

## HungerBox Case Study | Product Analyst Role

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On average, restaurants operating on the food platform encounter 100 cancellations out of the 10,000 orders processed daily. With the help of these rejected orders data, find out actionable insights, areas of improvement and areas of opportunity to minimize the order

### Insights gathered from the dataset:

Count of Order ID	Order Date						
Reason of Rejection	Cancellation Mode	2023-07-03	2023-07-04	2023-07-05	2023-07-06	2023-07-07	Grand Total
☐ Closed Premises	Cancelled by Restaurant	27	24	29	31	22	133
<b>Closed Premises Total</b>		<b>27</b>	<b>24</b>	<b>29</b>	<b>31</b>	<b>22</b>	<b>133</b>
☐ Customer Refusal	Cancelled by Restaurant	93	104	70	67	57	391
	Order cancelled through app	1274	1702	1876	1769	1272	7893
<b>Customer Refusal Total</b>		<b>1367</b>	<b>1806</b>	<b>1946</b>	<b>1836</b>	<b>1329</b>	<b>8284</b>
☐ High Demand at the Restaurant	Cancelled by Restaurant	24	24	20	15	22	105
<b>High Demand at the Restaurant Total</b>		<b>24</b>	<b>24</b>	<b>20</b>	<b>15</b>	<b>22</b>	<b>105</b>
☐ Item Unavailable	Cancelled by Restaurant	96	142	134	196	129	697
<b>Item Unavailable Total</b>		<b>96</b>	<b>142</b>	<b>134</b>	<b>196</b>	<b>129</b>	<b>697</b>
☐ Stock Shortage	Cancelled by Restaurant	145	172	219	171	151	858
<b>Stock Shortage Total</b>		<b>145</b>	<b>172</b>	<b>219</b>	<b>171</b>	<b>151</b>	<b>858</b>
<b>Grand Total</b>		<b>1659</b>	<b>2168</b>	<b>2348</b>	<b>2249</b>	<b>1653</b>	<b>10077</b>

Major Reasons of Rejection : ( Descending order )

1. Customer Refusal
2. Stock Shortage
3. Item Unavailable
4. Closed Premises
5. High Demand at the Restaurant

1. Customer Refusal

**% of total 'Quantities Ordered' by 'Restaurant ID'**

Restaurant ID	Count of Quantities Ordered
1002	18.89%
1302	13.38%
1129	7.16%
1200	7.08%
1282	4.85%
1145	4.61%
1084	4.39%
1135	4.31%
1117	3.90%
1284	3.31%
1395	2.19%
1074	2.14%
1094	1.81%
1346	1.81%

Reason of Rejection	Customer Refusal
Cancellation Mode	Order cancelled through app

Restaurant ID	Count of Restaurant ID
1002	22.03%
1302	16.27%
1200	8.03%
1129	7.21%
1145	5.13%
1117	4.16%
1282	4.14%
1284	4.09%
1084	3.14%
1395	2.77%
1074	2.39%
1346	2.31%
1094	2.31%
1162	1.37%
1390	1.33%
1006	1.19%

Reason of Rejection	Customer Refusal
Cancellation Mode	Cancelled by Restaurant

Restaurant ID	Count of Restaurant ID
1002	26.34%
1104	20.72%
1135	15.60%
1091	10.23%
1129	8.95%
1303	2.56%
1282	1.79%

Cancellation Mode	Sum of Product Price
Order cancelled through app	423881.79
Cancelled by Restaurant	116815.13
blank	83552.68
<b>Grand Total</b>	<b>624249.6</b>

'Cancellation Mode': **Order cancelled through app** accounts for the majority of 'Product Price'.



Insights from the above data and some solution proposed:

As it is evident from the above data that the restaurants that have got the maximum orders happen to have higher cancellation by **Customer Refusal: Customer through app**

1. Insight : **User Interface and Experience**

Customers might be facing some issues while working through the app leading to frustration and cancellation of the order.

Opportunity: Simplify the process of ordering and provide easy navigation through it by enhancing the UI/UX.

2. Insight : **App Performance and Reliability**

Improvement : Optimize the app performance and make it robust to work efficiently across different devices by regular testing.

### 3. Insight : **Payment Processing & Real time updates**

Improvement : Minimization of the payment failure through app and alternative payment procedure in case of failure of one viz (Cash on Delivery) . Prompt notification in case of order placed and timely notification for all order updates.

### 4. Insight: **Lack of Customization** -Customer might want to add some modifications according to his/her choice.

Improvement : Offer more customization options such that the person can have the according to his preference.

Customer Education and tutorials should be provided on the home page for better user experience.

### **Customer Refusal: Cancelled by Restaurant**

#### 1. Insight : Location Issues: Inaccurate delivery address or supposedly the restaurant does not service that location might also lead to order cancellation.

Improvement : Serviceable location should be clearly stated by the restaurant There also lies a hidden opportunity of increasing the order value by adding extra charge from the customer for the location far off.

#### 2. Insight : Since we can analyse from the data that restaurants high in demand are cancelling the orders , it might be possible due to the delayed delivery time or inavailability of the delivery partners at that restaurant.

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#### 3. Data to demonstrate when max restaurants are not functional:

REASON OF REJECTION IS CLOSE PREMISES						
Hours	03-07-20	04-07-20	05-07-20	06-07-20	07-07-20	TOTAL
17	4	2	4	5	2	17
13	2	1	4	3	5	15
16	3	4	4	2		13
14	5	2	2	3		12
18	2	2	4	1	2	11
12		3	1	2	3	9
15	1	2	2	1	2	8
22	2		2	3		7
08	3			1	2	6
09	2	2		1	1	6
21	1	2	1	1	1	6
10		1	1	1	2	5
11	1		2	1		4
19		1		2	1	4
00		2	1			3
20	1		1	1		3
01					1	1
03				1		1
05				1		1
23				1		1
Grand Total	27	24	29	31	22	133

Data stating the reason of rejection is high demand at the restaurants :

REASON OF REJECTION - HIGH DEMAND AT RESTAURANT						
Hours	03-07-20	04-07-20	05-07-20	06-07-20	07-07-20	TOTAL
13	3	5	7		11	26
09	4	1	3	1		9
12	1	3			5	9
21	1	6		1	1	9
10	2	1	3	2		8
16	1	3	2	1	1	8
15	2	3	1	1		7
14	1		1	3	1	6
08	5					5
18	2			1	1	4
19	1		1	1		3
11			1		1	2
17	1	1				2
23				2		2
01				1		1
04			1			1
05					1	1
07		1				1
20				1		1
Grand Total	24	24	20	15	22	105

Data to tell the maximum demand of the product:

% of total 'Quantity Ordered ' by 'Product Name'

Product Name	Count of Quantity Ordered
Breakfast	3.16%
Veg Lunch	2.94%
Ginger Tea	1.26%
Masala Dosa	1.25%
Tea	1.10%
Non Veg Lunch	0.87%
Combo (Limited Meals)	0.82%

**For 'Reason of Rejection' 'Item Unavailable', % distribution of 'Product Name'**

Reason of Rejection	Item Unavailable
Product Name	Count of Product Name
Breakfast	4.30%
Veg Lunch	2.30%
Combo (Limited Meals)	1.72%
Ginger Tea	1.29%
Breakfast Combo	1.15%
Plain Dosa	1.00%
Tea	0.86%
Masala Dosa	0.86%

Showing correlation insights for 'Quantity Ordered', where 'Reason of Rejection' is 'Stock Shortage'.

Reason of Rejection	Stock Shortage
Is Buffet Item?	Yes
Product Name	Sum of Quantity Ordered
Veg Lunch	25
Breakfast	24
Ginger Tea	8
Tea	8
Chicken Combo	6
North Lunch (Veg)	6
Combo (Limited Meals)	5
Non-Veg Lunch	5

For 'Reason of Rejection: Stock Shortage' and 'Is Buffet Item?: Yes', 'Product Name': **Veg Lunch** and **Breakfast** have noticeably higher 'Quantity Ordered'.



Now from the above data inferred it is clear that high number of restaurant are not functional in morning - noon time and the product that has the max quantity ordered is breakfast and lunch or similar types so it might be a reason causing **high demand at the limited restaurant that are open during that period**. This causes high order cancellations, where the customer is also left disappointed and the restaurants are also not able to maximise their profits.

Opportunity:

1. Encourage the partnered restaurants **to extend their functional hours** in order to maximise their sales.
2. **Enboard more restaurants specializing in these cuisines** or similar types to maximise on the traffic approaching the app during such hours.
3. **Demand Managemnt strategies** should be deployed such as give incentives to the customers to order during non - peak hours .
4. We see a trend where similar cuisines are high in demand , try to provide **such combos by giving discounts** where in the products lower in demand can be combined with those and they are also sold ; also **increasing the order value** .
5. **Dynamic Menu Planning** : Optimizie the menu based on the time of day to offer products that are most relevant and in-demand.

The above points can also be applied in cases of peak hours where partnerships with restaurants specializing in those particular highly demanded are promoted .

**For 'Cancellation Mode' 'Cancelled by Restaurant', % distribution of 'Restaurant ID'**

Cancellation Mode Cancelled by Restaurant	
Restaurant ID	Count of Restaurant ID
1135	18.04%
1084	8.88%
1002	7.55%
1282	7.42%
1129	7.01%
1104	6.64%
1091	6.04%
1200	3.62%
1117	2.98%
1302	2.93%
1145	2.75%

**For 'Reason of Rejection' 'Closed Premises', % distribution of 'Restaurant ID'**

Reason of Rejection Closed Premises	
Restaurant ID	Count of Restaurant ID
1135	20.30%
1084	11.28%
1302	8.27%
1104	8.27%
1403	6.02%
1129	5.26%
1282	5.26%
1002	5.26%
1303	3.01%
1106	3.01%
1200	3.01%
1107	2.26%
1450	2.26%
1162	2.26%
1287	1.50%
1113	1.50%
1411	1.50%
1117	1.50%

**For 'Reason of Rejection' 'High Demand at the Restaurant', % distribution of 'Restaurant ID'**

Reason of Rejection High Demand at the Restaurant	
Restaurant ID	Count of Restaurant ID
1135	25.71%
1106	14.29%
1104	12.38%
1303	7.62%
1282	6.67%
1091	5.71%
1113	5.71%
1302	4.76%
1084	2.86%
1002	2.86%

**For 'Reason of Rejection' 'Item Unavailable', % distribution of 'Restaurant ID'**

Reason of Rejection Item Unavailable	
Restaurant ID	Count of Restaurant ID
1135	21.66%
1282	10.76%
1084	8.18%
1091	7.03%
1200	4.88%
1002	4.30%
1129	3.44%
1113	3.01%
1117	2.73%
1302	2.58%

**% of total 'Quantities Ordered' by 'Restaurant ID'**

Restaurant ID	Count of Quantities Ordered
1002	18.89%
1302	13.38%
1129	7.16%
1200	7.08%
1282	4.85%
1145	4.61%
1084	4.39%
1135	4.31%
1117	3.90%
1284	3.31%
1395	2.19%
1074	2.14%
1094	1.81%
1346	1.81%

From the above data we infer that there are several restaurants that even though the customers are not ordering more from them , operational for relatively shorter durations still have to cancel the orders due to Stock Shortage , Item Unavailability & on the other hand there are those restaurants too that even though are higher in demand manages to have a relatively lower cancellation from their end .



### Opportunity & Improvements :

1. Restaurants with high demand and low cancellation rate (Restaurant ID:1302) proves to have a Good Inventory Management System , these restaurants should be more promoted on the app such that user experience is enhanced in case of a new customer to the platform.
2. **Demand Forecasting** : Restaurants which have considerable higher cancellation rates (Restaurant ID:1135) even for not so high demand , should focus more on the specific products that are in high demand such that they do not run out of them .
3. Customers should be incentivised to order more during non – peak hours so as to distribute the demand evenly.

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2. Given the above insights that you have from the data, suggest enhancements or modifications to the existing cancellation flow.

1. **User Feedback** : Customers should be able to provide their reasons for cancellation of the order so that the restaurants and the app can improve upon its services.
  2. **Alternative to the unavailable items** : Customers should be provided with options so that they tend to place the order when their preference product is out of stock.
  3. **Price Surge in High Demand:** Products high in demand during the peak hours should be charged a little more so as to manage the demand .
  4. Customer should be prompted about the restaurant reviews or the restaurant with relatively **good rating should be more visible** so that the user experience is enhanced and **restaurants with good performance are incentivised**.
  5. **Optimise Order Acceptance on Demand:** Restaurants can pause accepting the orders in peak hours in order to manage order volume effectively.
  6. **High Cancellation rates** for restaurants with consistently underperforming as it causes poor user experience for their mismanagement .
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3 . Provide the method of analysis and steps applied on the data to get the insights.

1. Data merging in excel with order id as the common key for both excel sheet. Before merging sort the order id else it will give erroneous results.
2. Data Analysis & Identifying Cancellation patterns based on the data in the given excel file .
3. Applying filters on various metrics to manipulate the data to come to some actionable and conclusive insights.
4. Plot the pivot tables , bar graph in excel from the above data .

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