Increasing the sales and profitability of Bhole Bharit and Nashta Center by sustainable customer acquisition practices using various statistical methods

Midterm Submission Report for the BDM Capstone Project

Submitted by

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Contents

Executive summary and Title

Bhole Bharit and Nashta center, located at Laxmi Nagar near M. J. College, is famous for their specialty in spicy and hot curry, and readymade curry mixture. This business runs only on the customer trust and taste. This mid submission is being submitted to provide an overview of capstone project's progress. It contains the data preprocessing and basic findings includes such as demand of each item, the weekly sales trends and so on which is based upon sales and inventory data.

Owner's co-operation is secured by presenting authorization letter, establishing trust, and facilitating the provision of key figures on daily sales. Through daily sales figures, the customer pattern of orders, the correlation of dishes with each other, etc. and further things like future sales can be predicted as we research further.

The main objectives of mid-term submission contain:

1. Weekly sales of the business.
2. Observed Sales trends on weekend and weekdays.
3. The most selling products.
4. The mode of order which contributing highest towards the revenue.
5. The approximate profit of restaurant on Monthly basis.
6. Finding raw material with highest expenditure that minimizing profit percentage.

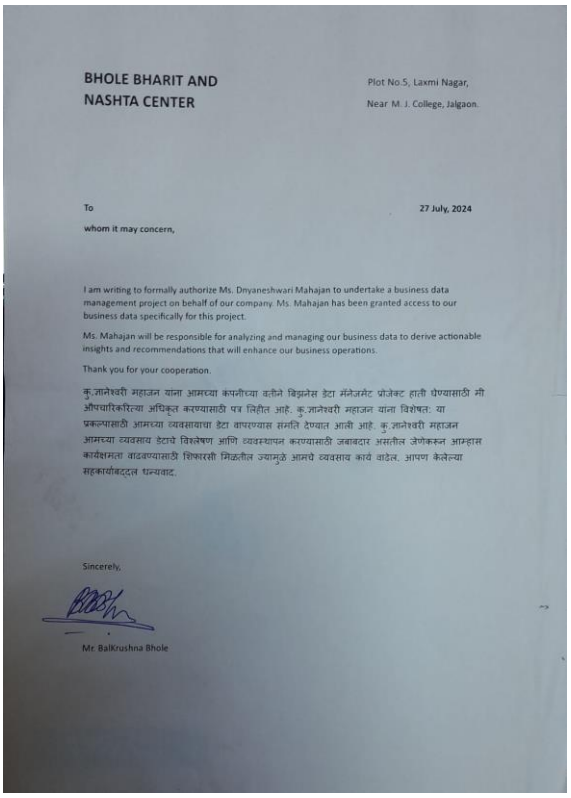
Proof of Originality of the Data

Address: Plot No. 05, Laxmi Nagar, Near M. J. College, Jalgaon.

Owner's Name: Mr. Balkrushna Bhole.

Google Maps: https://maps.app.goo.gl/uP5zEmzMnTBVs3FS8

Letter from Organization:



BHOLE BHARIT AND
NASHTA CENTER

Plot No.5, Laxmi Nagar,
Near M. J. College, Jalgaon.

To

27 July, 2024

whom it may concern,

I am writing to formally authorize Ms. Dnyaneshwari Mahajan to undertake a business data management project on behalf of our company. Ms. Mahajan has been granted access to our business data specifically for this project.

Ms. Mahajan will be responsible for analyzing and managing our business data to derive actionable insights and recommendations that will enhance our business operations.

Thank you for your cooperation.

कु.ज्ञानेश्वरी महाजन यांना आमच्या कंपनीच्या वतीने बिझनेस डेटा मॅनेजमेंट प्रोजेक्ट हाती घेण्यासाठी मी औपचारिकरित्या अधिकृत करण्यासाठी पत्र लिहीत आहे. कु.ज्ञानेश्वरी महाजन यांना विशेषत: या प्रकल्पासाठी आमच्या व्यवसायाचा डेटा वापरण्यास संमति देण्यात आली आहे. कु.ज्ञानेश्वरी महाजन आमच्या व्यवसाय डेटाचे विश्लेषण आणि व्यवस्थापन करण्यासाठी जबाबदार असतील जेणेकरून आम्हास कार्यक्षमता वाढवण्यासाठी शिफारसी मिळतील ज्यामुळे आमचे व्यवसाय कार्य वाढेल. आपण केलेल्या सहकार्याबद्दल धन्यवाद.

Sincerely,

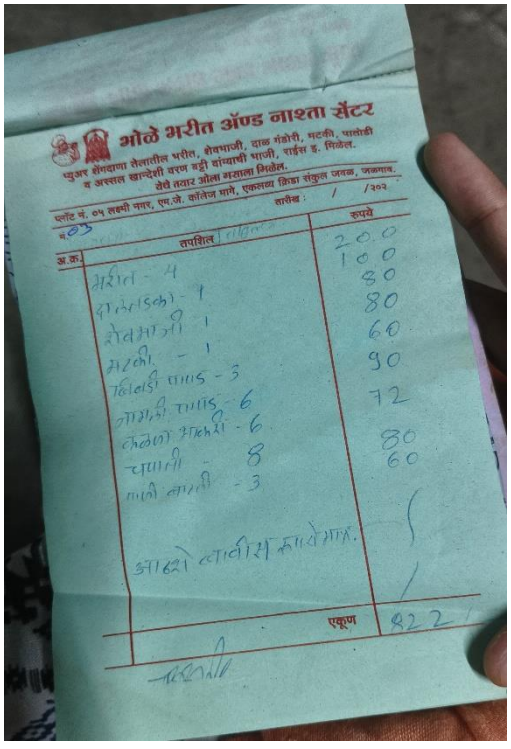
Mr. BalKrushna Bhole

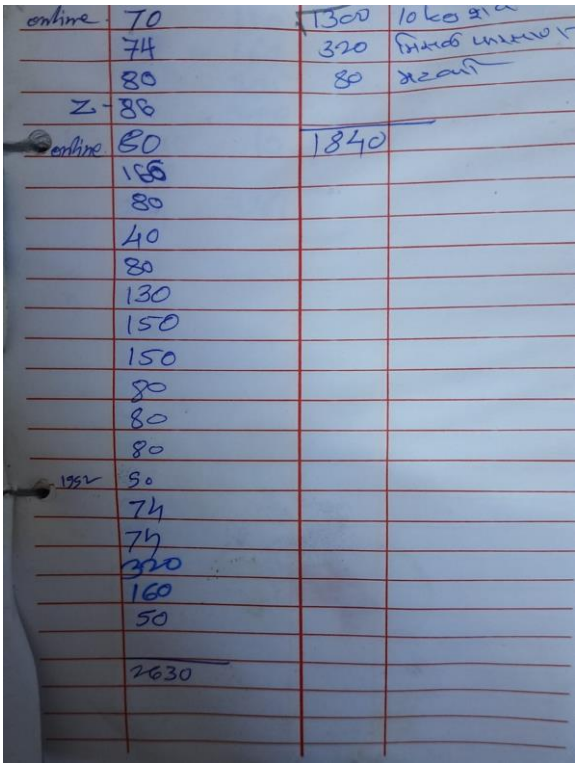
Interaction with Owner:

https://drive.google.com/file/d/1e_d1JCHdTbCui5R0qCfuQXdB7MXpiCWz/view?usp=sharing

Primary Data Collection Process:

They usually do not record their daily sales by item wise, only note the raw daily sales and amount that they spend on daily inventory. To get the estimated sales for each item, I have visited their restaurant couple of times on different time so that I can get an idea about the sales and time relation. apart from the multiple visits as well as interviews, interaction with the owner I made a data on the observations. As this data is created only on the figures given by owner and my observations, I couldn't get exact figures but from the research of market and by observing local customer trends I have made this data. The raw data that I have collected from the restaurant stored in excel sheets, then from the survey method I gathered the approximate figure for each category sales and inventory and converted this raw data into tabular data from which we can made conclusions. Data was collected for 1 month from 1st April 2024 to 1st May 2024. It is collected, then formatted in wanted form.





Metadata and Descriptive Statistics

The whole dataset consists of three excel sheets as follows:

Sales Data:
The dataset contains 846 rows and 7 columns. Below is an overview of the data columns, providing insight into the structure and characteristics of the dataset

Date: The date on which sales of particular item has been recorded.
Menu: The name of item that has been sold.
Quantity: The amount of item sold.
Rate: The selling price of each item
Total: Total amount
Order method: The method by which order has been made.
Order Id: It is unique order Id given to each bill that can be consists of multiple items.

Purchase Data:
The dataset contains 64 rows and 3 columns. Below is an overview of the data columns, providing insight into the structure and characteristics of the dataset.

Date: The date on which order has been made.
Items: The name of item that has been ordered
Rates: The total cost of that item.

Inventory Data:
It is dictionary for the purchase data that contains the item in each category that Bhole bharit and Nashta center need.

Here the link for excel sheets:

https://docs.google.com/spreadsheets/d/166d5hXjMUtkxZ4l7YrVyD1bl8Q2hPJRx1ObYTAcoEGE/edit?usp=sharing

For the descriptive statistics, I have used python (pandas Library):

```
df = pd.read_excel("/content/BDM_Final_Copy.xlsx")
```

```
df.describe()
```

	Date	Quantity	Rate	Total	OrderID
count	845	845.000000	845.000000	845.000000	845.000000
mean	2024-03-16 03:46:39.053254400	1.836686	88.656805	117.852071	265.815385
min	2024-03-01 00:00:00	1.000000	10.000000	10.000000	1.000000
25%	2024-03-08 00:00:00	1.000000	80.000000	80.000000	128.000000
50%	2024-03-18 00:00:00	1.000000	80.000000	90.000000	264.000000
75%	2024-03-24 00:00:00	1.000000	120.000000	140.000000	407.000000
max	2024-04-01 00:00:00	50.000000	200.000000	2400.000000	531.000000
std	NaN	3.542809	47.162375	132.337831	156.682465

```
df.Menu.value_counts()
```

```
Menu
Shev Bhaji        181
Dal Tadka         108
Jira Rice          77
Bhakri             55
Bharit             50
Fanas              47
Chapati            41
Paneer             39
Kaju Masala        37
Matar Paneer       35
Matki              32
Bibdi Papad        29
Pithala            28
Thecha             27
Chole Masala       25
Nagali Papad       18
Paneer Masala      16
Name: count, dtype: int64
```

```
df["Order Method"].value_counts()
```

```
Order Method
Parcel      414
Dine_In     300
Zomato      131
Name: count, dtype: int64
```

Detailed explanation of Analysis process / method

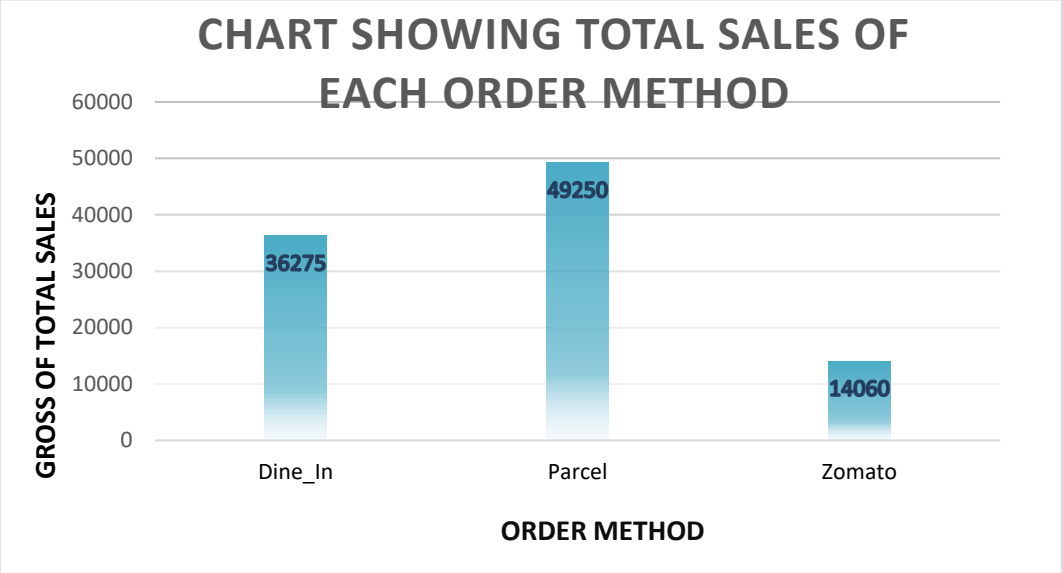
The collection of 30 days data is manually store in excel sheets, which was then cleaned, organized, analyzed later with the help of various tools of excel.

The tabulated data is carefully observed, to ensure the structure of the collected data is where clean and organized in effective way in order to get effective analysis. The preprocessing steps involved such as cleaning of the data, finding missing values, removing outliers to avoid misleading result. With the help of other resources, the information about hotel industry is gathered. And with the help of experiment some columns values are concluded such as some null values that present in the purchase data as well as some inventory dictionary inputs which was missing in the record given by the owner. Then different descriptive statistical methods were applied to get different findings such as mean, highest selling dish, inventory stocks expenditures analysis to gain insights about the overall business model of the restaurant. Column, bar, pie charts and scatter plot are used to visually represent each category contributing towards revenue, the items that need to purchase frequently or in larger amount. The sales representation is given on weekly basis. All these charts help to identify trends, customer pattern and areas of focus in decision making. By utilizing all these descriptive as well as visual techniques, we gain some comprehensive understanding of the data and its implications for the business model. This analysis will enable us to make informed decisions and optimize business strategies for improved performance and profitability.

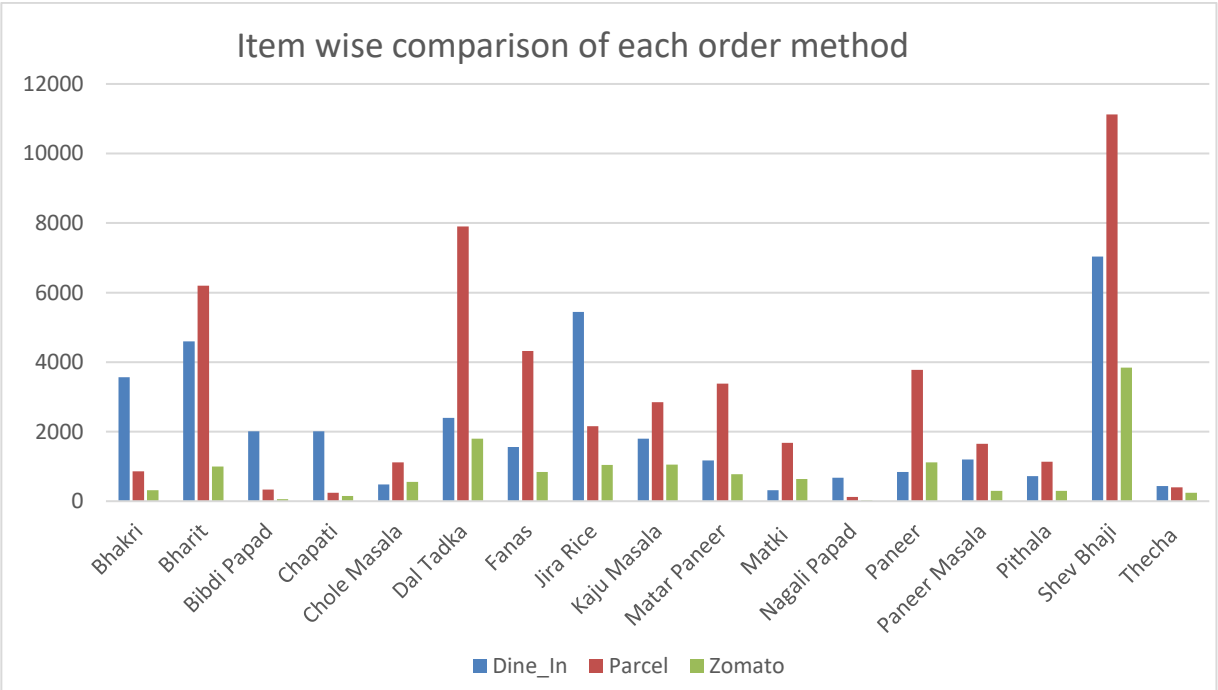
To get an idea about the raw material's purchase data I have selected top 8 raw materials contributing towards expenditure. On those different varieties bar chart is utilized. With the help of pie chart revenue model can be studied and could find the largest proportion of category most responsible for revenue increase. To get an idea about weekly sales scatter plot is used. With the help of scatter plot future sales can be forecasted. To compare the order method for each category clustered column chart is used. This chart provides information about the order method which is mostly used for particular item in the menu. This visualization will be helpful in further application such as, increasing the marketing and providing discounts on the particular item where its demand is impressive than the other order method

Result and Findings

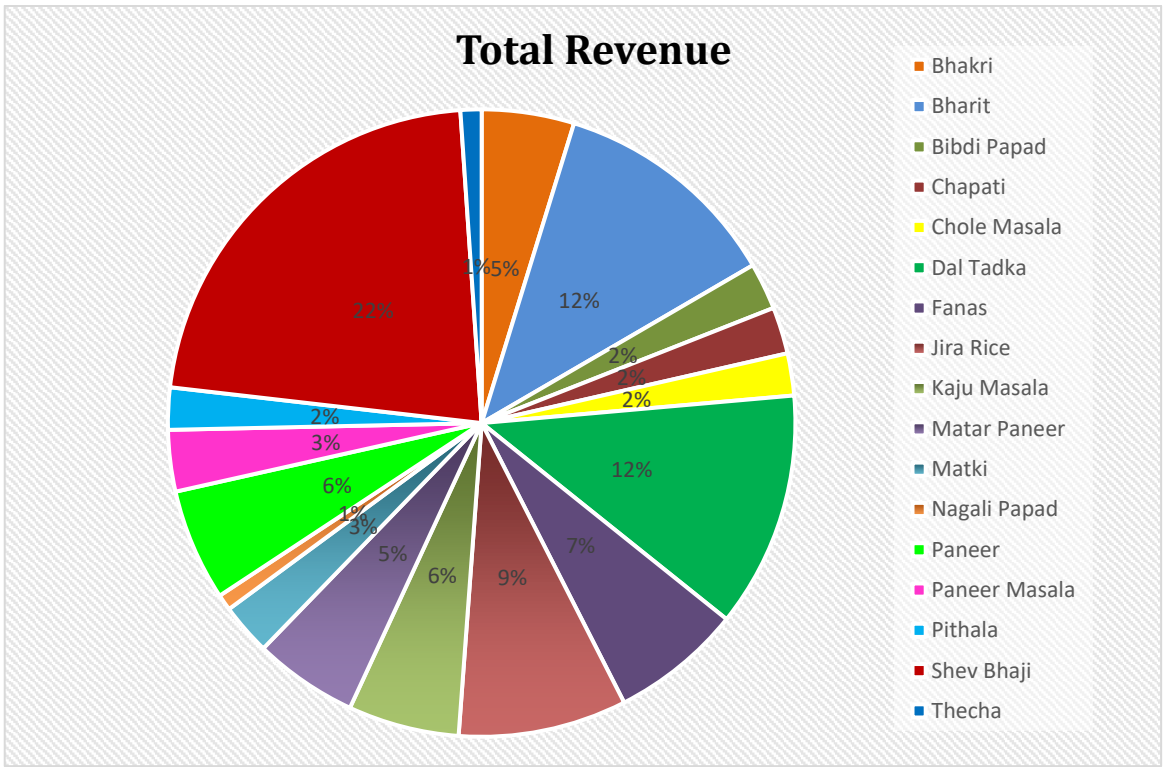
It is observed that among all order methods, 36.42% are Dine-In method, 49.45% are Parcel method and 14.11% are Zomato which contribute in total sales of Restaurant.

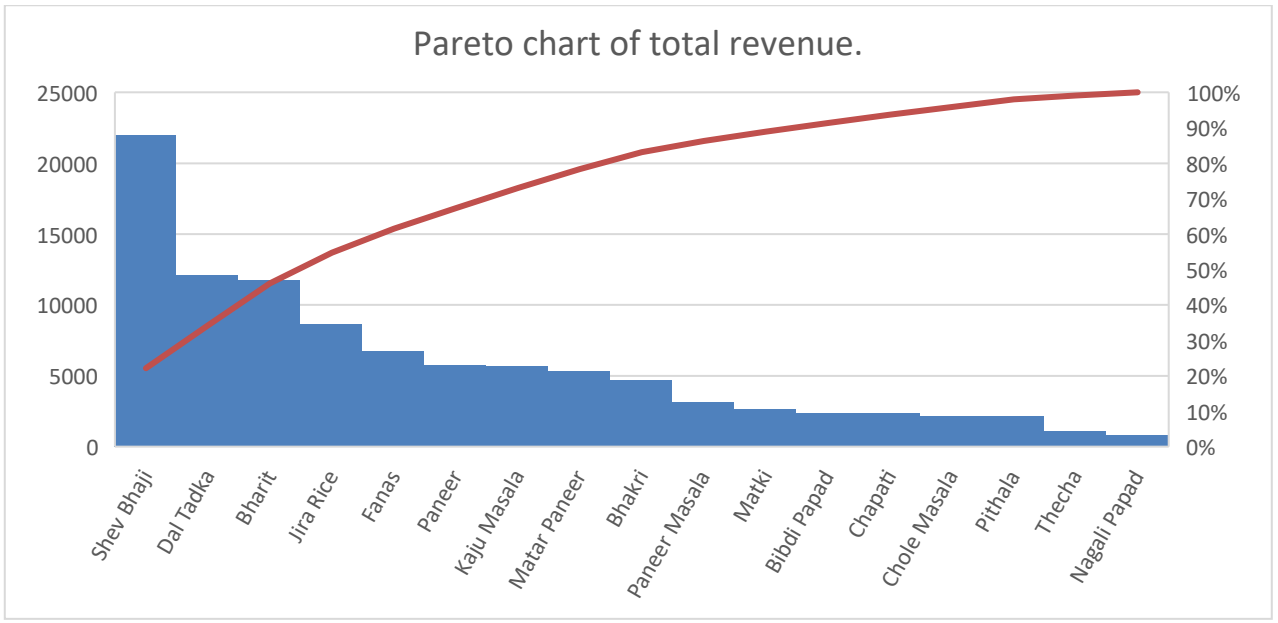


The chart showing each item sales in different order methods. Taking into consideration of all the methods sales, Shevbhaji is most selling product. But if we take into consideration of dine-in service then Bhakri, Jira Rice and Chapati make most sales and most of the curries such as Fanas, Dal Tadka, Paneer, Matar paneer are mostly sold in Parcel services. Zomato has least contribution in the sales of all variety of dishes.

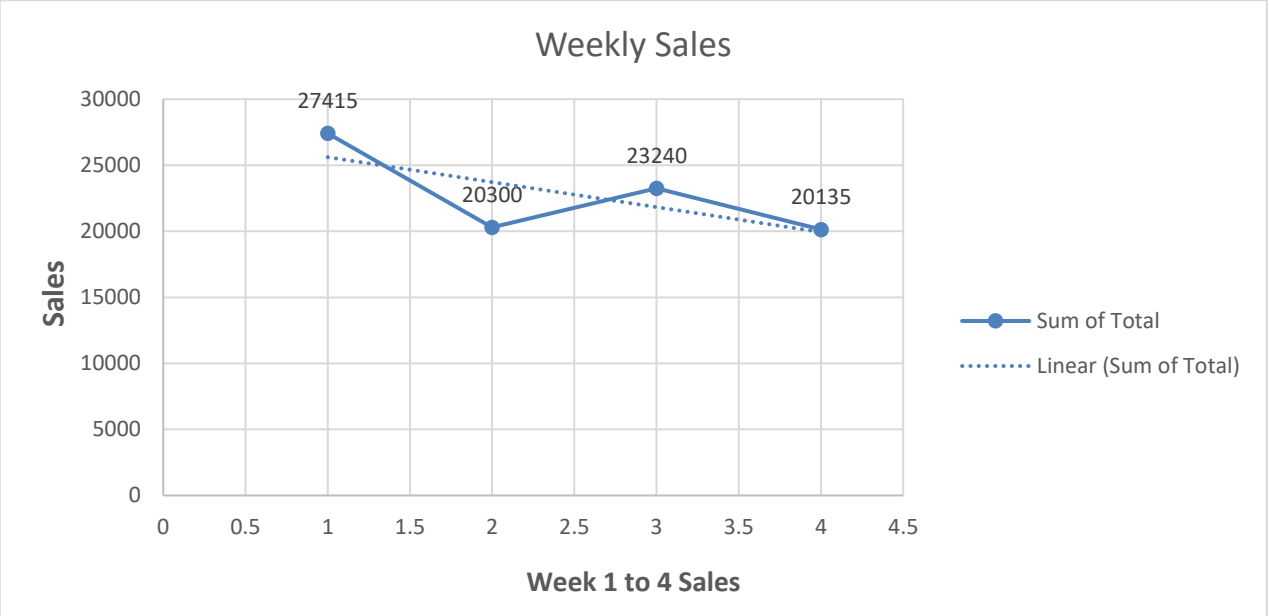


The following Pie chart is showing the contribution of each item in the total revenue of restaurant. It shows Shevbhaji is the biggest contributor in the total revenue i.e 22% , after that both Bharit (12%) and Dal Tadka (12%) are the major contributor in the revenue.

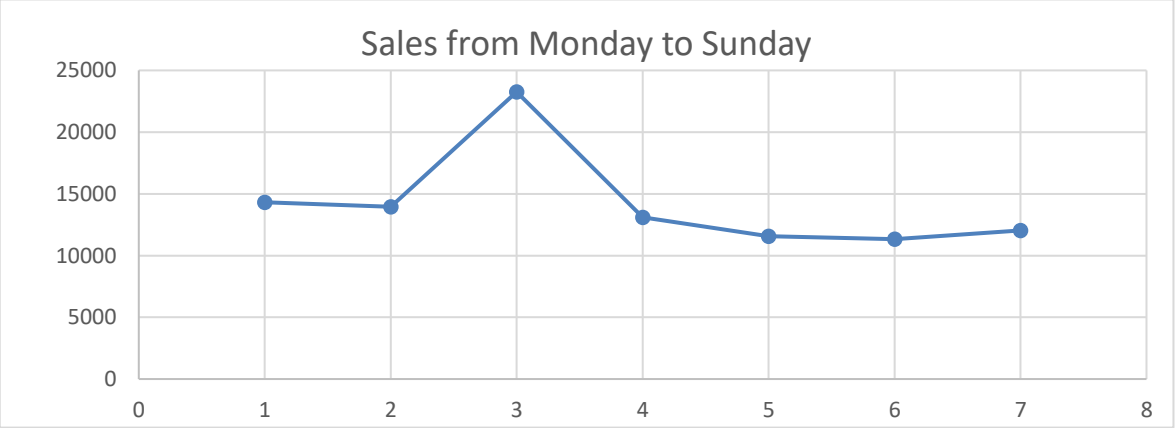




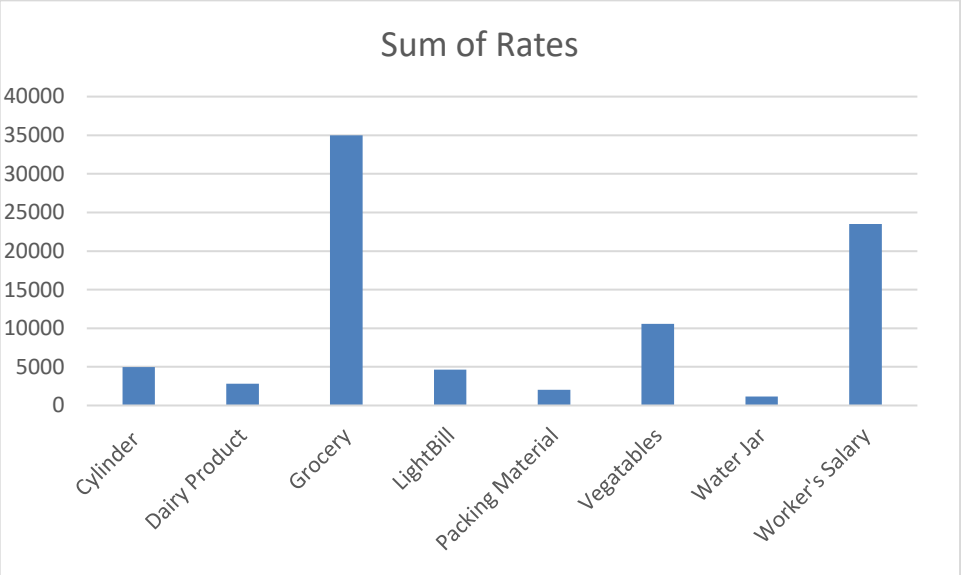
To forecast the upcoming sales, I drew this scatter plot; to get correct prediction I have omitted the data of week 5 as it had no all-days records of the week. Following graph showing that at the starting of the month sales are much higher than the at the end of month.



From the weekly sales graph, it can be seen that there is no relation of weekends and weekdays sales as it is showing Wednesday has more sales than other days.



Following graph shows that the largest amount of expenditure is done on retail grocery (it dips their profit margin) and second largest expenditure is done on workers salary.



From the one of the data as well as from owner's testimony it is confirmed that the average monthly expenditure is around 80-85k and their sales are around 90-95k. From the April month data, it can be seen that their expenditure on raw materials was 85,395 Rupees and their sales was 99,585 rupees. Hence their profit percentage was 16.61% which is quite low.

In final submission we will find some methods to increase their revenue by applying various techniques and give some insights to make their performance better in the market.