Maximizing Restaurant's Online Success

Final Submission for the BDM capstone Project

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Executive summary

This project focuses on a Pune-based restaurant, 'Bhaj Govindam,' operating in the B2C food service industry. Established in 2020 by Mr. Mayank Kaushik, the restaurant has been running successfully for the past four years but is still facing challenges in achieving good profits from its online business due to low order volume and profits on the Zomato platform. The project addresses this issue by analyzing factors affecting order volume over six months, from January 2024 to July 2024.

A major factor affecting online platform success is restaurant visibility; the more visible a restaurant is in searches; the more likely people are to order. Factors influencing visibility on any online platform include ratings, kitchen preparation time (KPT), marketing strategies (offers, advertisements), reviews (customer satisfaction and dissatisfaction), and menu wordings. For restaurants with multiple outlets, finding different strategies to improve each outlet is essential. Additionally, understanding Zomato's deductions and how they determine the final payout is crucial for improving profits.

The project focuses on these aspects using various strategies. For offers and marketing, customers are segmented based on their order history into Champions, Loyal, Potential Loyal, need attention and at-risk customer. Different marketing strategies can be developed for each group. For ratings and reviews, sentiment analysis was conducted to identify the top 30 positive and negative review words. Various trends and patterns were observed during this analysis, such as high-value customers generally giving high ratings; thus, the behavior of each customer segment was further analyzed. Additionally, a correlation between KPT and order volume was found. Deductions were analyzed for each outlet monthly over four months in April month there is highest variation and Veg Maridian co has highest deduction values.

After conducting this analysis, the project provides recommendations for the restaurant to grow in the online world, based on visualizations and findings from the data obtained using Power BI.

Detailed Explanation of analysis process and methods:-

After combining data for six months for each outlet using **Append queries** of power BI. I got data with **11665 rows and 30 columns**. There are some missing values and outlier as well for those I use **Remove empty** function of power BI. For outlier I used map multiple graphs and segment feature accordingly. For datatypes I checked datatype of each column and change them accordingly if some error came, I just remove those error.

Segmenting customers for personalized marketing: -

First, I **removed all the null values** from the customer ID columns null values then I segmented customers to different segments based on three factors **recency**, **frequency and Monetary value.** I found recency of customers from customer IDS by first calculating the last purchase date using the formula below.

```
1 LastPurchaseDate == CALCULATE(MAX(Append1[Order Placed At.1]), ALLEXCEPT(Append1, Append1[Customer ID]))
```

It is first taking the maximum date from all the dates of order placed then it removes all the filter from the table and keeps filter only for that customer ID. Using this **Recency** is calculated

```
Recency = DATEDIFF([LastPurchaseDate], [ReferenceDate], DAY)
```

Datediff function is used to find difference between dates in days format.

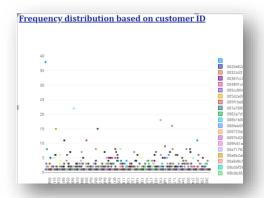
After Recency Frequency is calculated

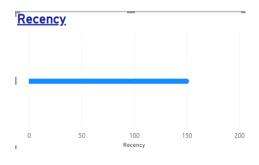
```
Frequency = CALCULATE(COUNT(Append1[Order ID]), ALLEXCEPT(Append1, Append1[Customer ID]))
```

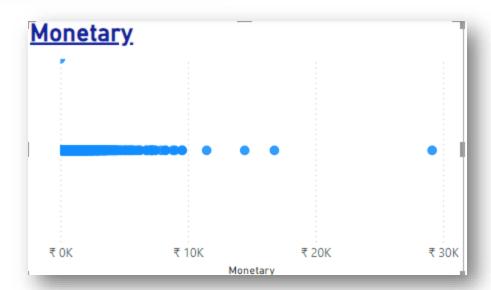
Count is used to count numbers and customer ID apply filter on the data.

Monetary value is also calculated in the same way.

```
Monetary = CALCULATE(SUM(Append1[Total]), ALLEXCEPT(Append1, Append1[Customer ID]))
```







See After this I found score for each segment ie **R_score**, **F_score and M_Score** Using different criteria and divide customers IN 4 PARTS .I utilize

```
L F_Score =
L R_Score =
                                         )
                                               SWITCH(
      SWITCH(
2
                                                   TRUE(),
          TRUE(),
3
                                                   [Frequency] >= 10, 4,
          [Recency] <= 20, 4,
                                                   [Frequency] >= 6, 3,
          [Recency] <= 75, 3,
                                                   [Frequency] >= 2, 2,
          [Recency] <= 125, 2,
                                         3
3
          M_Score =
       2
               SWITCH(
       3
                    TRUE(),
                    [Monetary] >= 5000, 4,
       5
                    [Monetary] >= 3000, 3,
       6
                    [Monetary] >= 750, 2,
                    1
       9
```

By finding average from all this I get a RFM score and then I divide customer into 4 parts.

I visualized this segmentation using multiple visualizations to see customer behavior for each group using line charts, stacked bar charts, bar charts and many more.

```
RFM Segment = SWITCH(

TRUE(),

Append1'[RFM_Score] == 4 , "Champions",

Append1'[RFM_Score] >= 3 && 'Append1'[RFM_SCORE] < 4 , "Loyal Customer",

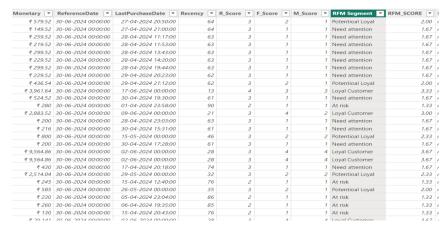
Append1'[F_Score] == 1 && 'Append1'[R_Score] == 4 , "New Customer",

Append1'[RFM_Score] >= 2 && 'Append1'[RFM_Score] < 3 , "Potentioal Loyal",

Append1'[RFM_Score] >= 1.5 && 'Append1'[RFM_Score] < 2 , "Need attention",

"Atrisk"

Atrisk"
```



Our data looks something like this after doing all the calculations and making new columns.

2. Analysing Customer reviews and complaints

Total number of reviews

which are there in the overall data is very less. The owner should focus on increasing the number of reviews, but as we discussed earlier reviews play a crucial role in increasing order volume by increasing rating directly, so we analyzed them, out of 11665 rows we have only 216 reviews which is only 1.85% of the overall data.

I utilize python function for doing the same. First, I extract all the reviews from the data by filtering blanks on duplicated data and take only review column then I applied **sentiment analysis** on it. It creates three sentiments positive, negative and neutral.

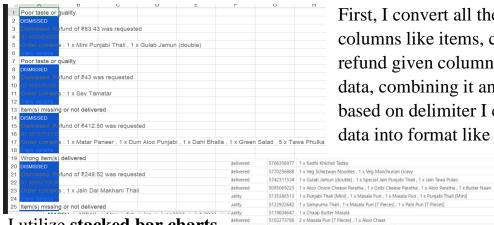
I made two tables from it, one for negative review and other for positive reviews

After this data looks like below. I sent this to collab notebook which has a function to find the top 30 top occurring word using count vectorizer. After this I visualize it using a bar graph. This is my working-



https://colab.research.google.com/drive/1Rz5OUS2htl0m9R1373nXa55Eh_JV_C_n?usp=sharing

<u>3.Complaints analysis:</u> - For complaints I have data like below which I have to collect for each month and each outlet differently. I collect all the data which is like below: -



First, I convert all the above data into columns like items, complaints tags, and refund given columns. By transposing data, combining it and then splitting it based on delimiter I converted the above data into format like below: -

01 August 2023 RESOLVEDID

01 August 2023 EXPIREDExpire 01 August 2023 EXPIREDExpire

I utilize stacked bar charts for it to show which type of complaints mostly occur on which outlet and uses comparative bar graph to

01 August 2023 EXPIREDExpire 01 August 2023 EXPIREDExpire 01 August 2023 EXPIREDExpire 5423655907 2 x Kheer 01 December 2023 RESOLVEDID or not delivered 5433189999 1 x Masala Puri [7 Pieces] , 1 x Punjabi Thali [Mini] , 1 x Chole Bhature , 1 x Malai Chaap 01 December 2023 RESOLVEDID
 delivered
 5427518686
 1 x Mini Punjab Thali , 1 x Pani Puri [7 Pieces]

 uality
 5405096985
 1 x Sev Bhaji , 6 x Butter Tandoori Roti
 01 December 2023 RESOLVEDID
 uality
 5378236547
 1 x Veg Manchrian Rice with Gravy , 1 x Spring Roll

 delivered
 5418638570
 1 x Lesooni Dal Tadka , 1 x Masala Puri , 1 x Tawa Phulka , 1 x Lachha Paratha
 01 December 2023 RESOLVEDID 5398386082 1 x Chole Kulche 01 December 2023 EXPIREDExpire 01 December 2023 EXPIREDExpire 01 February 2024 RESOLVEDID 01 February 2024 RESOLVEDID or not delivered 5545615771 1 x Corn Chaat , 2 x Pani Puri [7 Pieces] 01 February 2024 RESOLVEDID

show refund giving amount and refund requested amount.

4. Items analysis: -



Items are like list-like structure initially, which is very hard to compute, it is beneficial for finding combos but not for analyzing best item through this, so I duplicate table and took only order ID and Items, order ID for connecting the table with main table .I split items based

on comma and then remove the numerical part from it. Splitting it gives multiple items for each order then I duplicate it on multiple table and combine it using append queries. After doing all this I made a relation with the main table with order ID one too many. This helps me connect items with each customer segment to find the behavior of each customer segment in terms of their item choice.

5. Weekdays and weekend analysis: -

I made a calendar table which contains dates between the data collection period i.e. between January and July and extract weekdays, days, months from it and then

make a relation between date purchase and calendar table. Then I visualize it to see the trends.

6.Deduction analysis; -

While talking to the owner I came to know that for various outlet deduction charge by Zomato might be different based on outlet performance, so I analyze all the deductions for doing that I have monthly reports of each outlet I combined them for six months and then combined for all restaurants. For analyzing deduction, I scaled them by dividing it with overall payout.

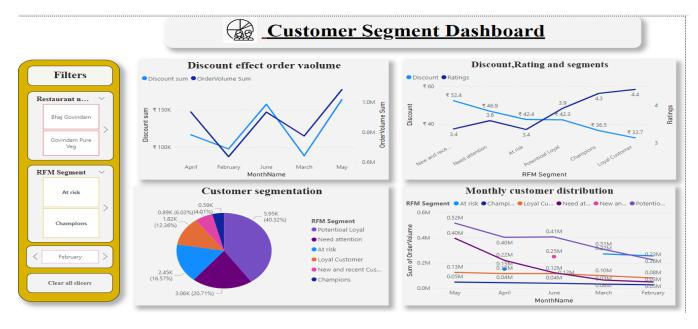
Then I formed some contingency table with month and restaurant name.

7.Item Price analysis: -

I collected Zomato Restaurant menu data and Zomato trends data, which is in Zamato trends website. I collected data, combine that ,categorized items, and calculated average prices. To clean the dataset, I employed techniques like **find and replace** to correct inconsistencies in pricing formats (e.g., '₹199' to '199') and standardize text (e.g., converting all text to lowercase). **Splitting** columns was also necessary to extract relevant information like item name, category, and price from combined fields. After meticulous cleaning and formatting, I compared online market trends with restaurant prices to identify discrepancies.

Results and Findings:-

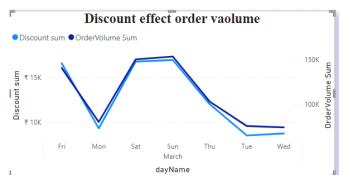
Customer segmentation analysis



I created a dashboard of customer segmentation where Owner able to see a lot of things at once and filter all the graph at once based on slicer.

Three slicer that I used

- Restaurant name
- Customer Category
- Time
- 1) Graph shows how amount of discount is directly proportional to Order Volume, as the discount increases order volume increases, so it is very important to take care about it. Hence, we divide customer into segment so that discount strategy can be



personalized, and loyal customer get personalized loyal discount, Potential loyal customer can get special discount for becoming loyal. Day wise effect even overlap.

It also shows February has less number of days thus less sales

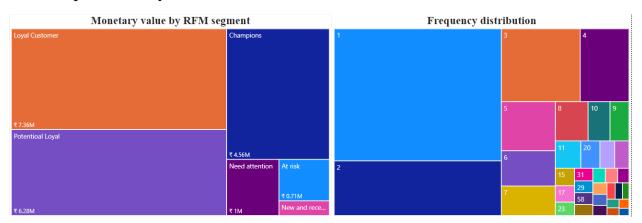
2) Graph shows a beautiful trend for customer category for champions and loyal customer even if the average discount they are getting is less but still they give high

rating. Need attention and at risk gave low rating . This might be the cause of bad discount strategy

3) 3rd graph show Segment of customer and its distribution based on sum of order most of the customer are potential loyal as their **RFM Score** is between 2 to 3 indicating their monetary value is medium to high but their frequency and recency might low. Her's the explanation of each segment.

Champions	Customers with high monetary value, high frequency, low recency
Loyal	RFM Score between 3 to less that 4
Potential	RFM Monetary value medium to high and score 2 to 3
loyal	
New recent	Recency low, frequency low but monetary any.
ones	

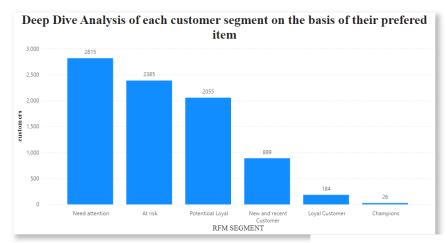
4) Graph show that Loyal customer and champions are constant over month while at risk and potential loyal customer increases over month.



1st Graph shows that even though **Loyal customers are less**, but they are **contributing to the overall sale highly** even greater then Potential Loyal. Hence major attention should be paid to these customers. It also shows that despite the large number of need attention and at-risk customers sales are generated by loyal, potential and champions customers.

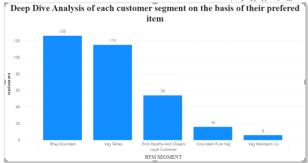
Graph shows that for **six-month data half of the customers are one timer.** This might be because we used only a six-month data. But the customers who are frequent are most valuable as they are constant.

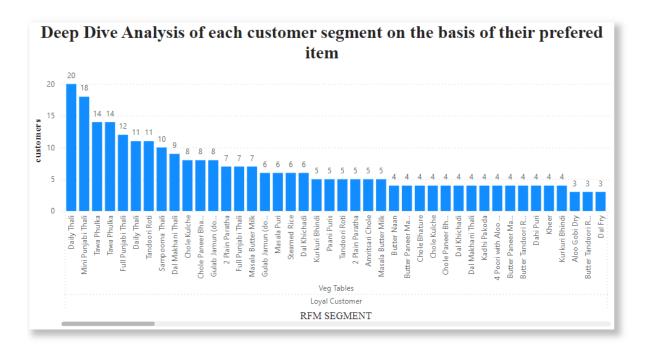
Deep Dive Item Analysis



First I show Number of customers in each segment then I utilize drill down technique of power BI to go deeper on each segment to see what the distribution of restaurant is among each restaurant.

For example, **Loyal customer distribution among restaurant** is as follows. We can see the same distribution for any category. Then we go **deeper into veg tables** to see which item is most famous in veg tables.

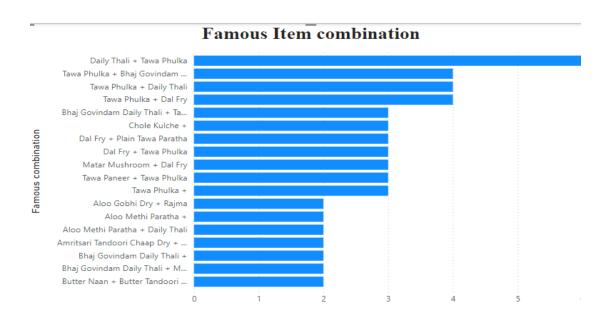


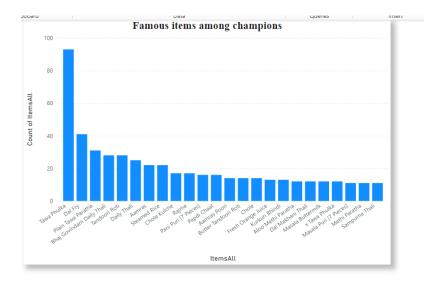


We found that **Daily thali all time famous** among loyal customers apart from this Mini Punjabi thali, Tawa pulka etc...

Owner can see this distribution for any Segment and easily get what is the **behavior** of which group. They can offer **personalized items for champions** and loyal customers by knowing what they usually want so that they will stay connected, seeing this also attracts potential loyal customers to be loyal ones.

Further we try to find most famous combination of items which can be used to make combos or to find that if someone's purchases one thing then we can provide discount on its partner thing so that customer buy both.





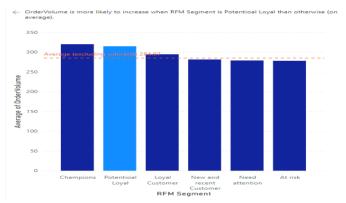
Graph shows famous item among champions.

How segment affecting order volume

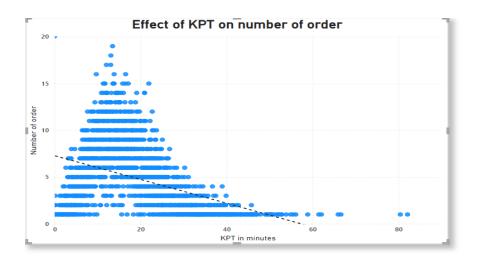
Order volume is highly affected by champions loyal customer and potential loyal



customers hence these customers need special attention and discount.

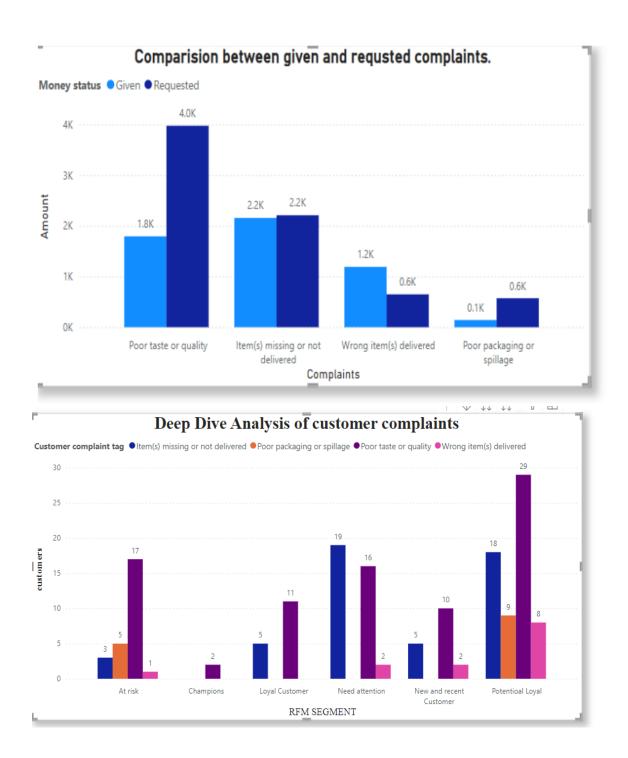


KPT Affecting OrderVolume



Graph show us that KPT highly affect number of orders KPT increases number of order decreases.

Complaints analysis.



Large difference between given and requested amount of money is visible for poor taste or quality category.

These complaints further analyze over customer segment, It is observed that due to high potential loyal customer they got more complaints. Owners can see items for poor taste and quality for any segment by using drill down on poor taste and quality

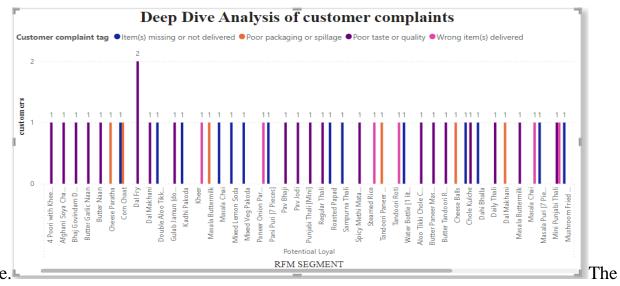


figure shows items with complaint in Potential loyal customer.

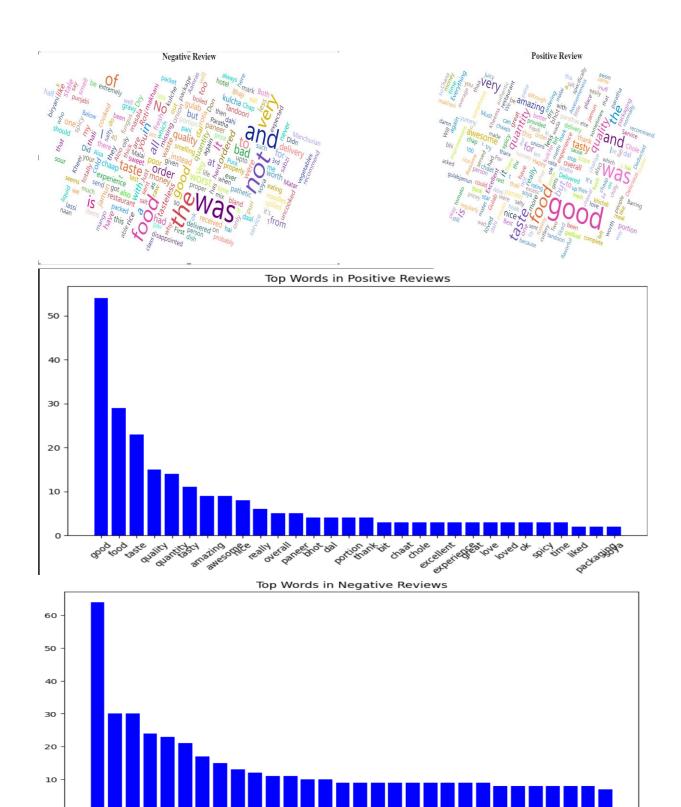
Customer Rating and Reviews

After doing Sentiment analysis on Reviews, I tried finding the most important words on reviews whose count is maximum. Result shows that **Chole, Chaat, Paneer items** under positive review. **Quality**, **taste**, **quantitity** are also good in positive reviews.

Negative reviews - **Chaap, Dal ,kulcha and Rice** are food items which comes under negative review.

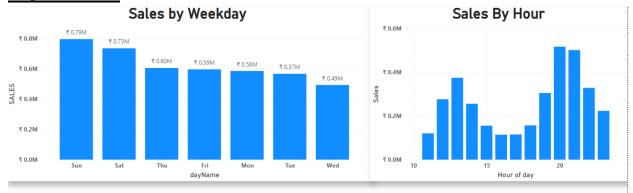
Quality, Freshness and taste are the major issue.

Figure shows the same.



Rod Bod Bee tog a feet tog the light for the

Day and time.



weekends show the most. Nighttime contains most of the orders.

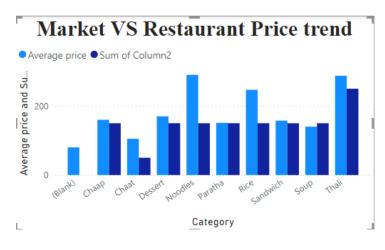
Deduction analysis:-

Res. name	April	February	January	March	May
Bhaj Govindam	0.47	0.48	0.48	0.48	0.48
Govindam Pure Veg	0.48	0.48		0.49	0.47
Pind Paratha And Chaaps	0.47	0.48	0.48	0.48	0.48
Veg Mandarin Co.	0.49	0.48	0.48	0.48	0.48
Veg Tables	0.47	0.48	0.48	0.48	0.48

Owner wants to know Is the deduction charge by Zomato is consistent throughout the restaurant or is there any mismatch, so I analyze it over the

month and over the restaurant and found that there is little variation among the restaurant for the month of April this is because Zomato charge more deduction on poor performing restaurant like here **veg Mandarin Co.** and in month of **April** deductions is most.

Item Pricing:-



It is found that Noodles price is high for Restaurant and soup price is less. Average market price is the price which shows the average price at which people are buying these category items in Pune region.

Interpretation and recommendations

<u>1) Customers segments Recommendations</u>- A substantial portion of a company's revenue is generated by loyal customers, including those with the potential to become loyal. Consequently, retaining and cultivating these customer segments should be a strategic priority.

***** Champions:

- ➤ **Recommendation**: Reward their loyalty with exclusive offers and personalized experiences. Engage them with VIP treatment and referral programs to leverage their influence.
- ➤ Thank you note with Personalized name and message. Make them feel special.

***** Loyal Customers:

➤ **Recommendation**: Offer loyalty discounts and keep them informed about new products and events. Focus on retention with early access to sales and special perks.

***** New Customers:

➤ **Recommendation**: Welcome them warmly with personalized thank-you messages and discounts on the next purchase. Guide them through a seamless onboarding process to encourage repeat business.

❖ Potential Loyal:

➤ **Recommendation**: Provide incentives for more frequent purchases and regularly engage them with personalized offers. Monitor their engagement and tailor strategies to boost their loyalty.

Need Attention:

➤ **Recommendation**: Reach out for feedback and offer special deals to reignite their interest. Send personalized communications to remind them of the brand's value.

* At Risk:

➤ **Recommendation**: Implement win-back campaigns with significant discounts and address any issues they might have. Experiment with different strategies to understand and re-engage this group.

2)Customer Feedback recommendations:

! Improve Taste:

Focus on enhancing Dal, Kulcha, Chap, and Rice.

❖ Increase Reviews:

➤ The current review rate is very low (0.02%). Most reviews are from customers with a frequency score above 3, indicating "potential loyal" and "need attention" customers are not reviewing.

***** Encourage Reviews:

- ➤ Provide personalized notes or requests for reviews, specifically targeting "potential loyal" and "need attention" customers.
- ➤ This help in two ways 1st Increase restaurant ratings, 2nd helps in knowing customer better.

3)Menu Recommendations

***** Focus on Major Items:

- ➤ Enhance Dal Fry, Amaras, Rajma, Paneer, and Chole Kulche.
- Focus on already famous items such as Daily Thali, Tawa pulka etc.

***** Create Popular Combos:

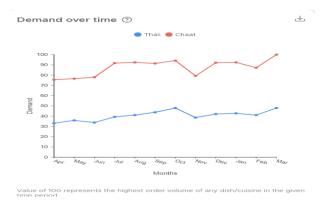
➤ Tawa Paneer + Tawa Pulka, Tawa Pulka + Major Thalis (Bhaj Govindam Thali, Dal Fry Thali, Daily Thali), Aloo Gobhi Dry + Rajma, Aloo Methi Paratha with Thalis etc.

❖ Reward Customers Segment Differently through their item selection knowledge:

- For example-Give loyal customers something special, like a handwritten card with their name and a personalized thank-you note and day making thought. This will create curiosity for future orders to see what message they will receive next.
- > Small extras or freebies make customers feel special and help your restaurant stand out among competitors.

❖ Utilize Zomato Trends: -

- To see the current trends of market for your particular
- ➤ Pricing of Menu should also be taking care by reducing price of **Noodles** etc.as it is far high then average market price. This might be the reason for low noodles demand



High Demand will come for Thali and chaat in month of august, September and October. Utilize Zomato trends for more such insights

4)KPT Recommendations.

***** Optimize Kitchen Preparation Time:

➤ Efficiently manage staff to reduce kitchen preparation time, which customers notice before purchasing.

❖ Predict Order Patterns:

➤ Utilize weekdays and time analysis to predict peak order times and days, which currently shows that Wednesday is the least productive day and Sunday is the most and at night customer order most. ensuring more staff are available when needed and reducing staff during slower periods.

5)Complaints Recommendation

Although some complaints about poor taste and quality might be fake, most are genuine. There is a significant gap between refunds requested and those given for poor taste or quality. Addressing these issues is important, so focus on the items causing taste and quality complaints, thus utilize Item distribution on taste complaints given in report. Missing and incorrect items are mostly handled by Zomato, but the owner needs to focus on packaging as well.

Conclusion:-

Increasing Order Volume and Profit

To boost order volume and profit, focus on visibility, ratings, reviews, customer retention, and satisfaction. Key areas include packaging quality, KPT, pricing, and reducing complaints. Here are concise solutions:

1. Customer Retention:

- o **Personalized Notes**: Add handwritten notes to orders.
- **Special Discounts**: Offer discounts to customers who order five times a month.

2. Addressing Complaints:

- o Quality Control: Dedicate staff to check and ensure packaging quality.
- o **Improve Taste**: Focus on items with frequent taste complaints.

3. **Pricing**:

 Competitive Pricing: Adjust prices based on market comparison, particularly lower the price of noodles as came out of our analysis.

4. Kitchen Preparation Time (KPT):

o **Efficiency**: Optimize operations and staff management to reduce preparation time as it directly affects order volume.

5. Menu Items:

o **Best Items and Combos**: Promote best-selling items and create popular combos by utilizing famous items and combos' analysis. Which shows which category likes what. Items which are common in Potential Loyal and loyal must be on the menu.

6. **Reviews**:

 Leverage Positive Feedback: Develop new items based on dishes which frequently occur in good reviews as they are already our strength.

Links for reference: -

All Power BI files in the folder

https://drive.google.com/file/d/1kTMn6u8ZT6NbqZL9qClZmqufngfZ6wZI/view?usp=sharing

PPT link:-

https://drive.google.com/drive/folders/1FYBS-BgObW_2uRXow1jS-8bMh1-UFdWi?usp=sharing