CUSTOMER RETENTION ANALYSIS

E-retail factors for customer activation and retention: A case study from Indian e-commerce customers

Submitted by:

NAINA JOSHI

ACKNOWLEDGMENT

I would like to thanks to **Flip Robo Technologies** to give me a wonderful opportunity. This project is given by my **SME Mr. Shubham Yadav**. I have referred below resources that helped and guided me in completion of this project as below:-

- Towardsscience.com
- Scikit-learn.org
- Kaggle.com
- Stack overflow, etc

DATA SOURCE

The data is collected from the Indian online shoppers. Results indicate the e-retail success factors, which are very much critical for customer satisfaction.

INTRODUCTION

WHAT IS CUSTOMER RETENTION?

Customer retention is the collection of activities a business uses to increase the number of repeat customers and to increase the profitability of each existing customer.

Customer retention strategies enable us to both provide and extract more value from our existing customer base. We want to ensure the customers we worked so hard to acquire stay with us, have a great customer experience, and continue to get value from our products.

- ### BUSINESS PROBLEM FRAMING

Customer satisfaction has emerged as one of the most important factors that guarantee the success of online store; it has been posited as a key stimulant of purchase, repurchase intentions and customer loyalty. A comprehensive review of the literature, theories and models have been carried out to propose the models for customer activation and customer retention. Five major factors that contributed to the success of an e-commerce store have been identified as: service quality, system quality, information quality, trust and net benefit. The research furthermore investigated the factors that influence the online customers repeat purchase intention. The combination of both utilitarian value and hedonistic values are needed to affect the repeat purchase intention (loyalty) positively. The data is collected from the Indian online shoppers. Results indicate the e-retail success factors, which are very much critical for customer satisfaction.

The company wanted to a data analysis to understand various aspect of customer satisfaction.

- ### CONCEPTUAL BACKGROUND OF THE DOMAIN PROBLEM

Problem Statement: Analyse the Features affecting Customer Satisfaction & retention and test if brand preference depends on factors like age and gender.

The combination of both utilitarian value and hedonistic values are needed to affect the repeat purchase intention (loyalty) positively.

The data is collected from the Indian online shoppers. Results indicate the e-retail success factors, which are very much critical for customer satisfaction.

Five major factors that contributed to the **success of an e-commerce store** have been identified as:

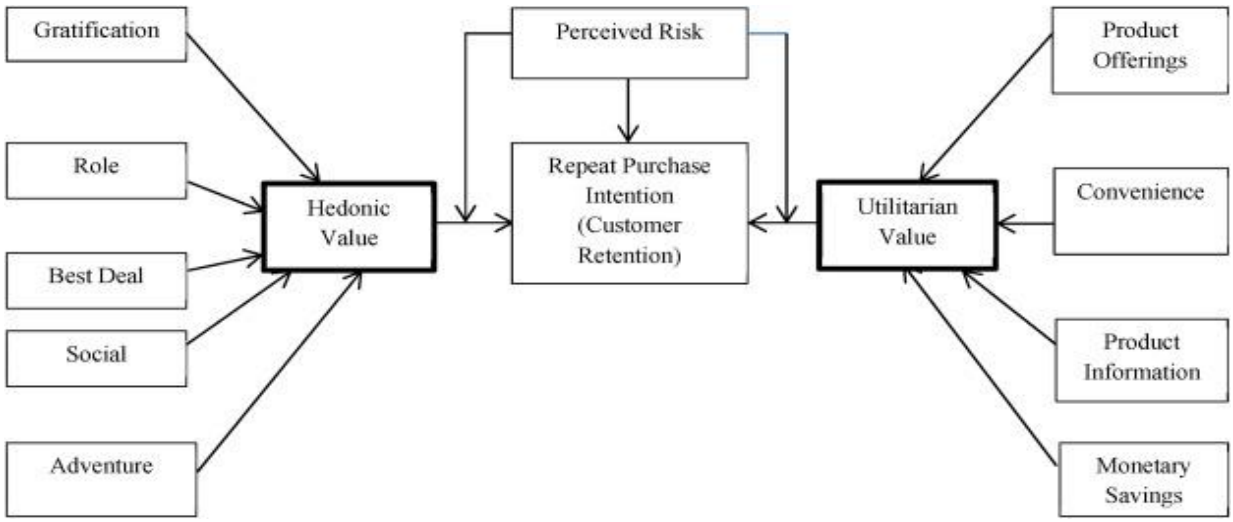
i) Service quality,
ii) System quality,
iii) Information quality,
iv) Trust
v) Net benefit

• REVIEW OF LITERATURE:

E-commerce market has been contributing to the significant growth for the GDP of the country. It has been continuously growing at more 8% CAGR on each year. And customer being a one of the stakeholders for the e-commerce players, every company wants to retain their valuable customer and grow customer loyalty. For improving the customer satisfaction each enterprise investing/spending a lot not only to improve their sales but improve the CSAT, that is customer satisfaction score.

For this project we are provided with a data set to a data analysis to gather insights for the customer feedback and help us understand the customer in a better way.

DIAGRAMMATIC REPRESENTATION OF CUSTOMER RETENTION



MOTIVATION FOR THE PROBLEM UNDERTAKEN

Since e-commerce growth has been significant so far at each industry for the last couple of years, understanding the customer who purchase your product and their journey post order in the platform plays a crucial role for retaining a customer. From the dataset we got the feedback of each of the parameters for a customer and through the data analysis each significant parameter has been dig down and understand the deeper meaning of it. This project helps me understand the objective of customer feedback which at enterprise level has a greater focus.

ANALYTICAL PROBLEM FRAMING

MATHEMATICAL/ ANALYTICAL MODELING OF THE PROBLEM

- In this project I need to understand the customer satisfaction for each of the parameters provided. I have done the exploratory data analysis process and try to figure out the customer in a better way.

DATA SOURCES AND THEIR FORMATS

This Dataset is **provided by Flip Robo Technologies xlsx format**. It contains 269 rows and 71 columns and each of the features is extremely important to under the customer.

Check the data information

df.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 269 entries, 0 to 268
Data columns (total 71 columns):
 #   Column                                                                  Non-Null
Count  Dtype
---  ------                                                                  --------
------  -----
 0   Gender                                                                  269 non-
null    object
 1   Age                                                                     269 non-
null    object
 2   city                                                                    269 non-
null    object
```

```
 3   Pin Code                                                269 non-
null    int64
 4   How Long You are Shopping Online                        269 non-
null    object
 5   How many times in the past 1 year                       269 non-
null    object
 6   How do you access the internet                          269 non-
null    object
 7   device                                                  269 non-
null    object
 8   screen size                                             269 non-
null    object
 9   operating system                                        269 non-
null    object
 10  browser                                                 269 non-
null    object
 11  channel                                                 269 non-
null    object
 12  After first visit                                       269 non-
null    object
 13  How much times                                          269 non-
null    object
 14  payment Option                                          269 non-
null    object
 15  How frequently do you abandon                           269 non-
null    object
 16  Why did you abandon                                     269 non-
null    object
 17  content on the website                                  269 non-
null    object
 18  similar product                                         269 non-
null    object
 19  Complete information                                    269 non-
null    object
 20  relevant information                                    269 non-
null    object
 21  Ease of navigation                                      269 non-
null    object
 22  Loading and processing speed                            269 non-
null    object
 23  User friendly                                           269 non-
null    object
 24  Convenient Payment methods                              269 non-
null    object
 25  Trust that the online retail store                      269 non-
null    object
 26  Empathy towards the customers                           269 non-
null    object
 27  privacy of the customer                                 269 non-
null    object
 28  Responsiveness and availability                         269 non-
null    object
 29  monetary benefit and discounts                          269 non-
null    object
 30  Enjoyment is derived from shopping online               269 non-
null    object
 31  Shopping online is convenient and flexible              269 non-
null    object
 32  Return and replacement policy                           269 non-
null    object
 33  Gaining access to loyalty                               269 non-
null    object
 34  quality Information on the website                      269 non-
null    object
 35  User derive satisfaction                                269 non-
null    object
```

```
 36  Net Benefit                                                    269 non-
null    object
 37  User satisfaction cannot exist without trust                   269 non-
null    object
 38  Offering a wide variety                                        269 non-
null    object
 39  Provision of complete and relevant product information         269 non-
null    object
 40  Monetary savings                                               269 non-
null    object
 41  The Convenience of patronizing the online retailer             269 non-
null    object
 42  sense of adventure                                             269 non-
null    object
 43  enhances your social status                                    269 non-
null    object
 44  gratification shopping on your favorite e-tailer               269 non-
null    object
 45  Shopping on the website helps you fulfill certain roles        269 non-
null    object
 46  Getting value for money spent                                  269 non-
null    object
 47  you have shopped from                                          269 non-
null    object
 48  Easy to use website or application                             269 non-
null    object
 49  Visual appealing web-page layout                               269 non-
null    object
 50  Wild variety of product on offer                               269 non-
null    object
 51  Complete description information of products                   269 non-
null    object
 52  Fast loading website speed of website and application          269 non-
null    object
 53  Reliability of the website or application                      269 non-
null    object
 54  Quickness to complete purchase                                 269 non-
null    object
 55  Availability of several payment options                        269 non-
null    object
 56  Speedy order delivery                                          269 non-
null    object
 57  Privacy of customers' information                              269 non-
null    object
 58  Security of customer financial information                     269 non-
null    object
 59  Perceived Trustworthiness                                      269 non-
null    object
 60  Presence of online assistance through multi-channel            269 non-
null    object
 61  Longer time to get logged in                                   269 non-
null    object
 62  Longer time in displaying graphics and photos                  269 non-
null    object
 63  Late declaration of price                                      269 non-
null    object
 64  Longer page loading time                                       269 non-
null    object
 65  Limited mode of payment on most products                       269 non-
null    object
 66  Longer delivery period                                         269 non-
null    object
 67  Change in website/Application design                           269 non-
null    object
 68  Frequent disruption when moving from one page to another       269 non-
null    object
```

```
 69  Website is as efficient as before                                269 non-
null    object
 70  Which of the Indian online retailer would you recommend to a friend  269 non-
null    object
dtypes: int64(1), object(70)
memory usage: 149.3+ KB
```

- ## HARDWARE AND SOFTWARE REQUIREMENTS AND TOOLS USED:

For this dataset, the Hardware is used Windows as operating system, a stable internet connection, and the software used are mainly Jupyter notebook to do my python programming and analysis.

I received data in xlsx format, I had used few libraries on **Jupyter Notebook** for this project. The Libraries are:

1. **Pandas**- a library which is used to read the data, visualization, and analysis of data.

2. **NumPy**- used for working with array and various mathematical techniques.

3. **Seaborn**- visualization tool for plotting different types of plot.

4. **Matplotlib**- It provides an object-oriented API for embedding plots into applications.

DATA ANALYSIS DEVELOPMENT AND EVALUATION

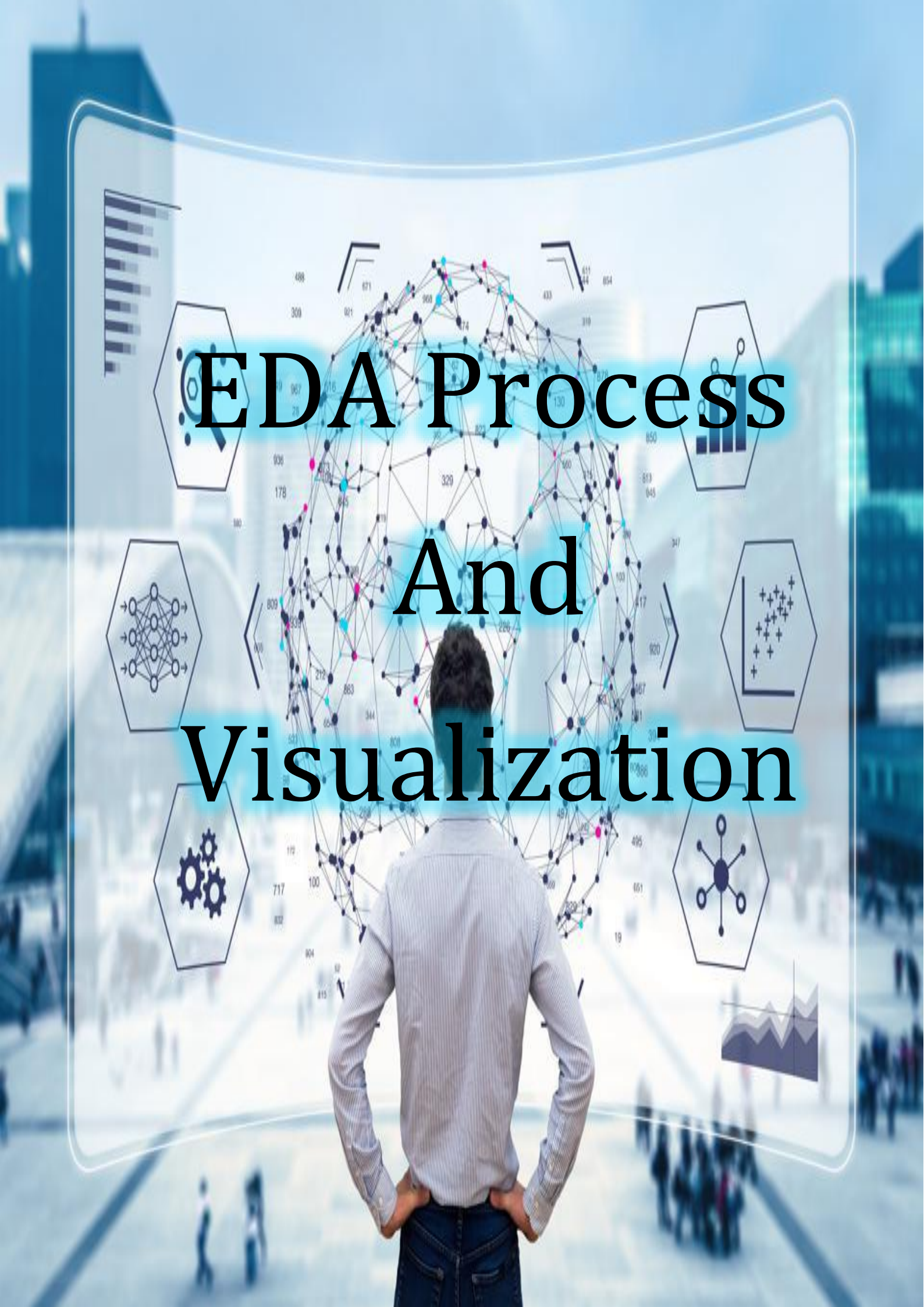
IDENTIFICATION OF POSSIBLE PROBLEM-SOLVING APPROACHES (METHODS):

For this project I have done EDA to understand the outcome of this dataset. And, I have used various visualization using seaborn & matplotlib package to understand the customer satisfaction in a suitable manner.

KEY METRICS FOR SUCCESS IN SOLVING PROBLEM UNDER CONSIDERATION

The key metrics that were mainly taken into consideration were the followings:

- Gender of the respondent
- What browser do you run on your device to access the website?
- Which device do you use to access the online shopping?
- Which of the Indian online retailer would you recommend to a friend?
- Quickness to complete purchase
- Speedy order delivery
- Presence of online assistance through multi-channel
- Getting value for money spent
- Return and replacement policy of the e-tailer is important for purchase decision
- Shopping online is convenient and flexible
- Convenient Payment methods
- User friendly Interface of the website


EDA Process
And
Visualization

EXPLORATORY DATA ANALYSIS

Customer Related Information

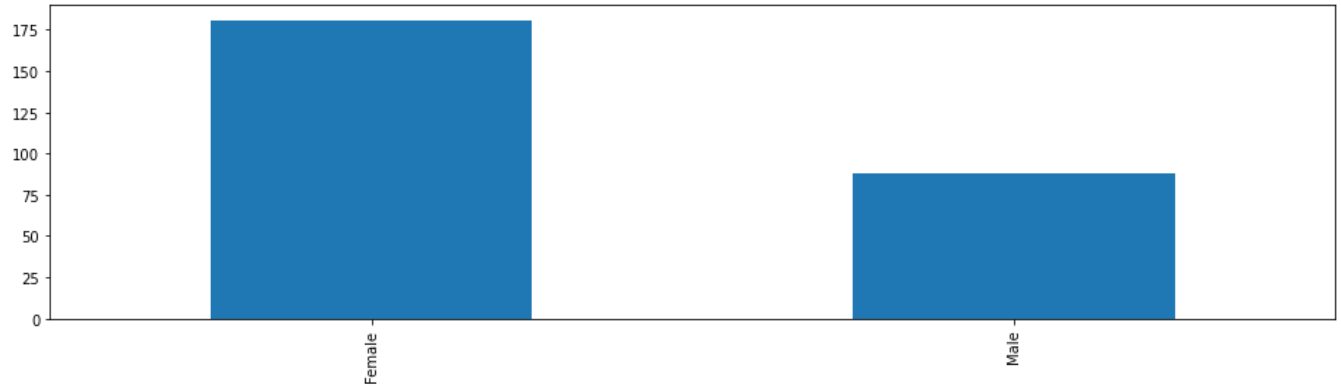
```
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Gender'].value_counts())

df['Gender'].value_counts().sort_index().plot.bar()
```

```
<AxesSubplot:>
```




```
Female    181
Male       88
Name: Gender, dtype: int64
```

From the above analysis, it has been observed that around 70% of the customers are women

---

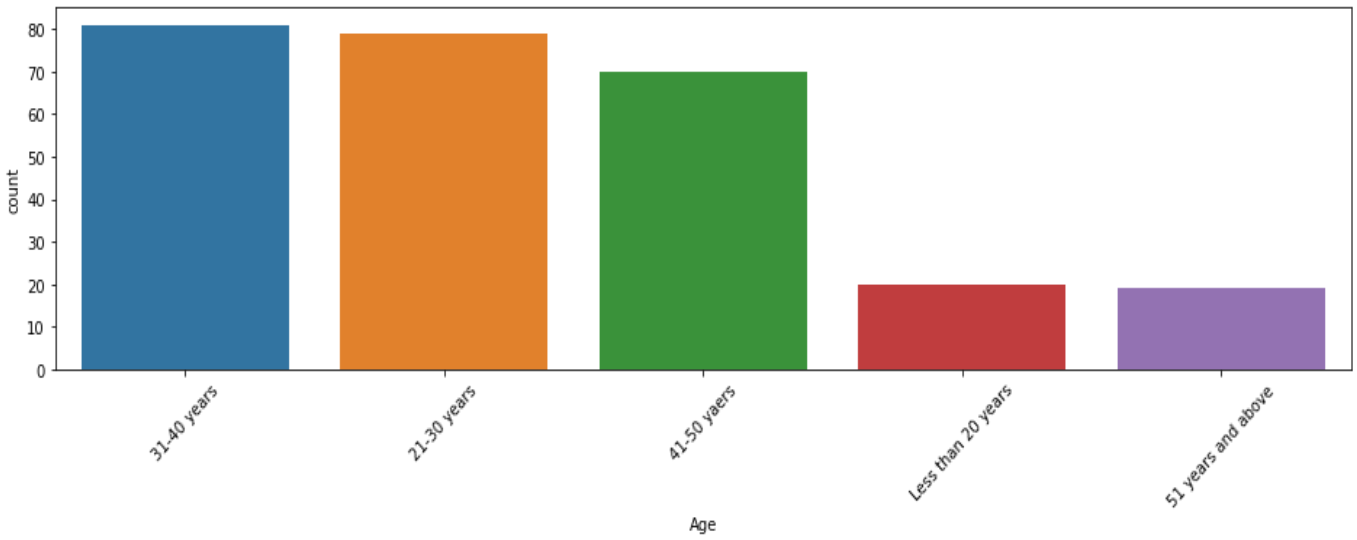
```
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Age'].value_counts())

sns.countplot(df['Age'])
```

```
<AxesSubplot:xlabel='Age', ylabel='count'>
```




```
31-40 years            81
21-30 years            79
41-50 yaers            70
Less than 20 years     20
51 years and above     19
Name: Age, dtype: int64
```

Most of the customers are aged between 31 to 40 years do online shopping,

next comes the customers aged between 21 to 30 yers old and so on as shown in graph above.

---

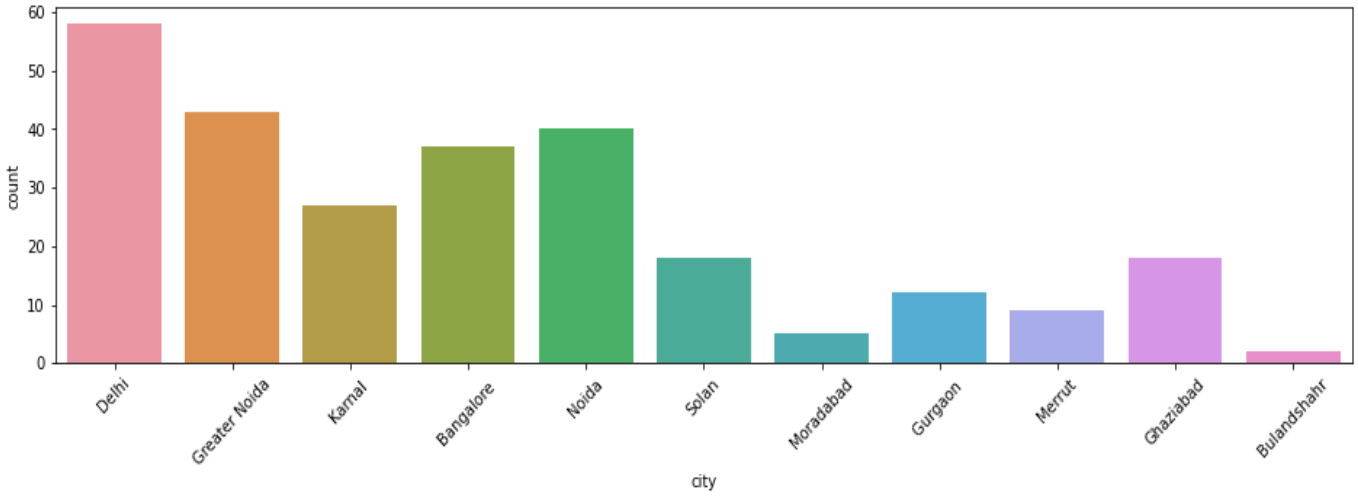
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['city'].value_counts())

sns.countplot(df['city'])

```
<AxesSubplot:xlabel='city', ylabel='count'>
```




```
Delhi             58
Greater Noida     43
Noida             40
Bangalore         37
Karnal            27
Solan             18
Ghaziabad         18
Gurgaon           12
Merrut             9
Moradabad          5
Bulandshahr        2
Name: city, dtype: int64
```

Customers from Delhi have the highest online shopping actions than comes the Greater Noida and least online shopping is in Bulandshahar.

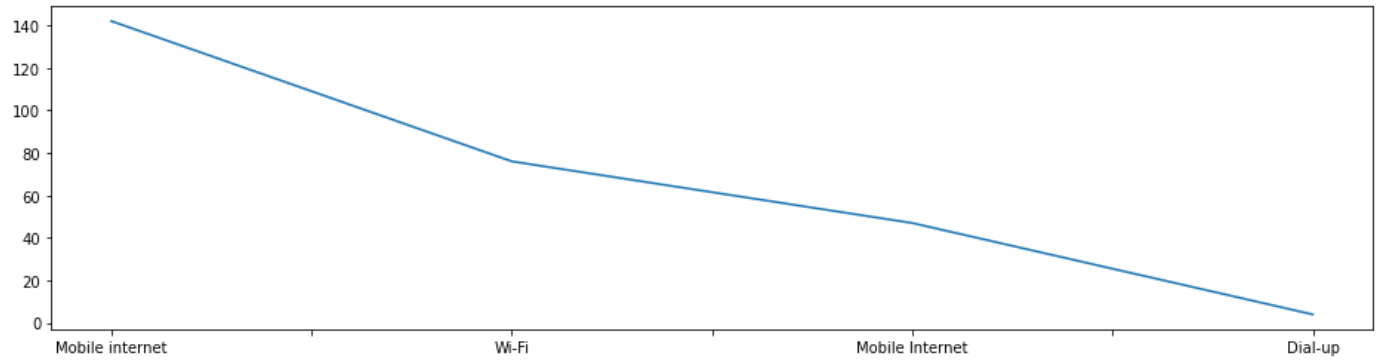
So, we can also say that the people from Metro Cities like Delhi-NCR, Bangalore are more preferred or active on online shopping sites.

```
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['How do you access the internet'].value_counts())

df['How do you access the internet'].value_counts().plot.line()
```




```
Mobile internet    142
Wi-Fi               76
Mobile Internet     47
Dial-up              4
Name: How do you access the internet, dtype: int64
```

Checking the number of people using which device for online shopping

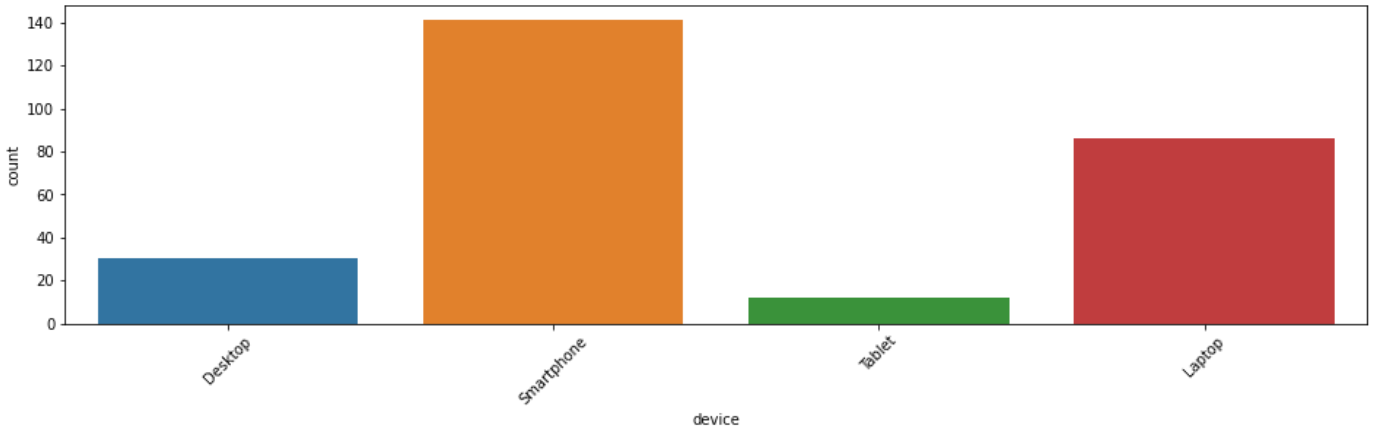
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['device'].value_counts())

sns.countplot(df['device'])

```
<AxesSubplot:xlabel='device', ylabel='count'>
```




```
Smartphone    141
Laptop         86
Desktop        30
Tablet         12
Name: device, dtype: int64
```

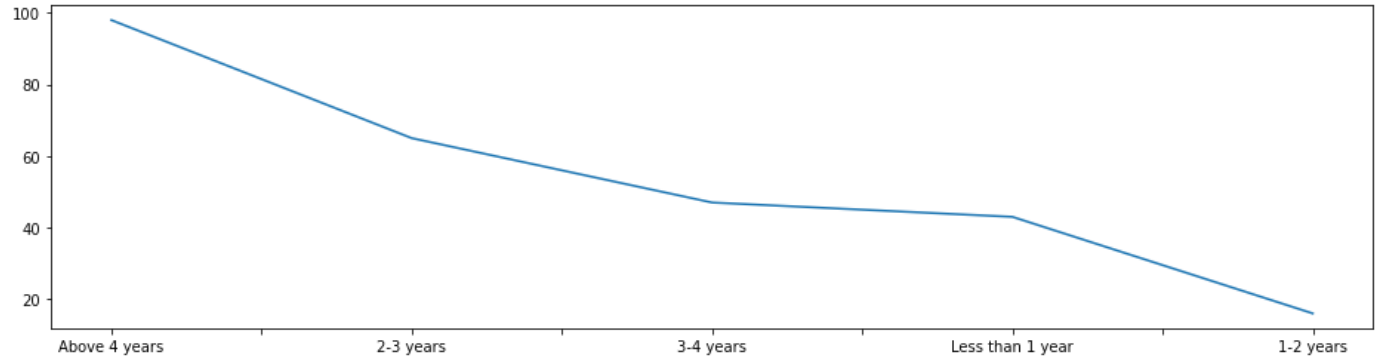
Here we can see that mostly people are using smartphone for online shopping . So, we can say that people are very comfortable to use smartphone and It is easier to operate than another device.

```
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['How Long You are Shopping Online'].value_counts())

df['How Long You are Shopping Online'].value_counts().plot.line()
```



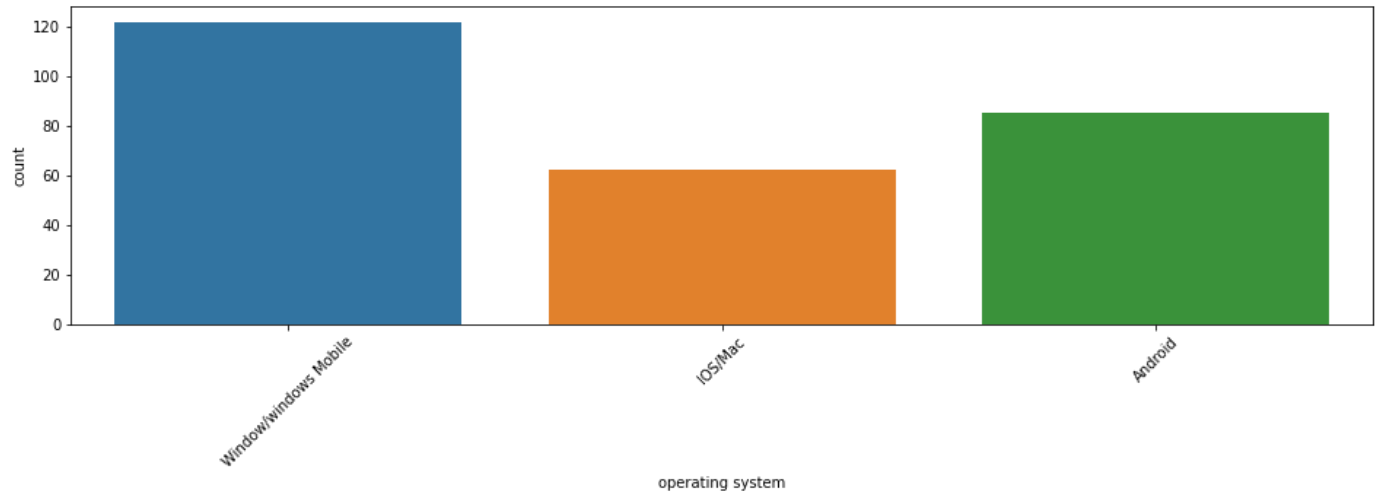

```
Above 4 years       98
2-3 years           65
3-4 years           47
Less than 1 year    43
1-2 years           16
Name: How Long You are Shopping Online, dtype: int64
```

```
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['operating system'].value_counts())

sns.countplot(df['operating system'])
```




```
Window/windows Mobile    122
Android                   85
IOS/Mac                   62
Name: operating system, dtype: int64
```

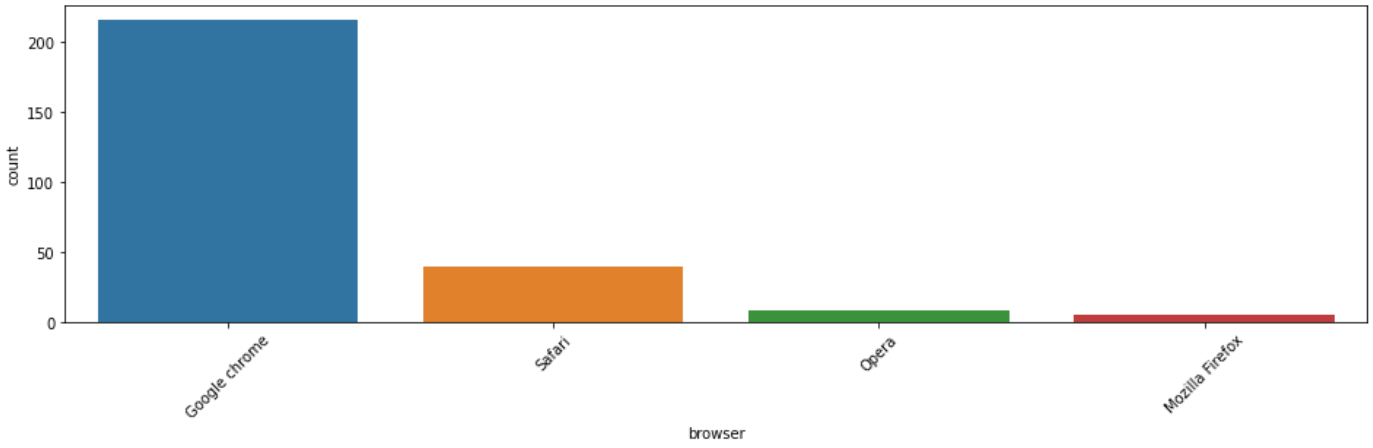
```
# checking  which browser preferred by people for online shoppings

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['browser'].value_counts())

sns.countplot(df['browser'])
```




```
Google chrome      216
Safari              40
Opera                8
Mozilla Firefox      5
Name: browser, dtype: int64
```

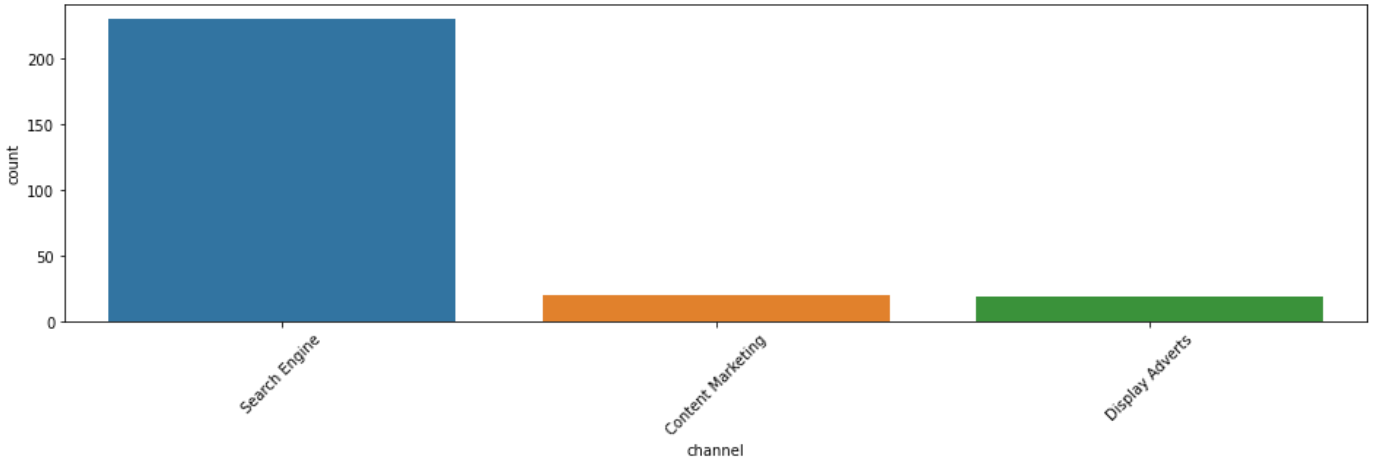
According to analysis, Google Chrome has the highest usage browser for online shoppings or we can say that people has lots of faith on Google Chrome for online transactions or shoppings. This is the biggest achievement for Google.

```
plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['channel'].value_counts())

sns.countplot(df['channel'])
```




```
Search Engine         230
Content Marketing      20
Display Adverts        19
Name: channel, dtype: int64
```

CONCLUSION FROM CUSTOMER RELATED INFORMATION ANALYSIS

1) In people doing online shopping Females are more as compared to Males.

2) People in the age group from 21 to 50 are doing more online shopping as compared to other age groups.

3) Delhi Topped in the city list where a greater number of people doing online shopping.

4) Mostly people are using mobile internet while shopping online.

5) Mostly People are doing online shopping through smartphone.

6) People having windows as operating system(OS) have maximum count.

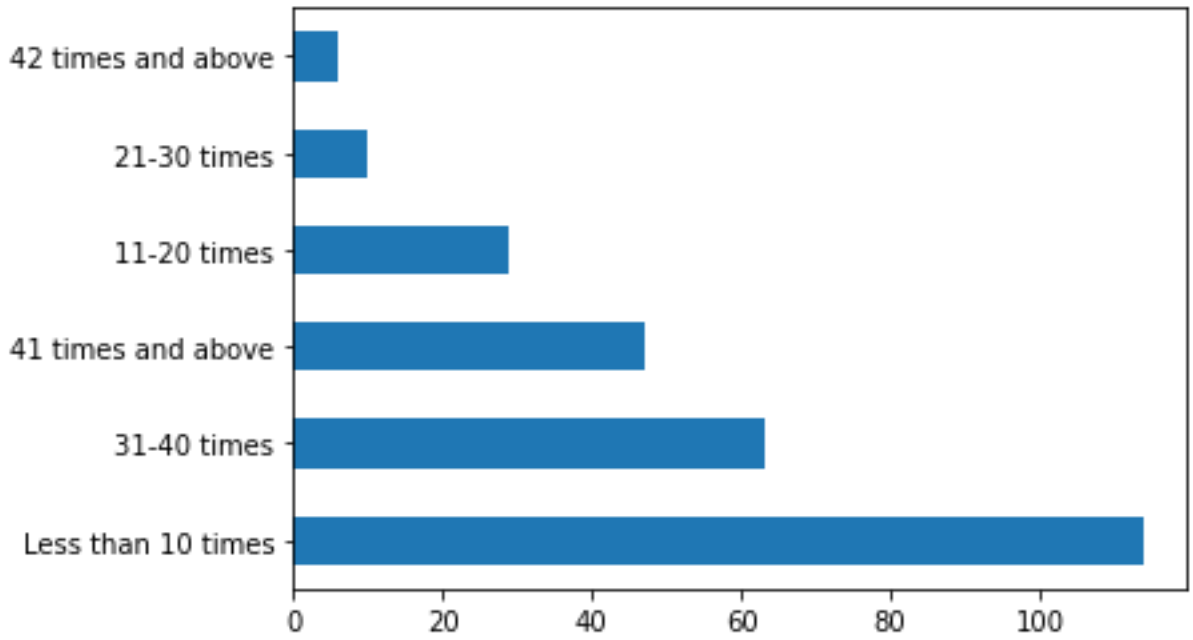
7) Mostly people are choosing google chrome as browser to access the website

8) People are mostly use search engine to arrive at their favourite online store for the first time.

9) After first visit people are using application or search engine to access website.

---

df['How many times in the past 1 year'].value_counts().plot.barh()



Most customers fall under the category of less than 10 orders per year, around the same number fall under the category where no of orders is more than 30

The number of customers who made more than 30 would be our area of interest are they are loyal customers / likely to purchase more

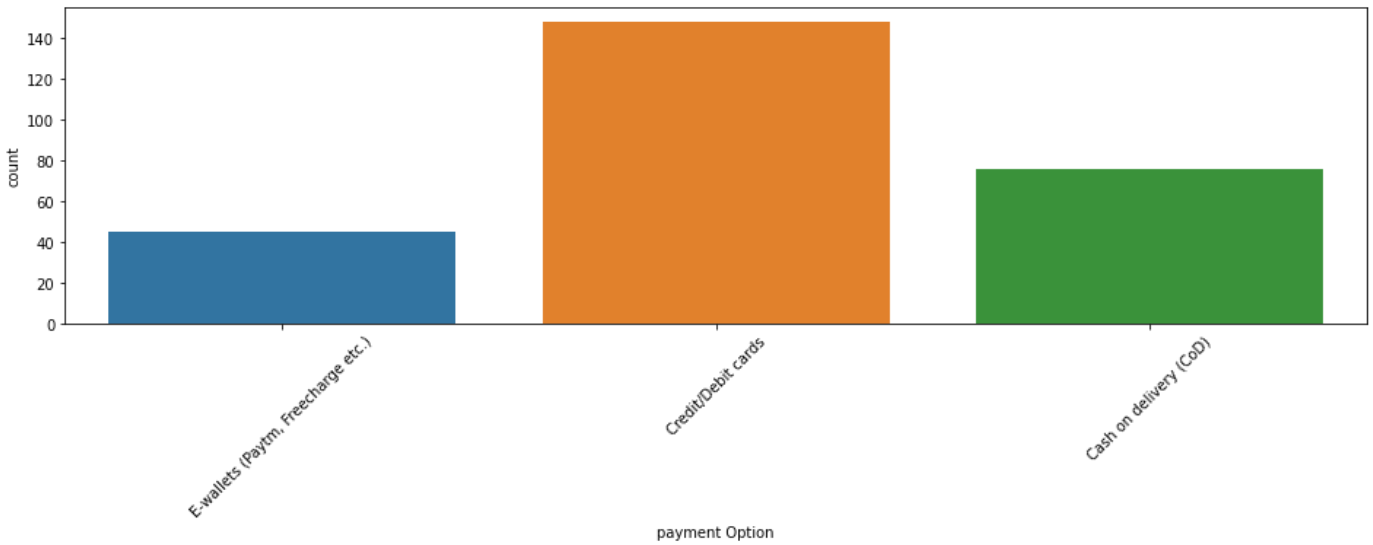
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['payment Option'].value_counts())

sns.countplot(df['payment Option'])



```
Credit/Debit cards                    148
Cash on delivery (CoD)                 76
E-wallets (Paytm, Freecharge etc.)     45
Name: payment Option, dtype: int64
```

Mostly people are using credit and debit cards as their preferred payment option.

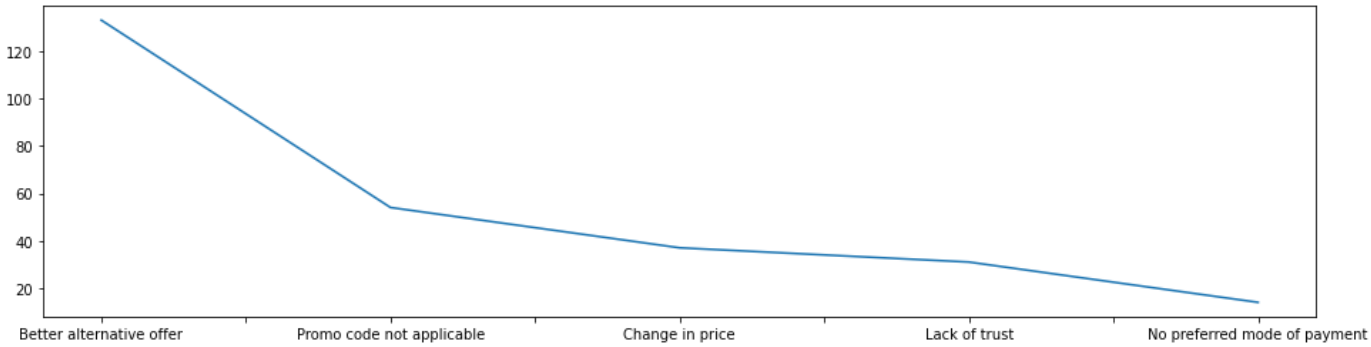
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Why did you abandon'].value_counts())

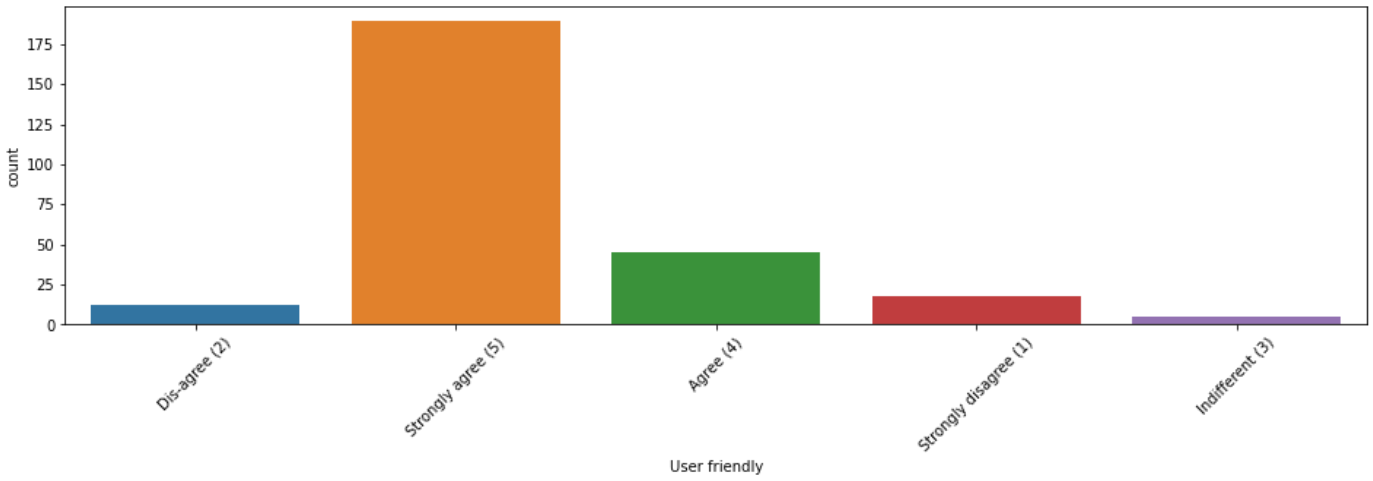
df['Why did you abandon'].value_counts().plot.line()




```
Better alternative offer        133
Promo code not applicable        54
Change in price                  37
Lack of trust                    31
No preferred mode of payment     14
Name: Why did you abandon, dtype: int64
```

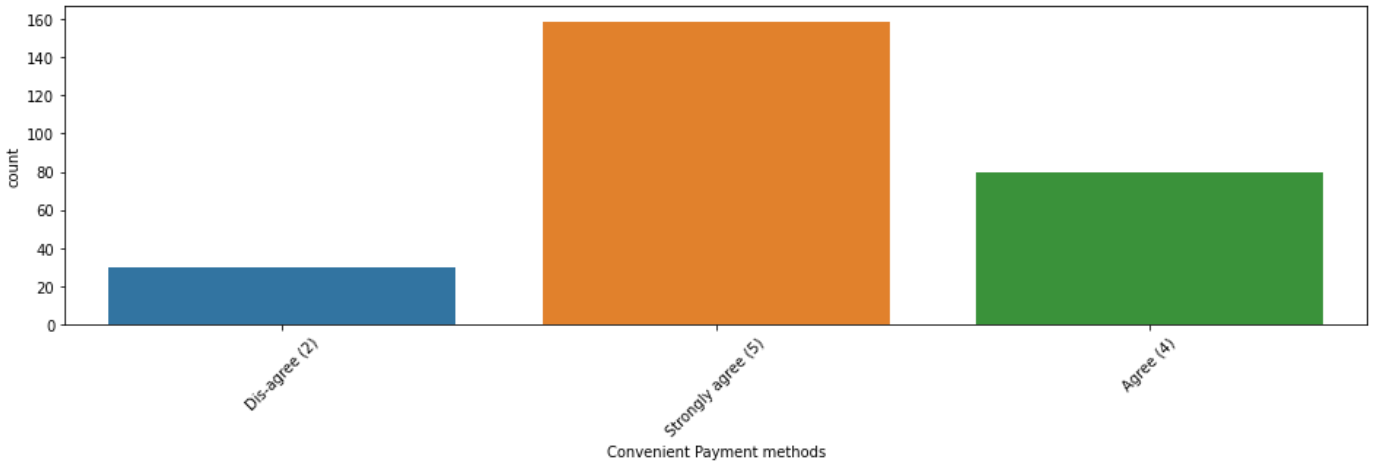
NOW WE ARE ANALYSING THE FEED-BACK FROM CUSTOMERS

```
plt.figure(figsize=(16,4))
plt.xticks(rotation=45)
print(df['User friendly'].value_counts())
sns.countplot(df['User friendly'])
```




```
Strongly agree (5)       189
Agree (4)                 45
Strongly disagree (1)     18
Dis-agree (2)             12
Indifferent (3)            5
Name: User friendly, dtype: int64
```

```
plt.figure(figsize=(16,4))
plt.xticks(rotation=45)
print(df['Convenient Payment methods'].value_counts())
sns.countplot(df['Convenient Payment methods'])
```




```
Strongly agree (5)    159
Agree (4)              80
Dis-agree (2)          30
Name: Convenient Payment methods, dtype: int64
```

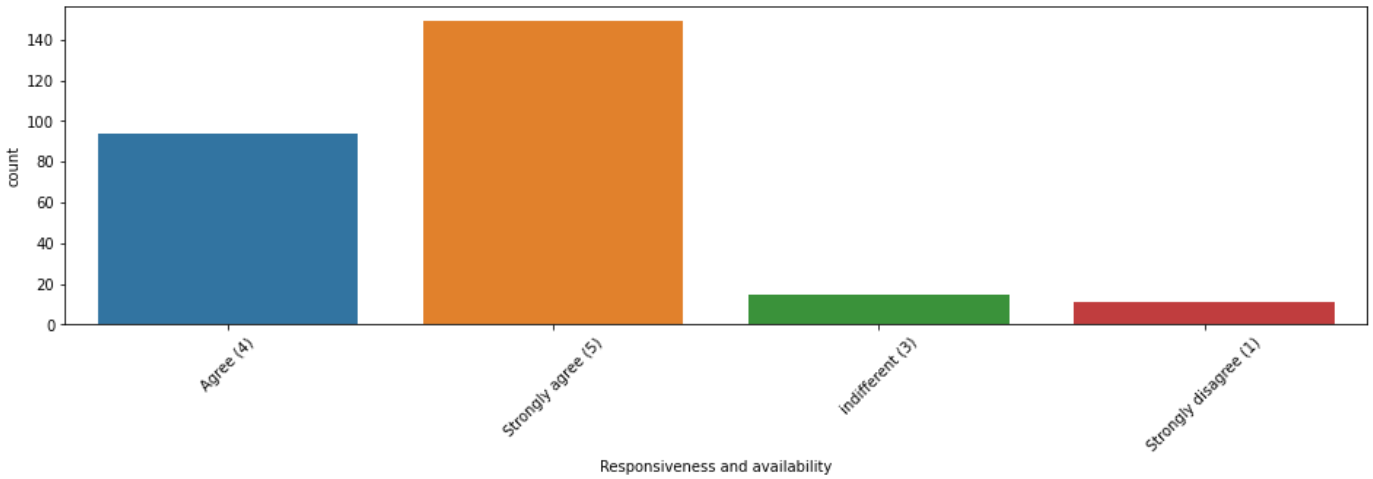
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Responsiveness and availability'].value_counts())

sns.countplot(df['Responsiveness and availability'])




```
Strongly agree (5)       149
Agree (4)                 94
indifferent (3)           15
Strongly disagree (1)     11
Name: Responsiveness and availability, dtype: int64
```

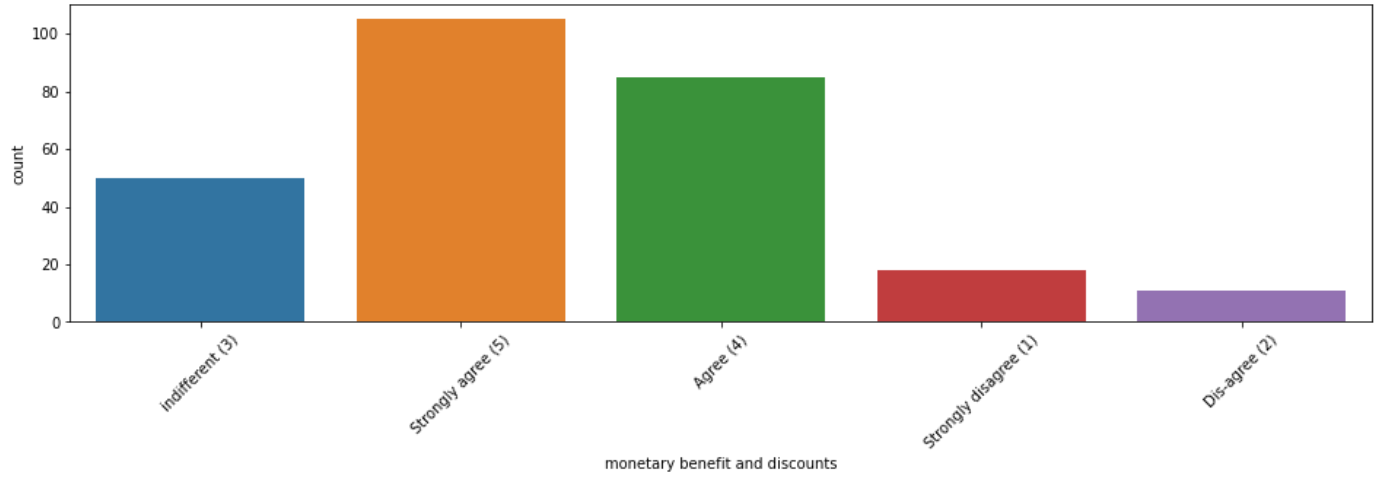
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['monetary benefit and discounts'].value_counts())

sns.countplot(df['monetary benefit and discounts'])




```
Strongly agree (5)       105
Agree (4)                 85
indifferent (3)           50
Strongly disagree (1)     18
Dis-agree (2)             11
Name: monetary benefit and discounts, dtype: int64
```

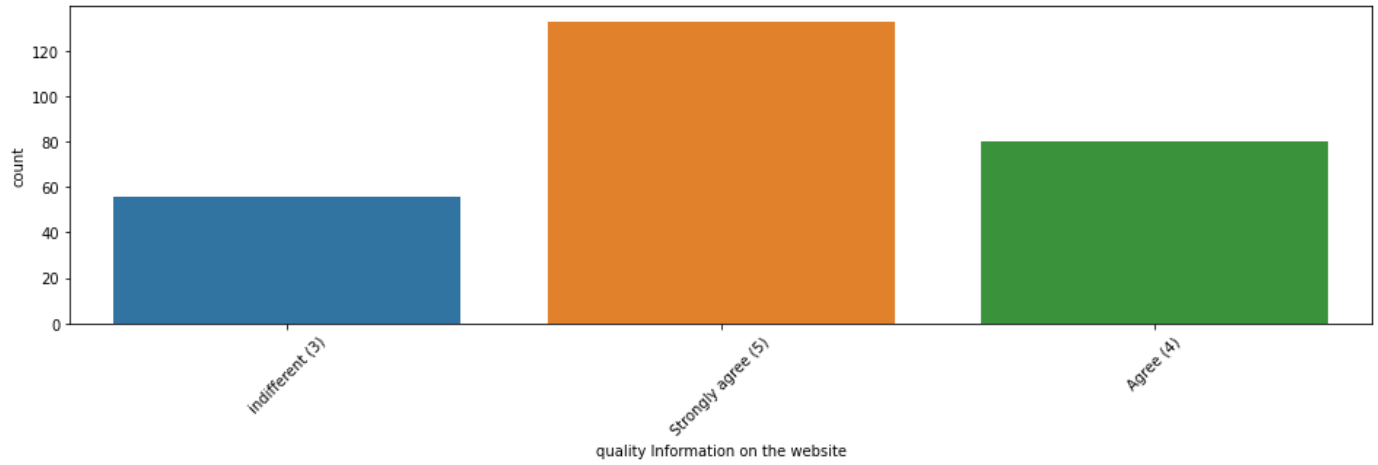
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['quality Information on the website'].value_counts())

sns.countplot(df['quality Information on the website'])




```
Strongly agree (5)    133
Agree (4)              80
indifferent (3)        56
Name: quality Information on the website, dtype: int64
```

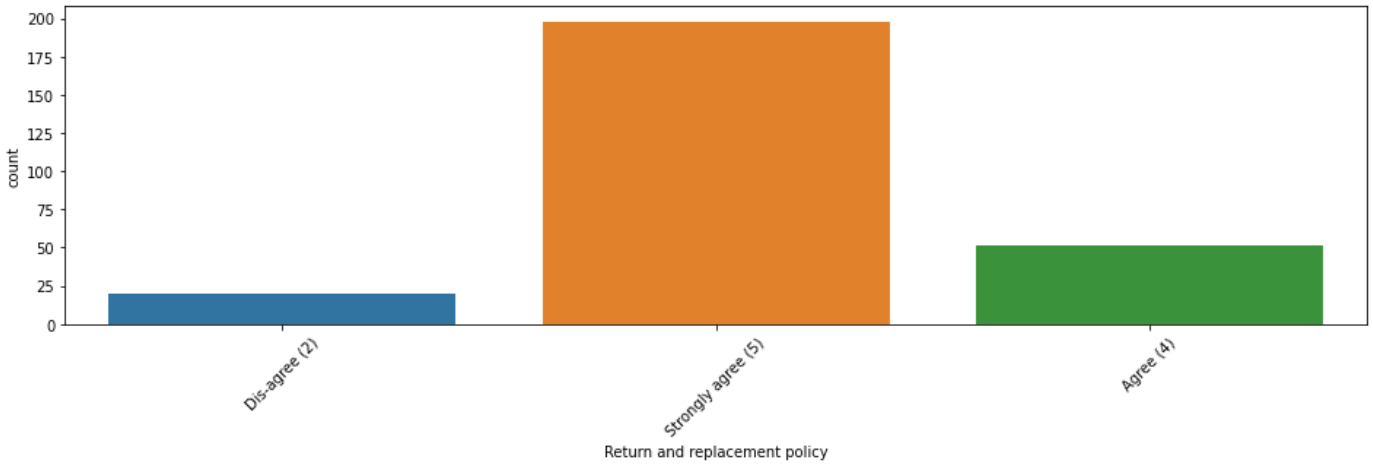
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Return and replacement policy'].value_counts())

sns.countplot(df['Return and replacement policy'])




```
Strongly agree (5)    198
Agree (4)              51
Dis-agree (2)          20
Name: Return and replacement policy, dtype: int64
```

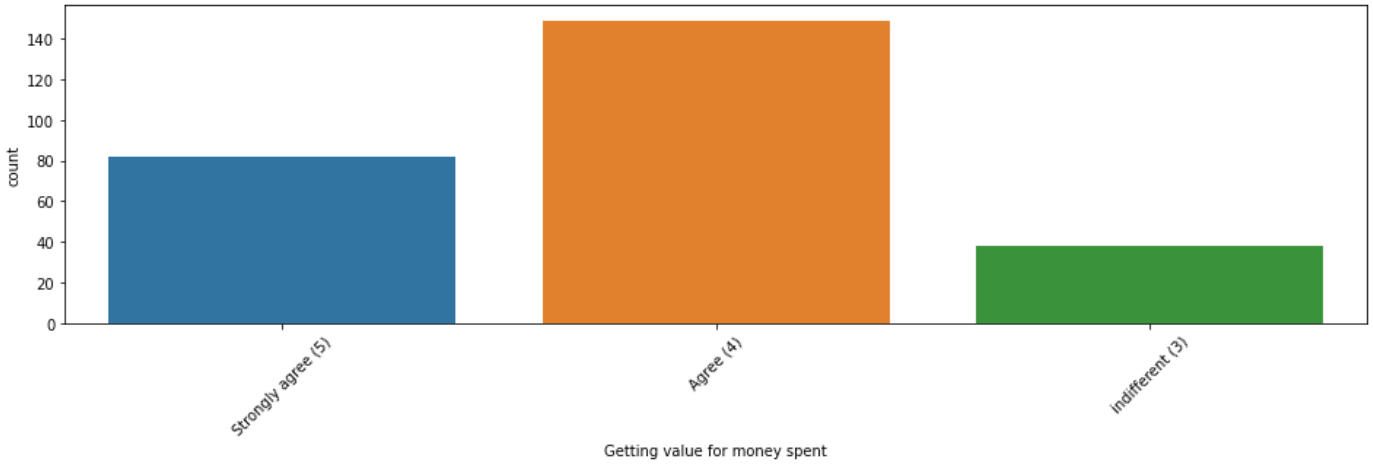
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Getting value for money spent'].value_counts())

sns.countplot(df['Getting value for money spent'])




```
Agree (4)             149
Strongly agree (5)     82
indifferent (3)        38
Name: Getting value for money spent, dtype: int64
```

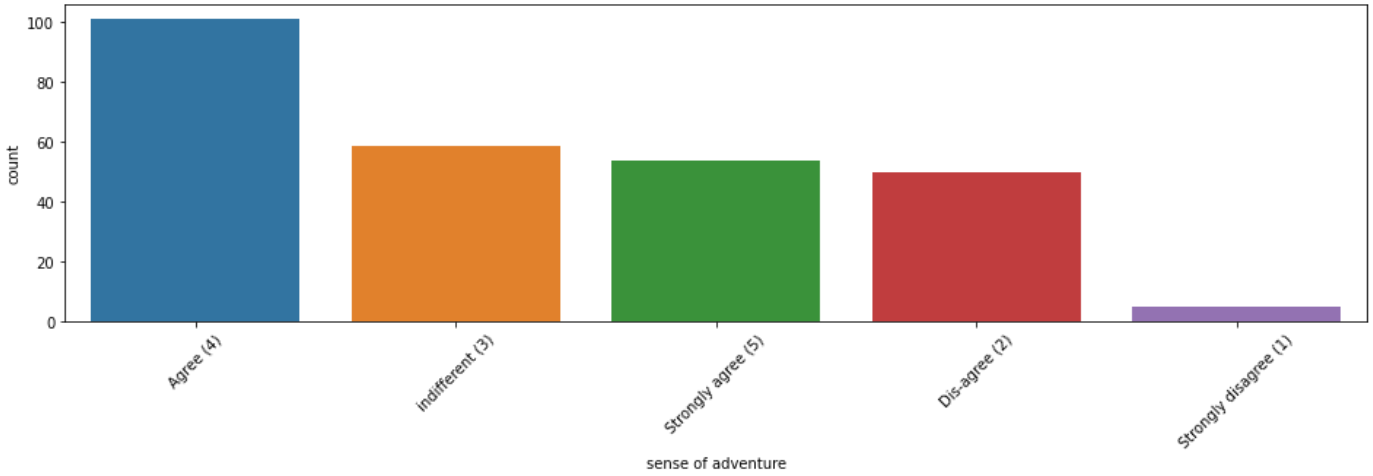
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['sense of adventure'].value_counts())

sns.countplot(df['sense of adventure'])




```
Agree (4)                 101
indifferent (3)            59
Strongly agree (5)         54
Dis-agree (2)              50
Strongly disagree (1)       5
Name: sense of adventure, dtype: int64
```

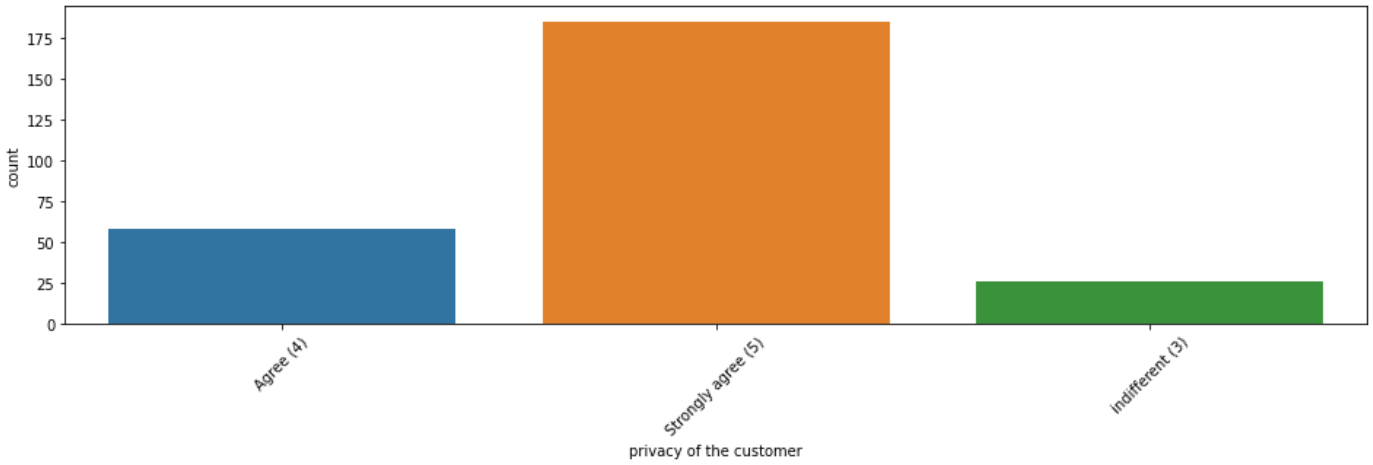
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['privacy of the customer'].value_counts())

sns.countplot(df['privacy of the customer'])




```
Strongly agree (5)    185
Agree (4)              58
indifferent (3)        26
Name: privacy of the customer, dtype: int64
```

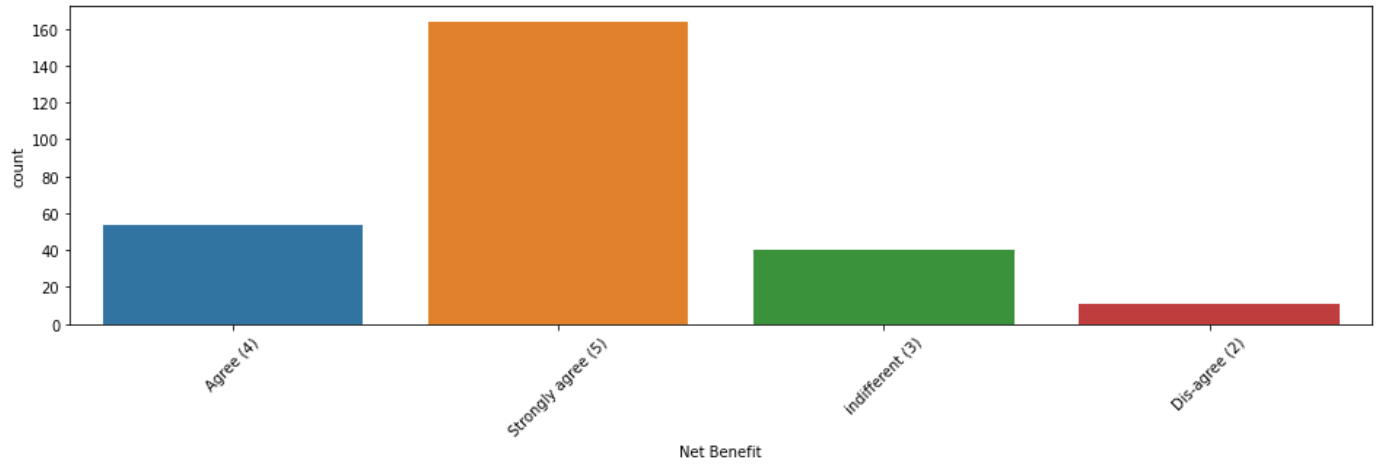
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Net Benefit'].value_counts())

sns.countplot(df['Net Benefit'])




```
Strongly agree (5)    164
Agree (4)              54
indifferent (3)        40
Dis-agree (2)          11
```

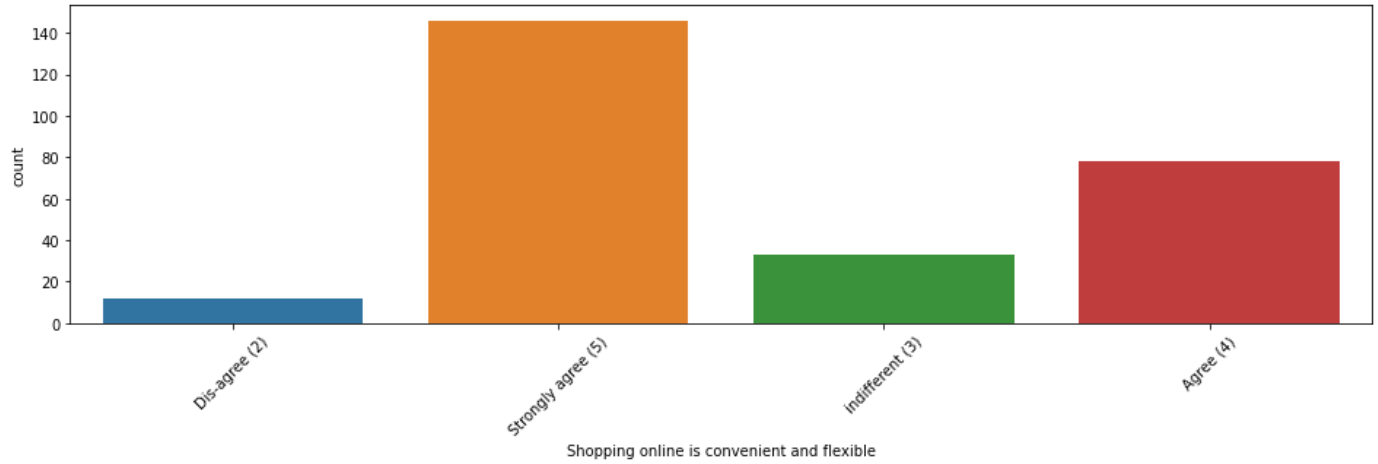
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Shopping online is convenient and flexible'].value_counts())

sns.countplot(df['Shopping online is convenient and flexible'])




```
Strongly agree (5)    146
Agree (4)              78
indifferent (3)        33
Dis-agree (2)          12
Name: Shopping online is convenient and flexible, dtype: int64
```

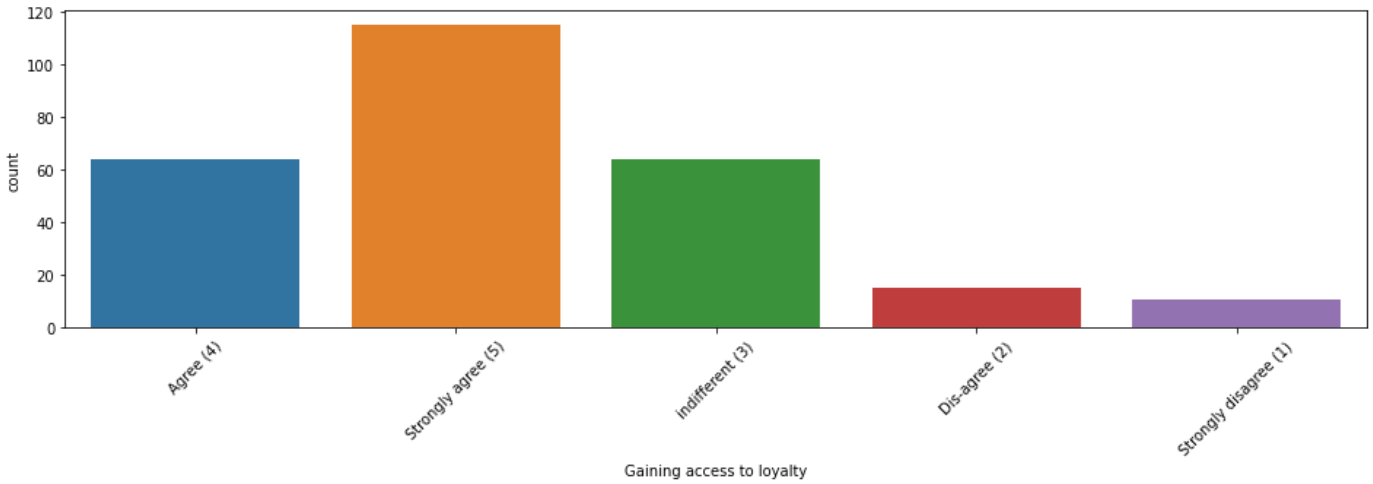
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Gaining access to loyalty'].value_counts())

sns.countplot(df['Gaining access to loyalty'])




```
Strongly agree (5)       115
indifferent (3)           64
Agree (4)                 64
Dis-agree (2)             15
Strongly disagree (1)     11
Name: Gaining access to loyalty, dtype: int64
```

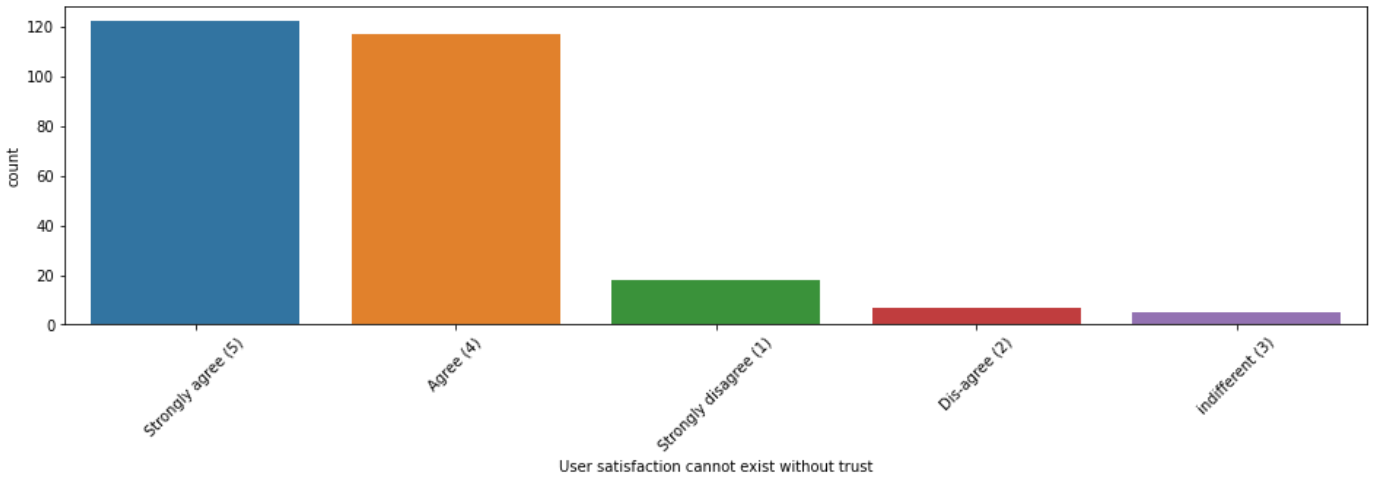
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['User satisfaction cannot exist without trust'].value_counts())

sns.countplot(df['User satisfaction cannot exist without trust'])




```
Strongly agree (5)       122
Agree (4)                117
Strongly disagree (1)     18
Dis-agree (2)              7
indifferent (3)            5
Name: User satisfaction cannot exist without trust, dtype: int64
```

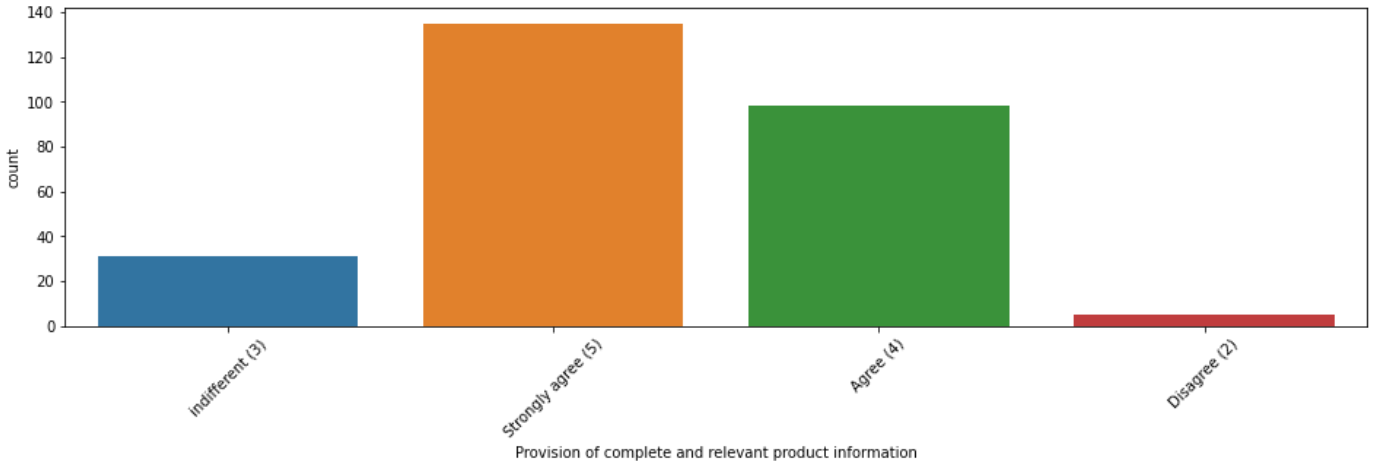
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['Provision of complete and relevant product information'].value_counts())

sns.countplot(df['Provision of complete and relevant product information'])




```
Strongly agree (5)    135
Agree (4)              98
indifferent (3)        31
Disagree (2)            5
Name: Provision of complete and relevant product information, dtype: int64
```

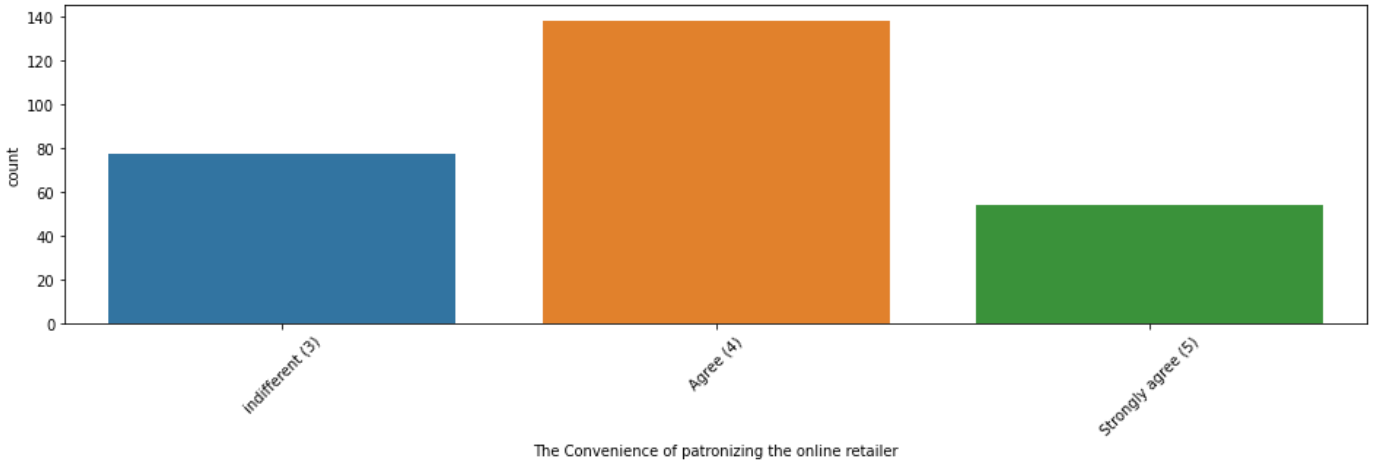
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['The Convenience of patronizing the online retailer'].value_counts())

sns.countplot(df['The Convenience of patronizing the online retailer'])




```
Agree (4)              138
indifferent (3)         77
Strongly agree (5)      54
Name: The Convenience of patronizing the online retailer, dtype: int64
```

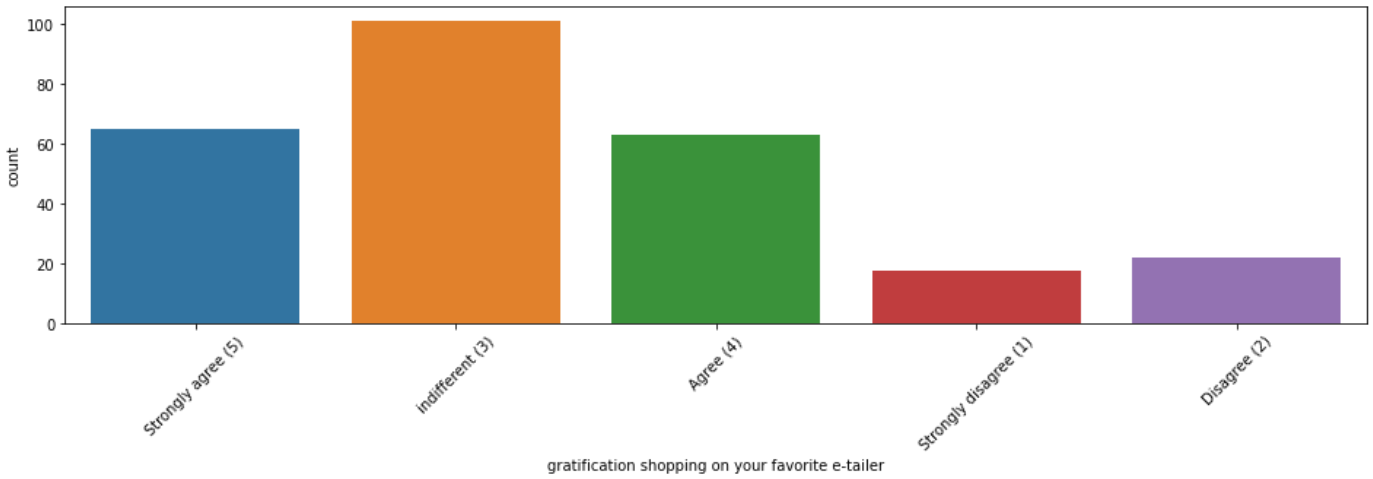
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['gratification shopping on your favorite e-tailer'].value_counts())

sns.countplot(df['gratification shopping on your favorite e-tailer'])




```
indifferent (3)          101
Strongly agree (5)        65
Agree (4)                 63
Disagree (2)              22
Strongly disagree (1)     18
Name: gratification shopping on your favorite e-tailer, dtype: int64
```

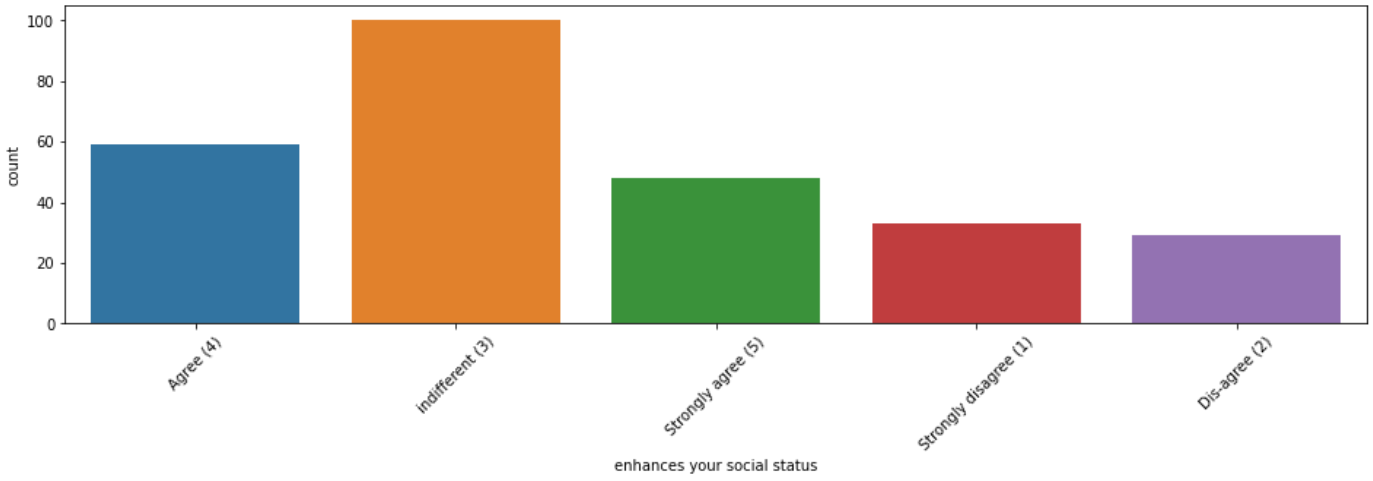
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

print(df['enhances your social status'].value_counts())

sns.countplot(df['enhances your social status'])




```
indifferent (3)          100
Agree (4)                 59
Strongly agree (5)        48
Strongly disagree (1)     33
Dis-agree (2)             29
Name: enhances your social status, dtype: int64
```

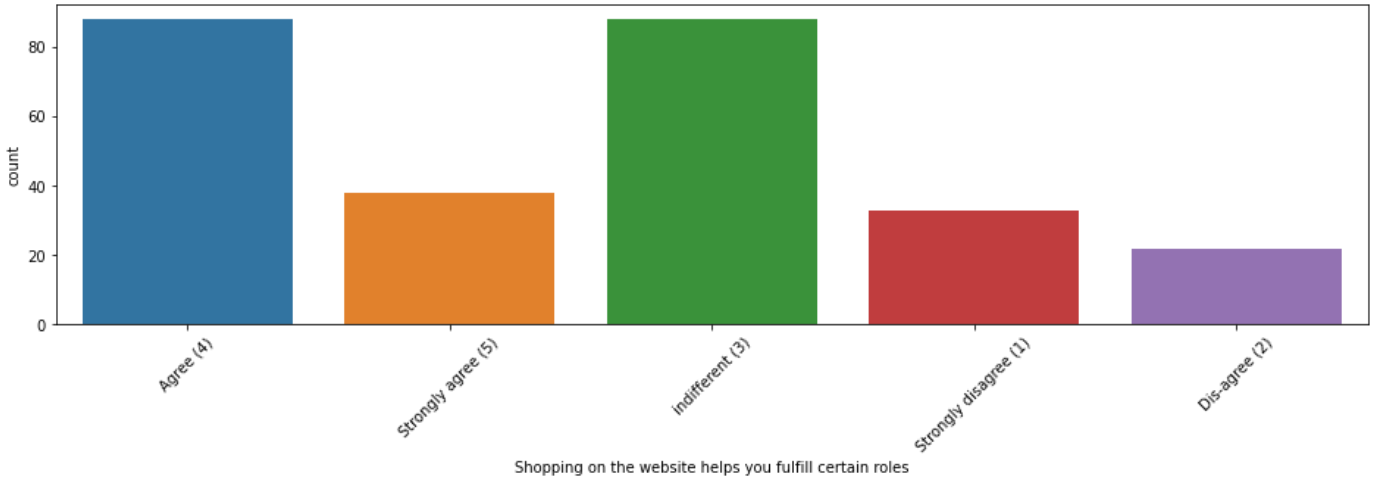
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=45)

```
print(df['Shopping on the website helps you fulfill certain roles'].value_counts())

sns.countplot(df['Shopping on the website helps you fulfill certain roles'])
```




```
indifferent (3)           88
Agree (4)                 88
Strongly agree (5)        38
Strongly disagree (1)     33
Dis-agree (2)             22
Name: Shopping on the website helps you fulfill certain roles, dtype: int64
```

CONCLUSION FROM CUSTOMER'S FEED-BACK

People strongly agree that

1 Website has user friendly interface.

2 Payment method Should be convenient.

3 Responsiveness, availability of several communication channels (email, online rep , twitter, phone etc) is necessary.

4 Online shopping gives monetary benefit and discounts to the customers.

5 Displaying quality Information on the website improves satisfaction of customers.

6 Return and replacement policy of the e-tailer is important for purchase decision.

7 Doing online shopping give them value of money spend.

8 Shopping on the website give them sense of adventure.

9 Being able to guarantee the privacy of the customer

10 User derive satisfaction while shopping on a good quality website or application.

11 Shopping online is convenient and flexible.

12 Gaining access to loyalty programs is a benefit of shopping online.

13 User satisfaction exist when they have trust one website.

14 Their should be provision of complete and relevant product information website.

15 They feel gratification shopping on your favorite e-tailer.

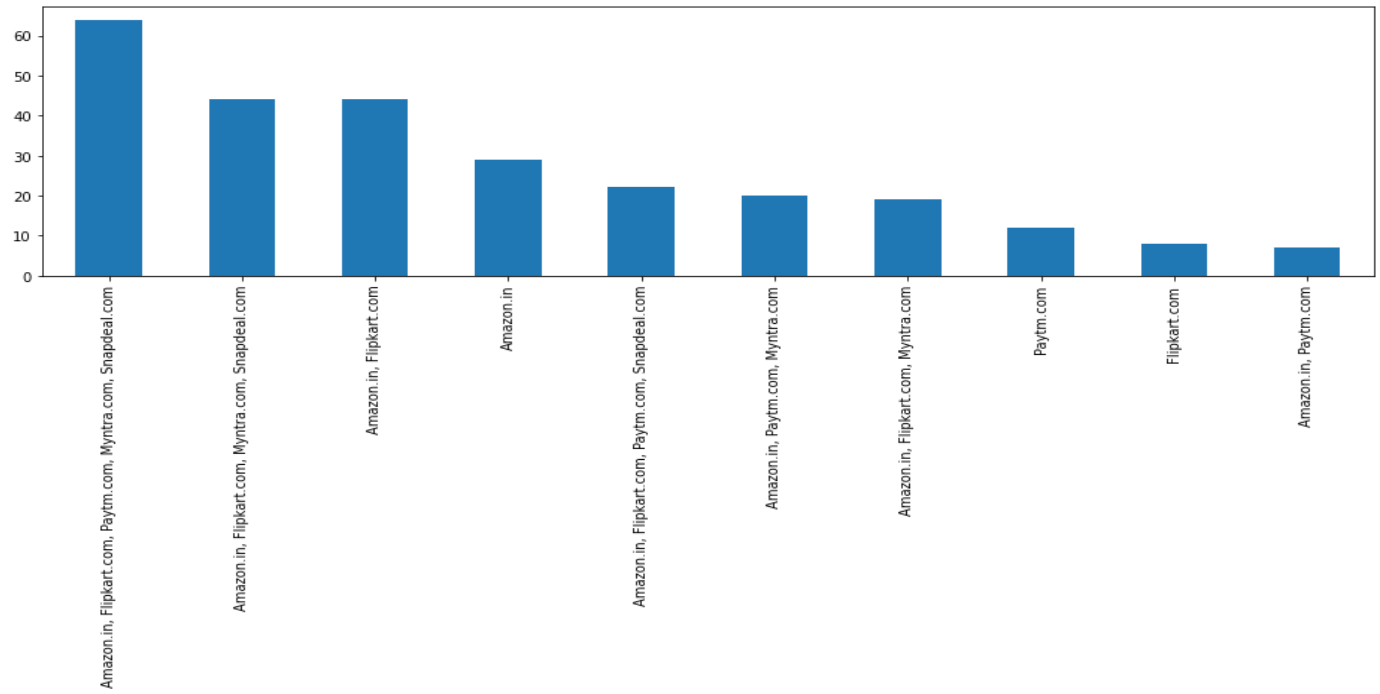
16 The Convenience of patronizing the online retailer.

Users have indifferent opinion that shopping on their preferred e-tailer enhances their social status.

Users have mixed reaction on wheither shopping on website helps them to fulfil certain roles some agree it some are indifferent .

DIFFERENT WEBSITES OR ONLINE SHOPPING PLATFORM USED BY CUSTOMERS

```
plt.figure(figsize=(16,4))
plt.xticks(rotation=50)
print(df['Easy to use website or application'].value_counts())
df['Easy to use website or application'].value_counts().plot(kind="bar")
plt.show()
```




```
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com    64
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com               44
Amazon.in, Flipkart.com                                         44
Amazon.in                                                       29
Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com                22
Amazon.in, Paytm.com, Myntra.com                                20
Amazon.in, Flipkart.com, Myntra.com                             19
Paytm.com                                                       12
Flipkart.com                                                     8
Amazon.in, Paytm.com                                             7
Name: Easy to use website or application, dtype: int64
```

As per above graph, Majority of the customers are using Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com as It is Easy to use Websites and as our earlier analysis on device using category shows that Most of the people are using Smartphone and all this online platform has their own mobile application which has lots of features even and Easy to use

Amazon is the choice of among 90% Users, Showing very clear in above Graph

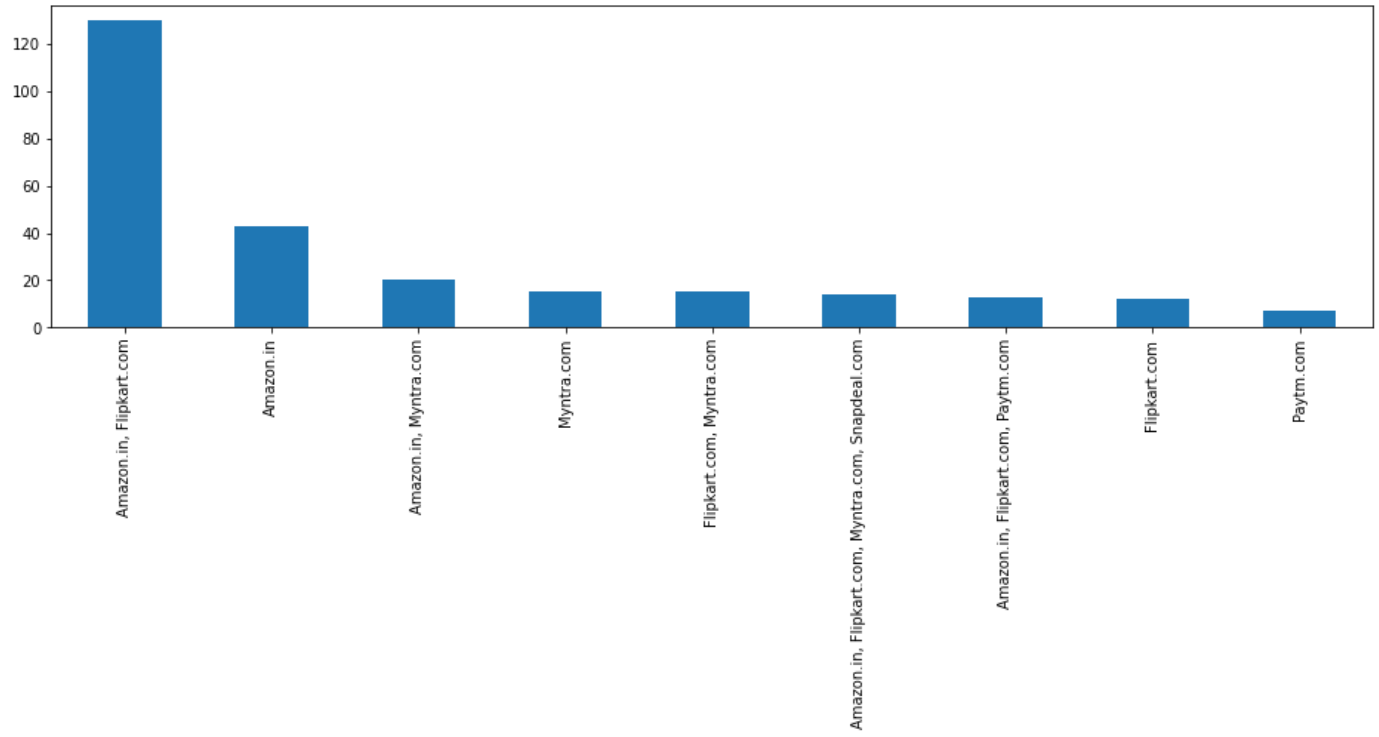
---

```
plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Wild variety of product on offer'].value_counts())

df['Wild variety of product on offer'].value_counts().plot(kind="bar")
```




```
Amazon.in, Flipkart.com                                  130
Amazon.in                                                 43
Amazon.in, Myntra.com                                     20
Myntra.com                                                15
Flipkart.com, Myntra.com                                  15
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com         14
Amazon.in, Flipkart.com, Paytm.com                        13
Flipkart.com                                              12
Paytm.com                                                  7
Name: Wild variety of product on offer, dtype: int64
```

Website like Amazon and Flipkart have visual appealing webpage layout and they offer wild variety of products.

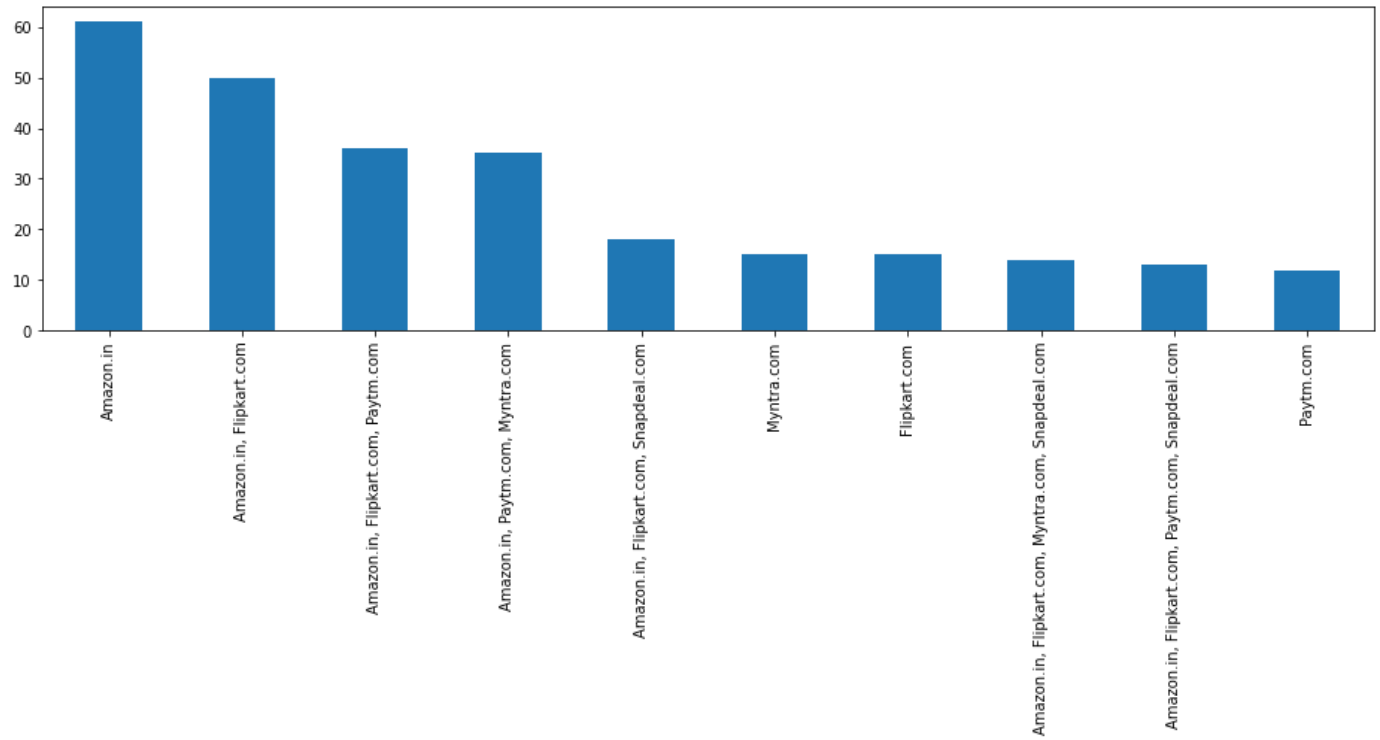
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Reliability of the website or application'].value_counts())

df['Reliability of the website or application'].value_counts().plot(kind="bar")




```
Amazon.in                                          61
Amazon.in, Flipkart.com                            50
Amazon.in, Flipkart.com, Paytm.com                 36
Amazon.in, Paytm.com, Myntra.com                   35
Amazon.in, Flipkart.com, Snapdeal.com              18
Myntra.com                                         15
Flipkart.com                                       15
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com  14
Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com   13
Paytm.com                                          12
Name: Reliability of the website or application, dtype: int64
```

For Reliability of the website or application

61 out of 269 customers choose amazon and

50 out of 269 customers choose amazon and flipkart

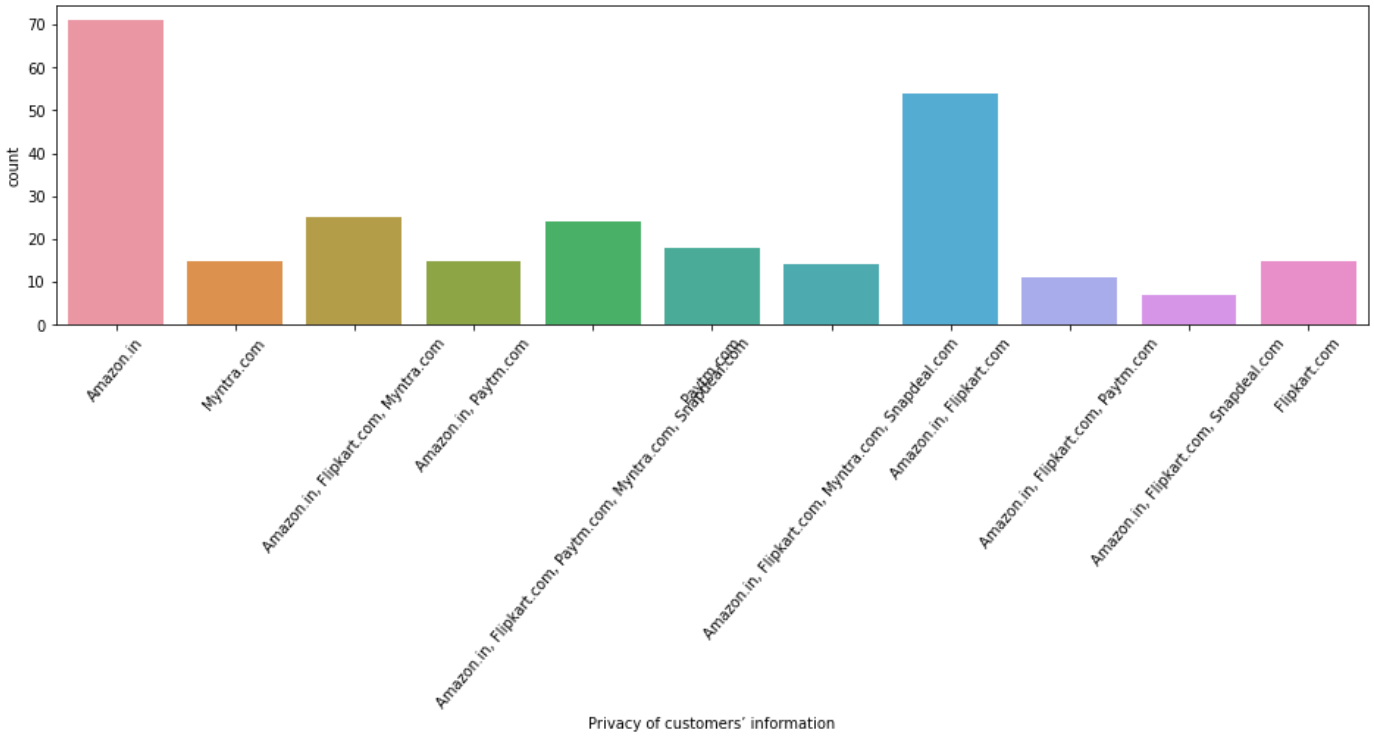
---

plt.figure(figsize=(16,4))

```
plt.xticks(rotation=50)

print(df['Privacy of customers’ information'].value_counts())

sns.countplot(df['Privacy of customers’ information'])
```



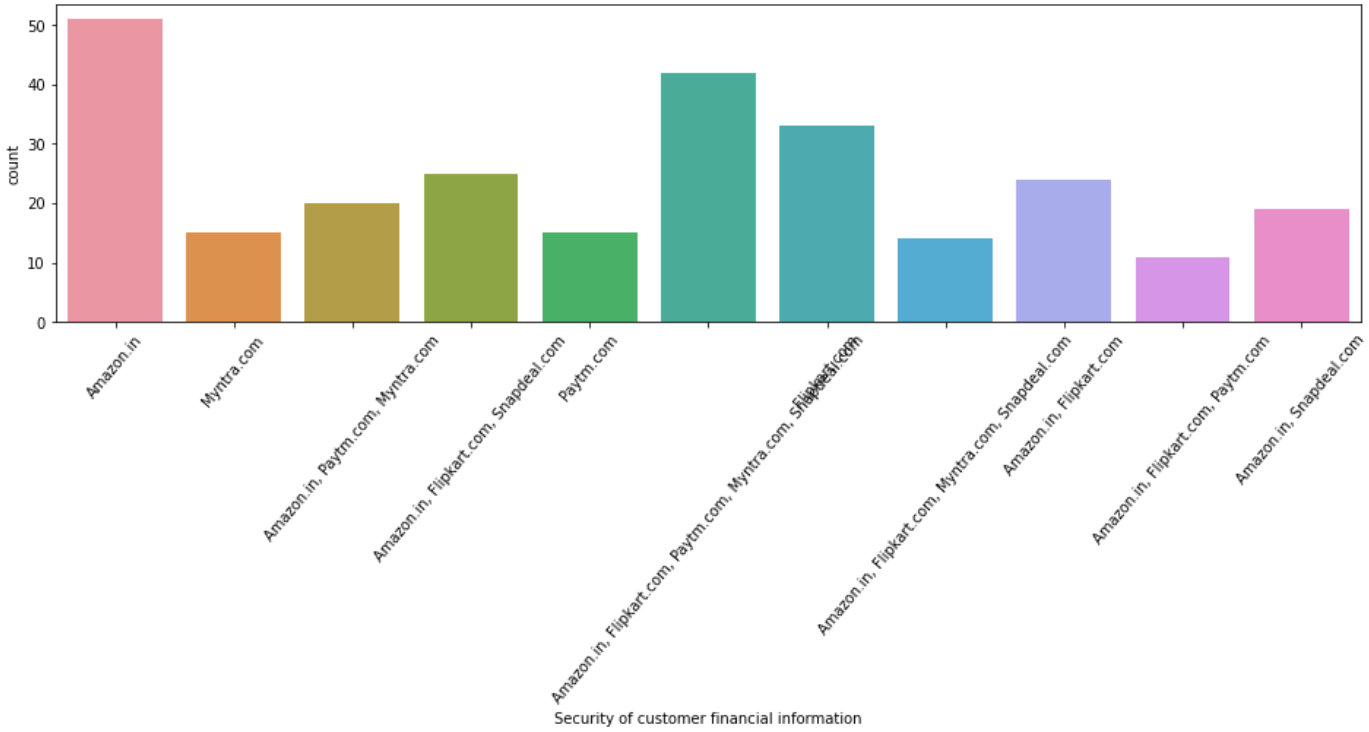

```
Amazon.in                                                          71
Amazon.in, Flipkart.com                                            54
Amazon.in, Flipkart.com, Myntra.com                                25
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com       24
Paytm.com                                                          18
Myntra.com                                                         15
Amazon.in, Paytm.com                                               15
Flipkart.com                                                       15
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com                  14
Amazon.in, Flipkart.com, Paytm.com                                 11
Amazon.in, Flipkart.com, Snapdeal.com                               7
Name: Privacy of customers’ information, dtype: int64
```

```
plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Security of customer financial information'].value_counts())

sns.countplot(df['Security of customer financial information'])
```



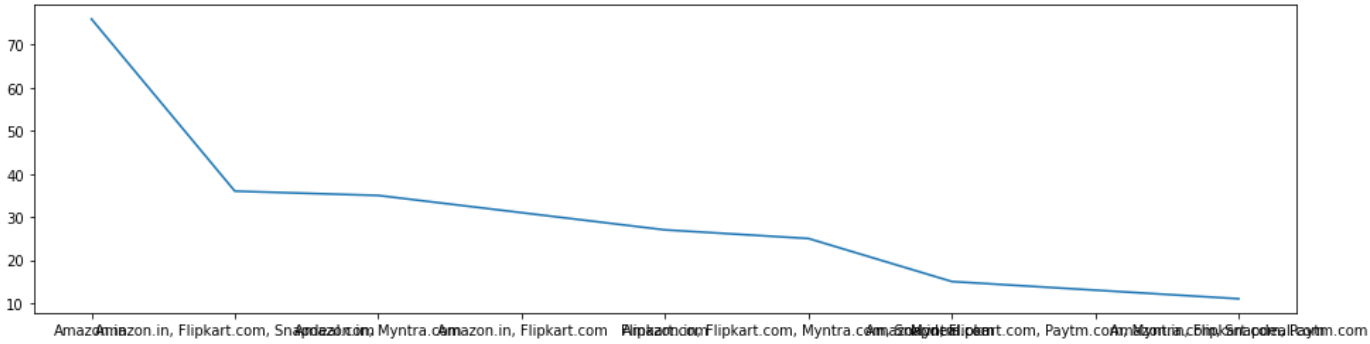

```
Amazon.in                                                          51
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com       42
Flipkart.com                                                       33
Amazon.in, Flipkart.com, Snapdeal.com                              25
Amazon.in, Flipkart.com                                            24
Amazon.in, Paytm.com, Myntra.com                                   20
Amazon.in, Snapdeal.com                                            19
Myntra.com                                                         15
Paytm.com                                                          15
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com                  14
Amazon.in, Flipkart.com, Paytm.com                                 11
Name: Security of customer financial information, dtype: int64
```

plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Perceived Trustworthiness'].value_counts())

df['Perceived Trustworthiness'].value_counts().plot(kind="line")



```
Amazon.in                                          76
Amazon.in, Flipkart.com, Snapdeal.com              36
Amazon.in, Myntra.com                              35
Amazon.in, Flipkart.com                            31
Flipkart.com                                       27
```

```
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com                25
Myntra.com                                                       15
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com     13
Amazon.in, Flipkart.com, Paytm.com                               11
Name: Perceived Trustworthiness, dtype: int64
```

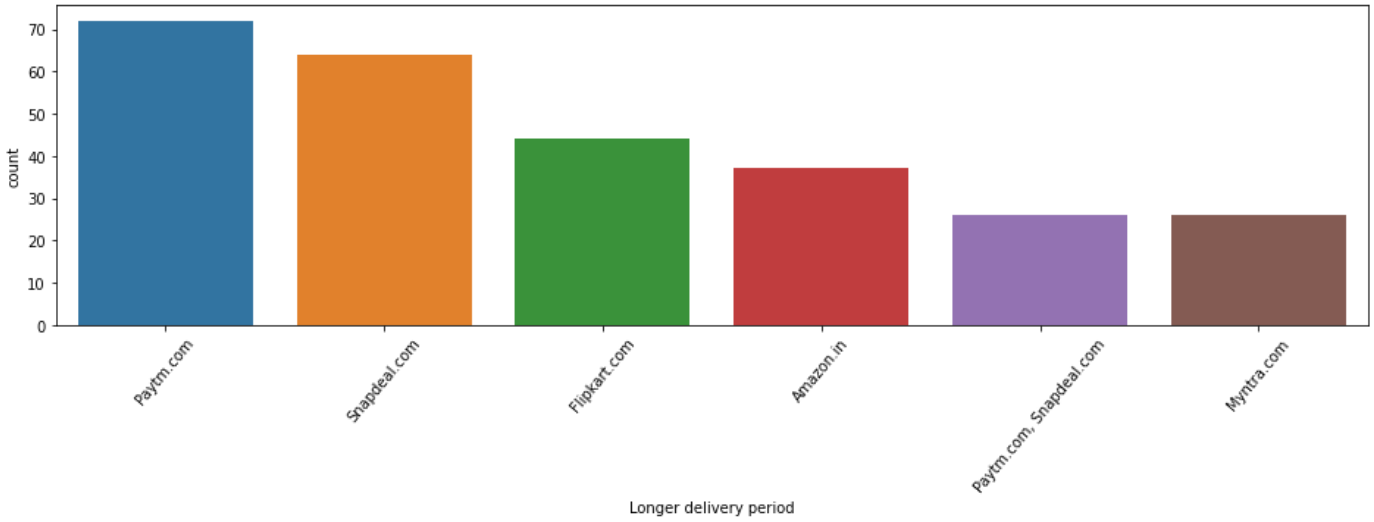
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Longer delivery period'].value_counts())

sns.countplot(df['Longer delivery period'])




```
Paytm.com                  72
Snapdeal.com               64
Flipkart.com               44
Amazon.in                  37
Paytm.com, Snapdeal.com    26
Myntra.com                 26
Name: Longer delivery period, dtype: int64
```

In Longer delivery period paytm.com topped the list

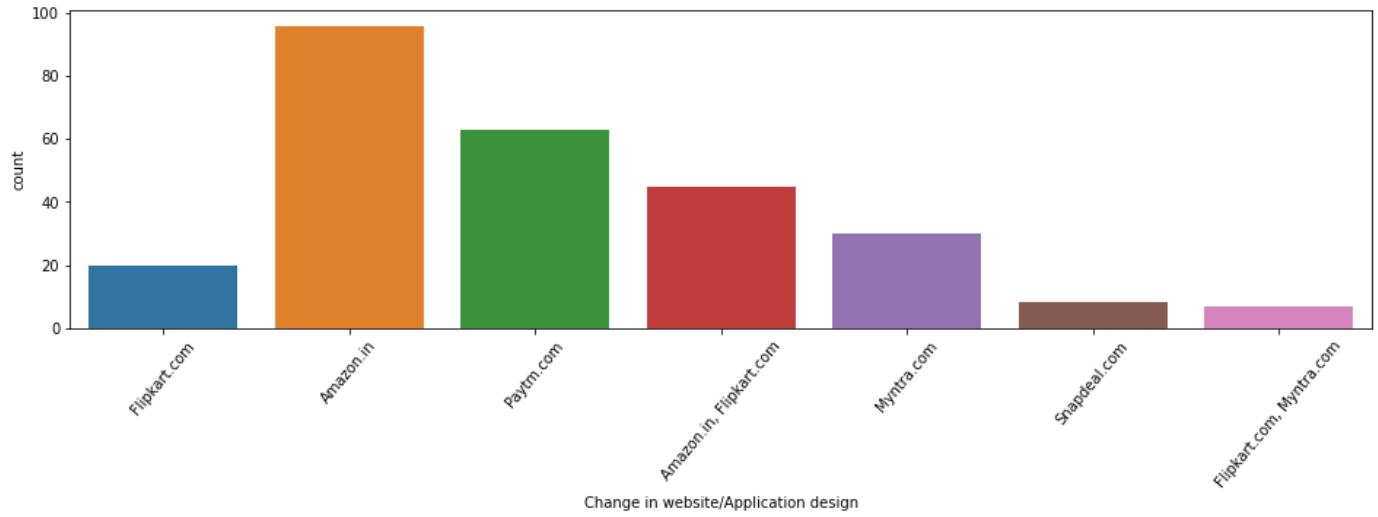
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Change in website/Application design'].value_counts())

sns.countplot(df['Change in website/Application design'])




```
Amazon.in                    96
Paytm.com                    63
Amazon.in, Flipkart.com      45
Myntra.com                   30
Flipkart.com                 20
Snapdeal.com                  8
Flipkart.com, Myntra.com      7
Name: Change in website/Application design, dtype: int64
```

In Change in website/Application design amazon.in topped the list.

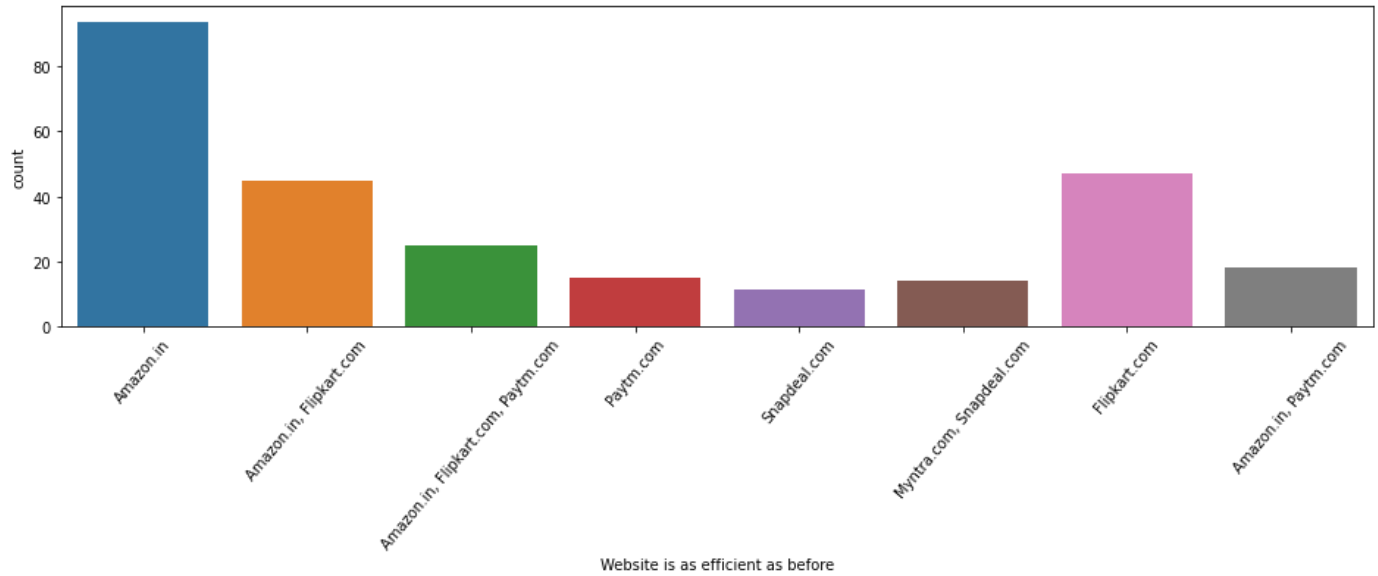
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Website is as efficient as before'].value_counts())

sns.countplot(df['Website is as efficient as before'])




```
Amazon.in                              94
Flipkart.com                           47
Amazon.in, Flipkart.com                45
Amazon.in, Flipkart.com, Paytm.com     25
Amazon.in, Paytm.com                   18
Paytm.com                              15
```

```
Myntra.com, Snapdeal.com                14
Snapdeal.com                            11
Name: Website is as efficient as before, dtype: int64
```

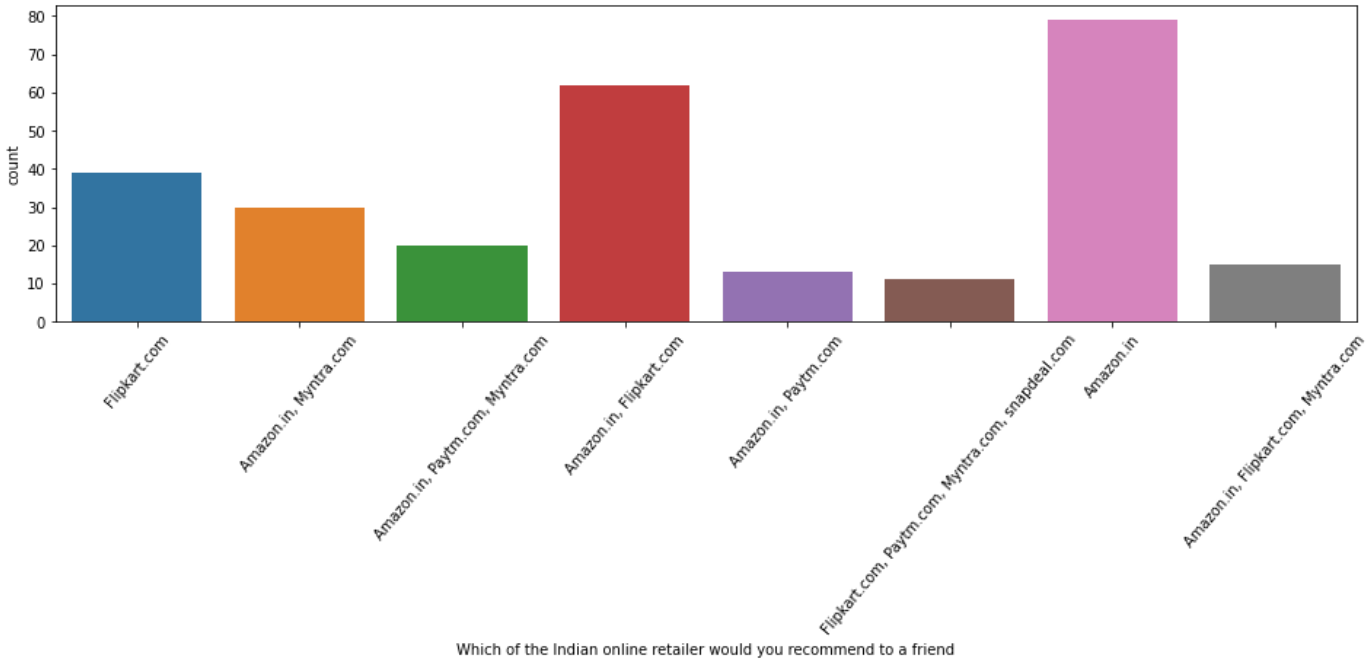
---

plt.figure(figsize=(16,4))

plt.xticks(rotation=50)

print(df['Which of the Indian online retailer would you recommend to a friend'].value_counts())

sns.countplot(df['Which of the Indian online retailer would you recommend to a friend'])



Which of the Indian online retailer would you recommend to a friend?

79 out of 269 choose amazon which tops the list

2nd most is 62 out of 269 choose amazon and flipkart

CONCLUSION

As in the final countplot in which user were asked which online retailer they would recommend to a friend in this Amazon.in topped the list because it is providing all the features that users want. Website is efficient and it is fast loading , it gives complete , relevant description and information of products . It is reliable and quick to complete the purchase. Amazon give speedy delivery to its customers and there are several payment options available on the website. It provides online assistance through multi channels. Providing good deals on products. Its website have visual appealing webpage layout and they offer wide variety of products and its application is easy to use . lastly the main thing why user recommend it is because of its Trustworthiness and its robust Security in protecting customer financial information and their Privacy information .

These all features make it top the list of recommended online retailer .Providing these features it is retaining its customers.

They are some cons like the amazon website topping the list In Frequent disruption when moving from one page to another this con company should see and improve it to give overall best experience to the users.

CHALLENGES:

It was difficult to read each column and comparing with others on the dataset in notebook as it took some time to understand and analyse it a proper way.

KEY FINDINGS AND CONCLUSIONS OF THE STUDY:

I used various visualization methods and understood the EDA in a better way

This customer satisfaction can be used as an impact of eCommerce market development as well as for economic development of the country

Learning Outcomes of the Study in Respect of Data Science:

As per as learning outcomes is concerned, I have learnt the following things:

i) Visualization helps us understand the data graphically.

ii) I also understand the about reading various related features and importance of them in the whole dataset.

Limitations of this Work and Scope for Future Work

Since I have only used a sample dataset, hence sometimes it is difficult to understand the overall impact of this customer feedback at a larger scale.