, aspects of this paper were inspired by Roman’s analysis.

Dataset: https://www.kaggle.com/datasets/romanniki/food-delivery-cost-and-profitability