Project brief

Zomato, an Indian multinational company, serves as both a restaurant aggregator and a food delivery service. Founded by Deepinder Goyal and Pankaj Chaddah in 2008, Zomato offers detailed information, menus, and user reviews of restaurants, along with food delivery services from partner establishments across more than 1,000 cities and towns in India, as of 2022–2023. The platform has an average of 17.5 million monthly transacting customers for its food delivery service. Additionally, the number of active restaurant partners on Zomato's platform for food delivery has grown by 8.7% year-on-year, increasing from 208,000 to 226,000.

The objective of this project is to derive data-driven insights from Zomato's extensive platform. By analyzing customer transaction patterns, restaurant engagement metrics, and growth trends, the project aims to uncover critical insights that could help optimize the platform's performance. This includes understanding customer behavior, identifying top-performing restaurants, evaluating market penetration, and suggesting strategies for enhancing customer satisfaction and expanding Zomato's footprint in the competitive food delivery market.

Import all the libraries

In [26]:

```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
sns.set()
%matplotlib inline
import warnings
warnings.filterwarnings('ignore')
```

In [2]:

```
zomato = pd.read_csv("Zomato data .csv")   ## loading the data
```

Data cleaning

In [3]:

```
zomato
```

Out[3]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	Jalsa	Yes	Yes	4.1/5	775	800	Buffet
1	Spice Elephant	Yes	No	4.1/5	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8/5	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7/5	88	300	Buffet
4	Grand Village	No	No	3.8/5	166	600	Buffet
...	...	...	...	...	...	...	...
143	Melting Melodies	No	No	3.3/5	0	100	Dining
144	New Indraprasta	No	No	3.3/5	0	150	Dining

145	Anna Kuteera	Yes	No	4.0/5	771	450	Dining
146	Darbar	No	No	3.0/5	98	800	Dining
147	Vijayalakshmi	Yes	No	3.9/5	47	200	Dining

148 rows × 7 columns

In [4]:

```
zomato.head(10)   ## showing first 10 rows
```

Out[4]:

	name	online_order	book_table	rate	votes	approx_cost(for two people)	listed_in(type)
0	Jalsa	Yes	Yes	4.1/5	775	800	Buffet
1	Spice Elephant	Yes	No	4.1/5	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8/5	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7/5	88	300	Buffet
4	Grand Village	No	No	3.8/5	166	600	Buffet
5	Timepass Dinner	Yes	No	3.8/5	286	600	Buffet
6	Rosewood International Hotel - Bar & Restaurant	No	No	3.6/5	8	800	Buffet
7	Onesta	Yes	Yes	4.6/5	2556	600	Cafes
8	Penthouse Cafe	Yes	No	4.0/5	324	700	other
9	Smacznego	Yes	No	4.2/5	504	550	Cafes

In [5]:

```
zomato.isnull().sum()   ## Checking for null values
```

Out[5]:

```
name                           0
online_order                   0
book_table                     0
rate                           0
votes                          0
approx_cost(for two people)    0
listed_in(type)                0
dtype: int64
```

In [6]:

```
zomato.shape
```

Out[6]:

```
(148, 7)
```

In [7]:

```
zomato.rename(columns={'approx_cost(for two people)': 'approx_cost'}, inplace=True)   ##
```

In [8]:

```
def fixrate(value):                                 ## fixing the rate column
    value = str(value).split('/')
    value = value[0]
    return float(value)



zomato['rate'] = zomato['rate'].apply(fixrate)
print(zomato.head(5))
```

```
                    name online_order book_table  rate  votes  approx_cost  \
0                  Jalsa          Yes        Yes   4.1    775          800
1         Spice Elephant          Yes         No   4.1    787          800
2        San Churro Cafe          Yes         No   3.8    918          800
```

```
3  Addhuri Udupi Bhojana           No          No    3.7      88             300
4           Grand Village           No          No    3.8     166             600

  listed_in(type)
0          Buffet
1          Buffet
2          Buffet
3          Buffet
4          Buffet
```

In [9]:

```
zomato
```

Out[9]:

	name	online_order	book_table	rate	votes	approx_cost	listed_in(type)
0	Jalsa	Yes	Yes	4.1	775	800	Buffet
1	Spice Elephant	Yes	No	4.1	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7	88	300	Buffet
4	Grand Village	No	No	3.8	166	600	Buffet
...	...	...	...	...	...	...	...
143	Melting Melodies	No	No	3.3	0	100	Dining
144	New Indraprasta	No	No	3.3	0	150	Dining
145	Anna Kuteera	Yes	No	4.0	771	450	Dining
146	Darbar	No	No	3.0	98	800	Dining
147	Vijayalakshmi	Yes	No	3.9	47	200	Dining

148 rows × 7 columns

In [10]:

```
zomato.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 148 entries, 0 to 147
Data columns (total 7 columns):
 #   Column           Non-Null Count  Dtype  
---  ------           --------------  -----  
 0   name             148 non-null    object 
 1   online_order     148 non-null    object 
 2   book_table       148 non-null    object 
 3   rate             148 non-null    float64
 4   votes            148 non-null    int64  
 5   approx_cost      148 non-null    int64  
 6   listed_in(type)  148 non-null    object 
dtypes: float64(1), int64(2), object(4)
memory usage: 8.2+ KB
```

EDA

Majority of the customers are ordered from which type of resturants

In [11]:

```
zomato.columns
```

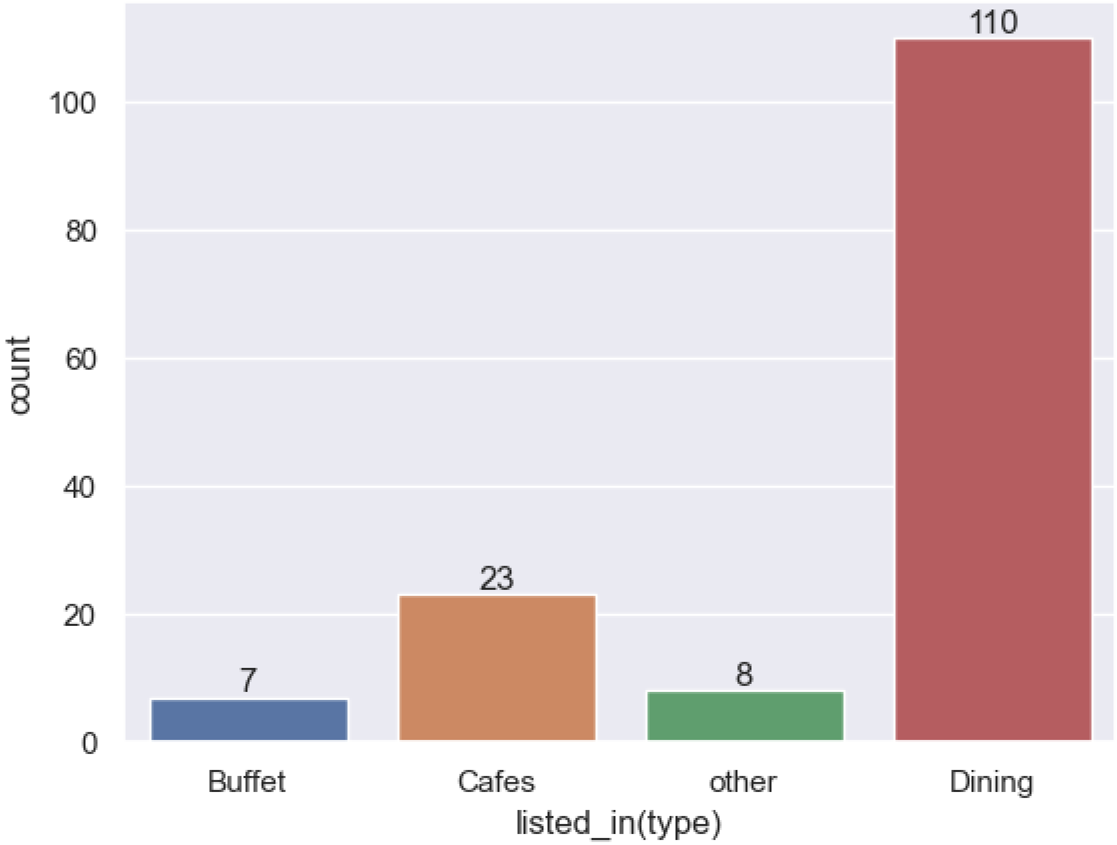
Out[11]:

```
Index(['name', 'online_order', 'book_table', 'rate', 'votes', 'approx_cost',
       'listed_in(type)'],
      dtype='object')
```

In [12]:

```
type_of_resturent= sns.countplot(x=zomato['listed_in(type)'], data =zomato)

for bars in type_of_resturent.containers:
    type_of_resturent.bar_label(bars)
```

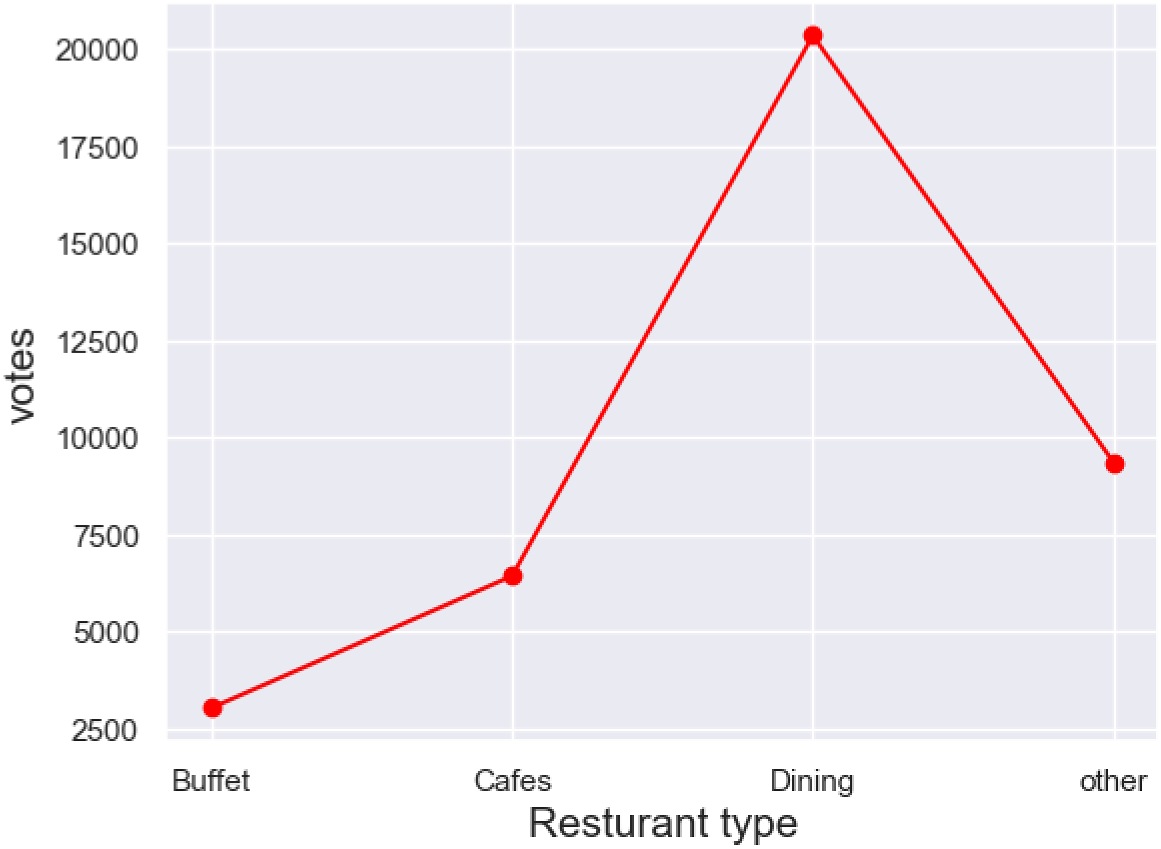


It can be stated from the above graph that, majority of the custoemers are prefferred dinning as their first choice and maximum of them are avoid the buffet.

Votes recieved for the resturants

In [13]:

```
grouped_data = zomato.groupby('listed_in(type)') ['votes'].sum()
graph = pd.DataFrame({'votes' : grouped_data})
plt.plot(graph, c= 'red', marker= 'o')
plt.xlabel("Resturant type", size = 15)
plt.ylabel("votes", size = 15)
plt.show()
```



In [14]:

```
vote_resturant  = zomato.groupby([zomato['listed_in(type)']],as_index=False).votes.sum()
```

In [15]:

```
vote_resturant
```

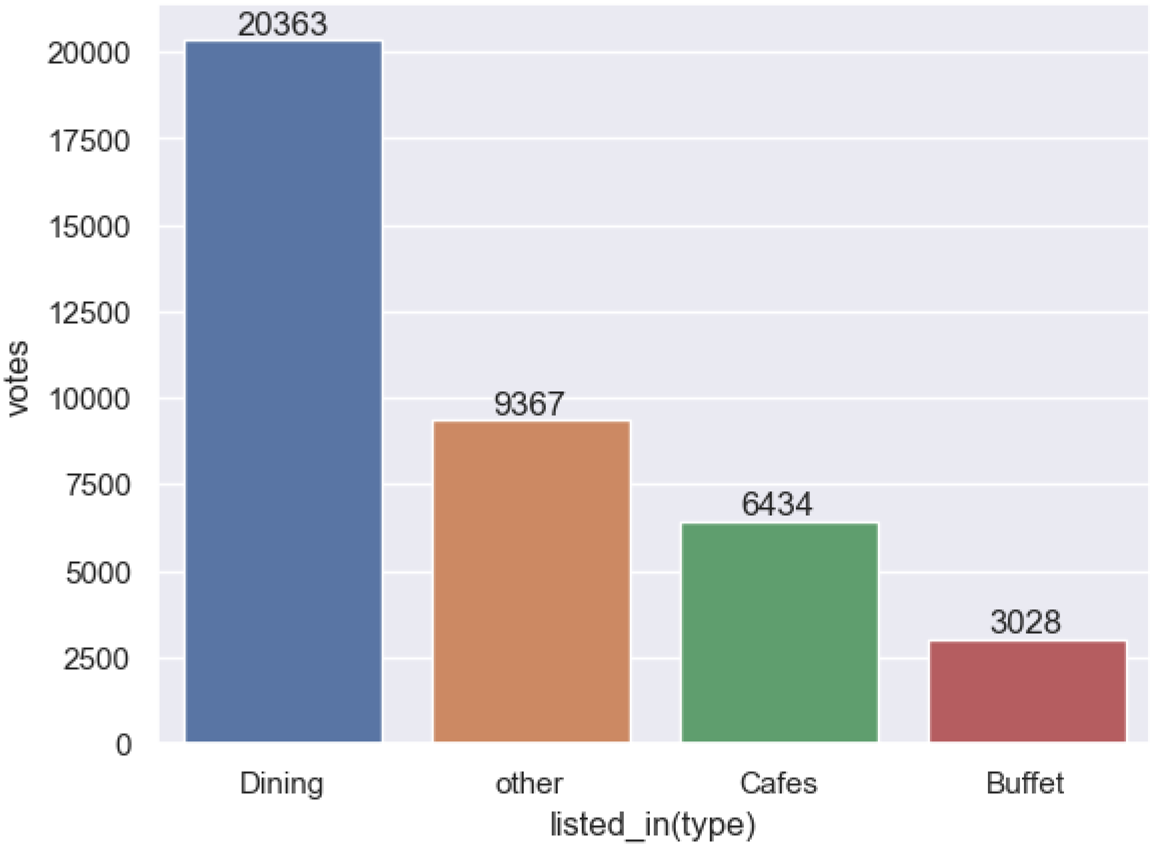
Out[15]:

	listed_in(type)	votes
2	Dining	20363
3	other	9367
1	Cafes	6434
0	Buffet	3028

In [16]:

```
vote_resturant_graph = sns.barplot(x='listed_in(type)', y='votes', data =vote_resturant)

for bars in vote_resturant_graph.containers:
    vote_resturant_graph.bar_label(bars)
```

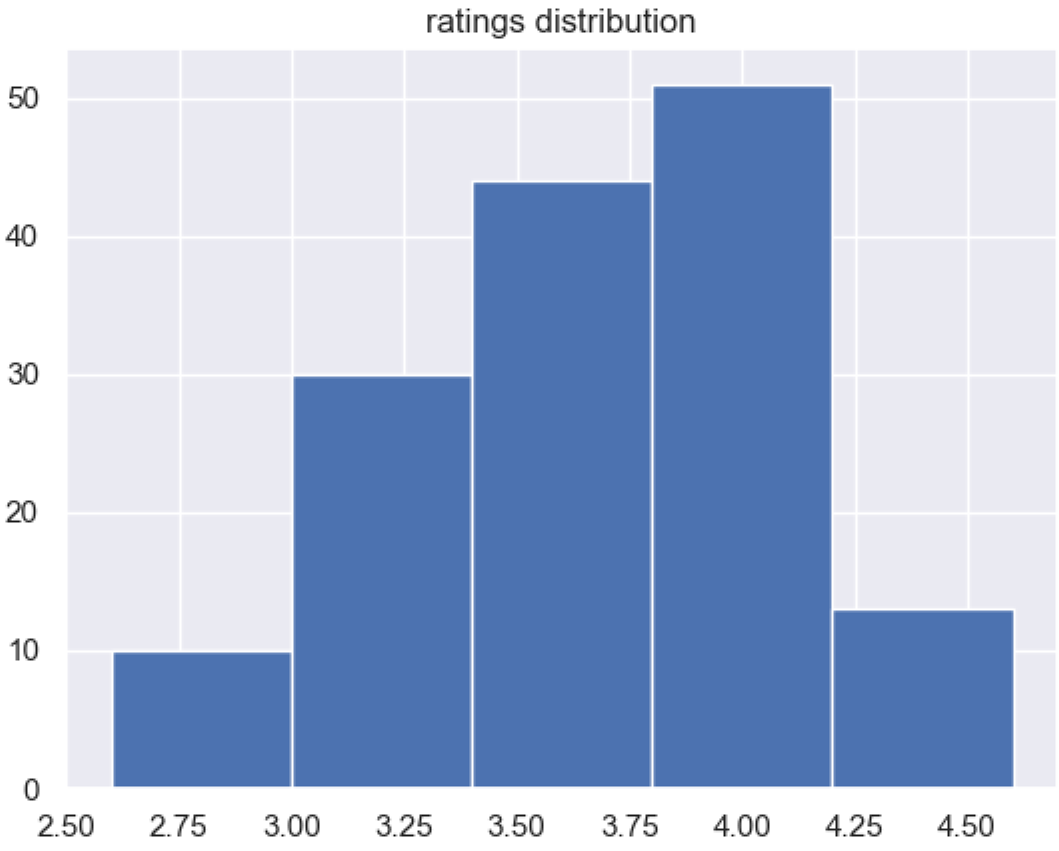


Dining type of resturant has got majority of the votes from the customers and buffet got lowest votes

Ratings that are received by the majority of restaurants

In [17]:

```
plt.hist(zomato['rate'], bins = 5)
plt.title('ratings distribution')
plt.show()
```



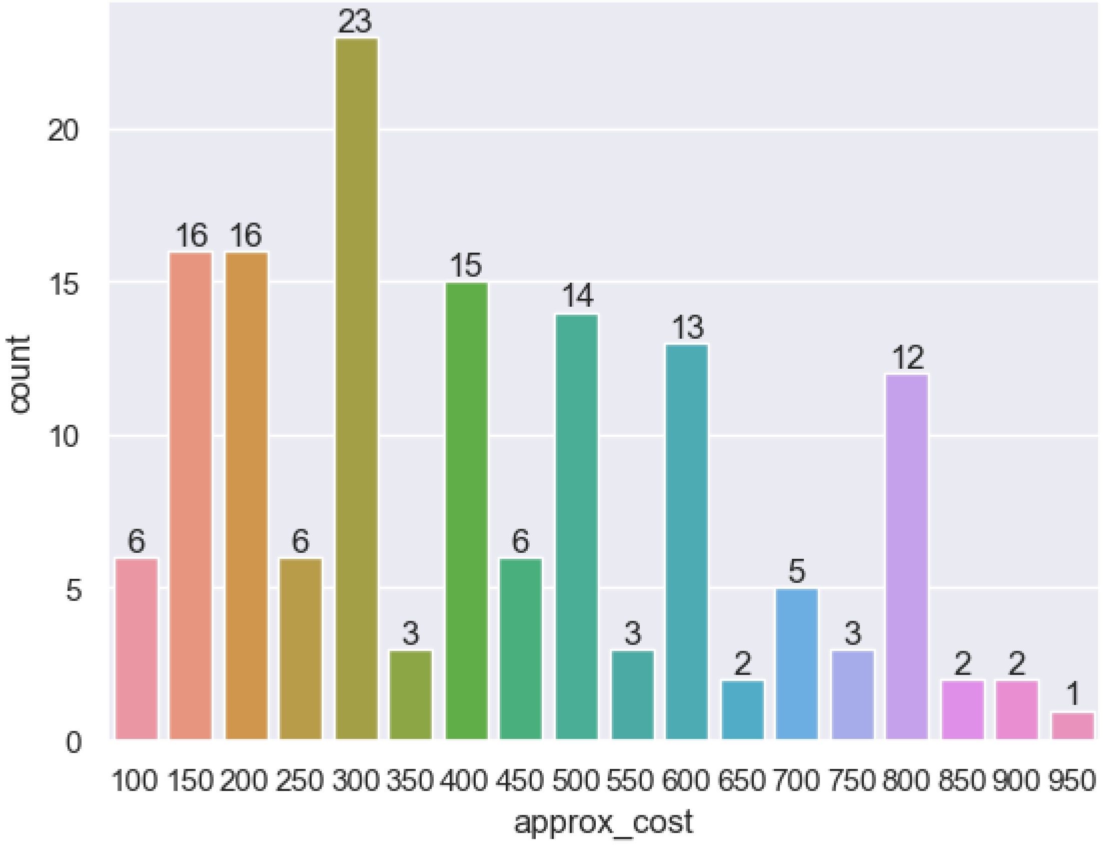
Majority of the resturants has got ratings between 3.5 to 4

What is the spending of the customers on each order?

In [18]:

```
order_amount = sns.countplot(x=zomato['approx_cost'], data = zomato)

for bars in order_amount.containers:
    order_amount.bar_label(bars)
```



majority of the couple has ordered 300 rupees food

What is the average spending on each order?

In [19]:

```
spend_resturant  = zomato.groupby([zomato['listed_in(type)']],as_index=False).approx_cos
spend_resturant
```

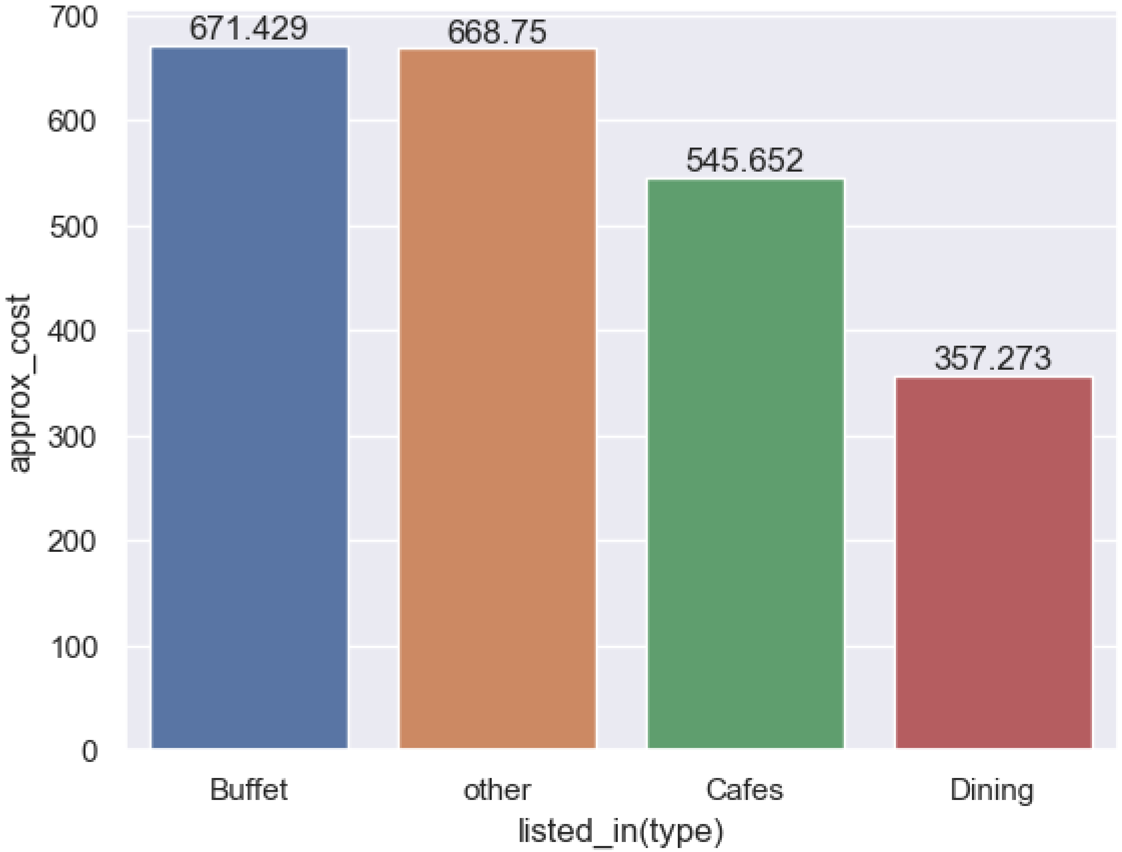
Out[19]:

	listed_in(type)	approx_cost
0	Buffet	671.428571
3	other	668.750000
1	Cafes	545.652174
2	Dining	357.272727

In [20]:

```
spend_resturant_graph = sns.barplot(x='listed_in(type)', y='approx_cost', data =spend_re

for bars in spend_resturant_graph.containers:
    spend_resturant_graph.bar_label(bars)
```



It says buffet has the highest average spending and dining has the lowset average spending

Which mode (online or offline) has received the maximum rating?

In [21]:

```
zomato.head()
```

Out[21]:

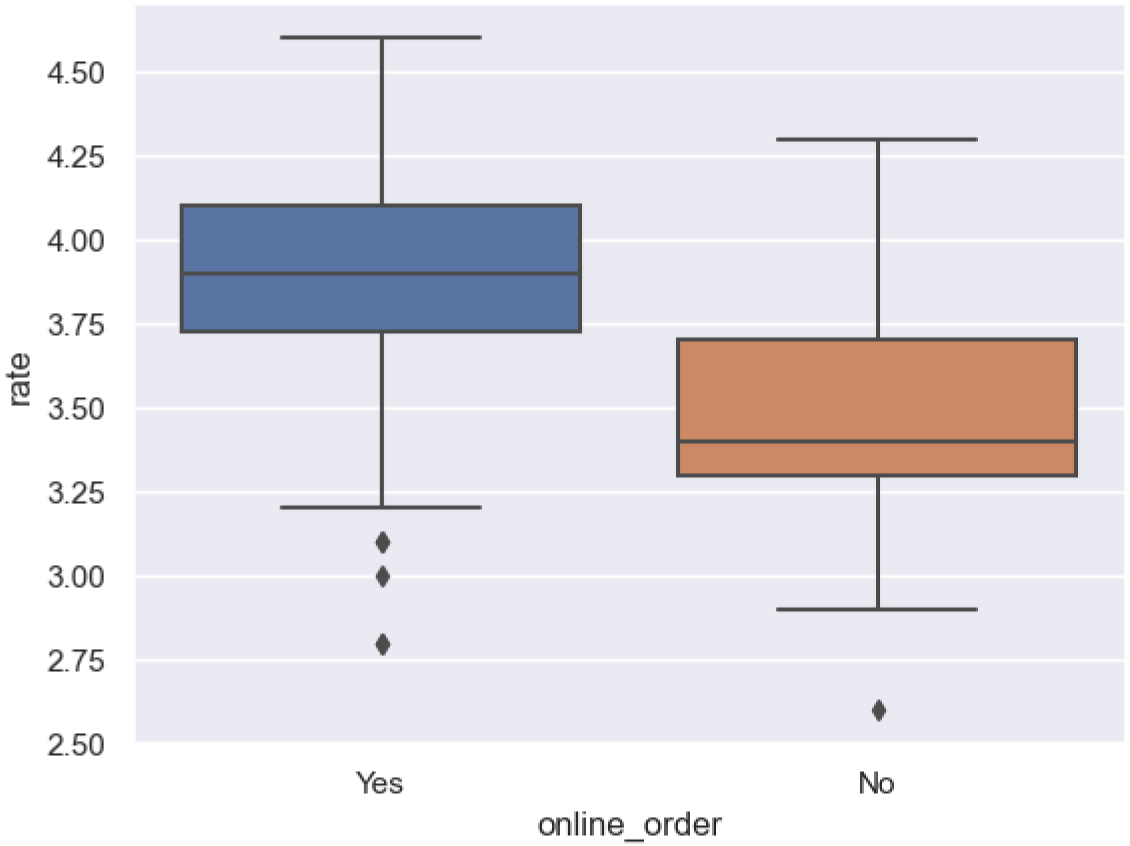
	name	online_order	book_table	rate	votes	approx_cost	listed_in(type)
0	Jalsa	Yes	Yes	4.1	775	800	Buffet
1	Spice Elephant	Yes	No	4.1	787	800	Buffet
2	San Churro Cafe	Yes	No	3.8	918	800	Buffet
3	Addhuri Udupi Bhojana	No	No	3.7	88	300	Buffet
4	Grand Village	No	No	3.8	166	600	Buffet

In [22]:

```
sns.boxplot(x=zomato['online_order'], y= zomato['rate'], data= zomato)
```

Out[22]:

```
<Axes: xlabel='online_order', ylabel='rate'>
```



Online custoemers has gave the high rating than the offline custoemers. It shows Zomato has a greater online popularity than offline.

Which type of restaurant received more offline orders, so that Zomato can provide customers with some good offers?

In [23]:

```
pivot_table = zomato.pivot_table(index= 'listed_in(type)', columns = 'online_order', agg
```

In [24]:

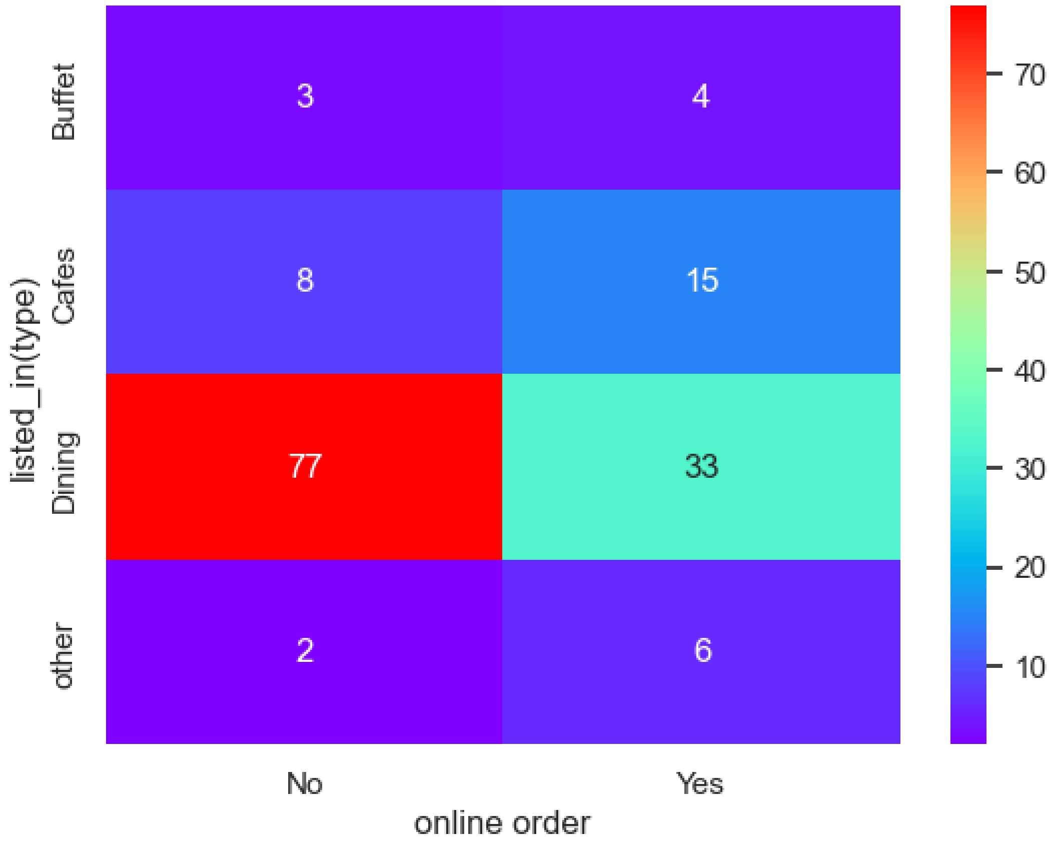
```
pivot_table
```

Out[24]:

online_order	No	Yes
listed_in(type)		
Buffet	3	4
Cafes	8	15
Dining	77	33
other	2	6

In [25]:

```
sns.heatmap(pivot_table, cmap= 'rainbow', annot = True, fmt= 'd')
plt.xlabel('online order')
plt.ylabel('listed_in(type)')
plt.show()
```



The heatmap shows dining has highest offline order

Summary

After analyzing the Zomato data, it is evident that the majority of consumers prefer the dining facilities offered by the platform. However, Zomato needs to focus on improving its buffet segment to expand its customer base. The data shows that dining facilities received the highest number of votes, while cafes garnered moderate attention, and the buffet segment received the lowest number of votes from customers. Therefore, it is crucial for Zomato to enhance the offerings and customer service within its buffet segment.

Zomato's restaurants have received an average rating of 3.5 to 4, reflecting the platform's excellent customer service, timely delivery, and quality of food. The majority of customers tend to spend around 300 rupees per order. Notably, the buffet segment has the highest average cost, followed by cafes and dining facilities.

Furthermore, Zomato has received the majority of its ratings from online orders rather than offline orders, indicating that its online presence is more popular among customers. For offline orders, dining facilities have the largest customer base compared to cafes and buffets.

Overall, while Zomato has established a strong reputation in online orders and dining facilities, there is room for improvement in its buffet offerings to attract a broader customer base.