



Customer Retention Analysis

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

**Presented by:
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ACKNOWLEDGMENT

I would like to thanks to **Flip Robo Technologies** to give me a wonderful opportunity. This project is given by my **SME SWATI MAHASETH**. 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:

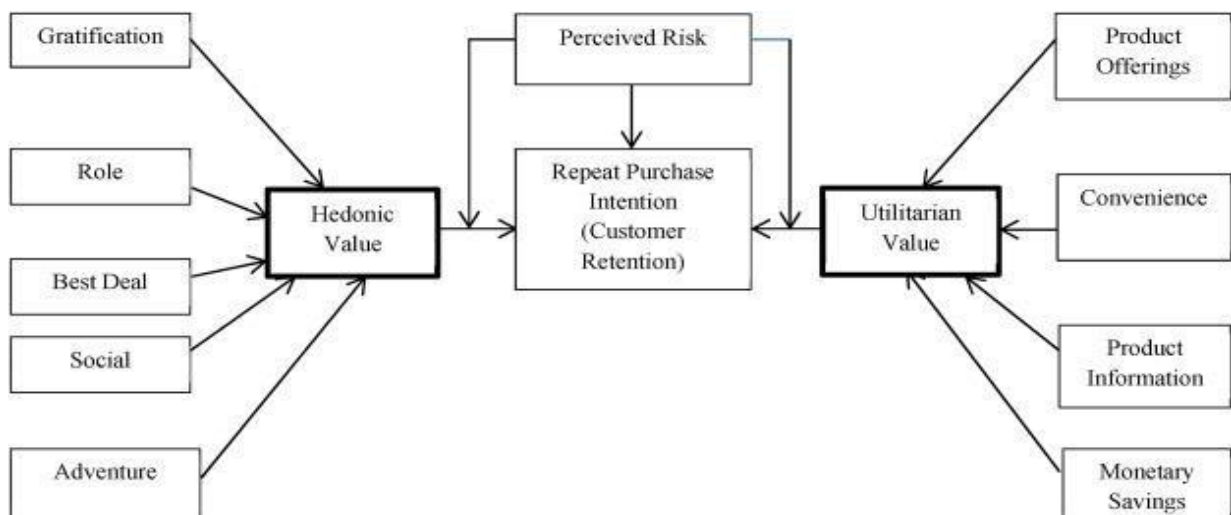
- i) Service quality,
- ii) System quality,
- iii) Information quality,
- iv) Trust
- v) Net benefit

• 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):

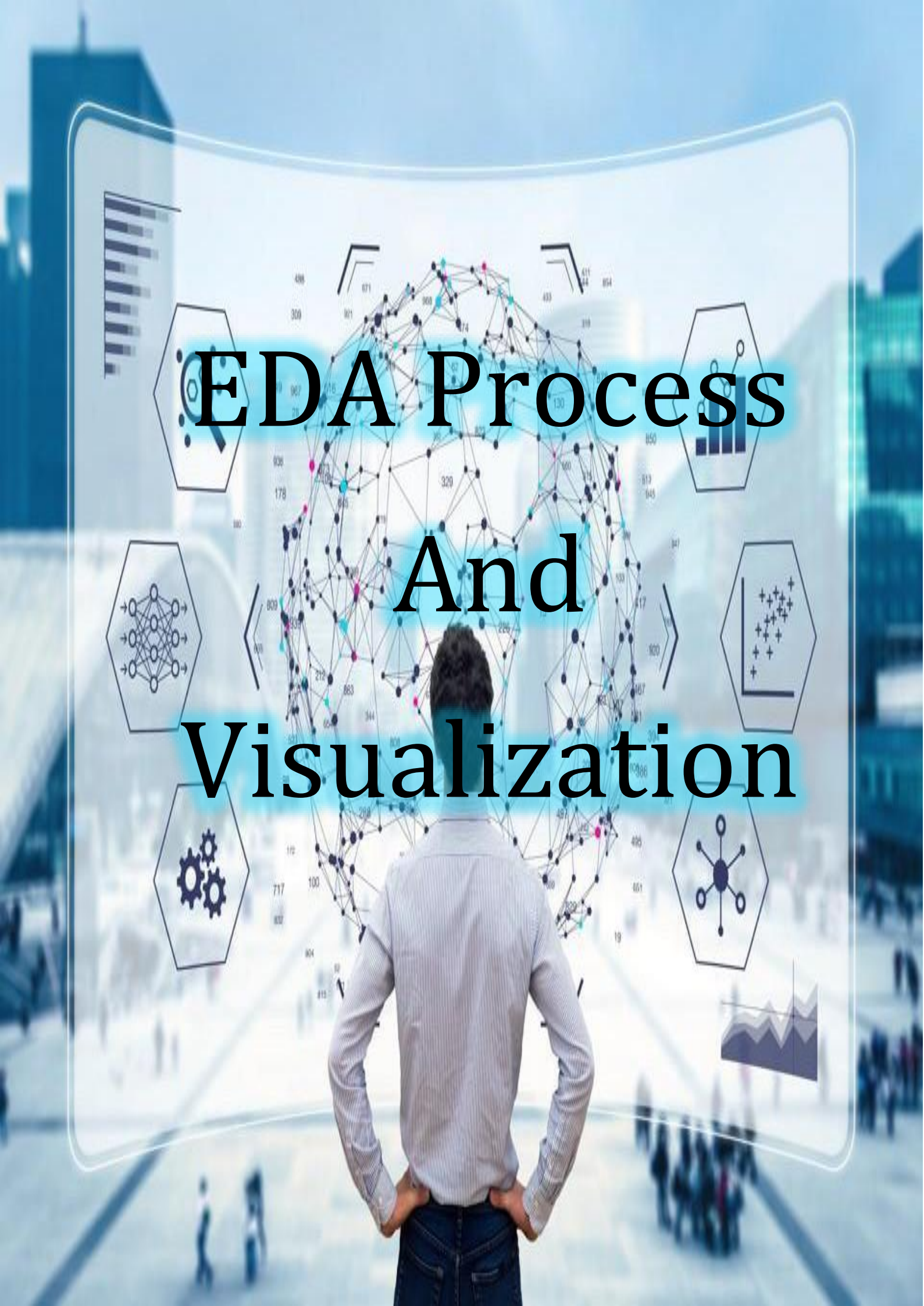
For this project I have done EDA to understand the outcome of this dataset. And, I have used various **visualization using seaborn & matplotlib** package to understand the customer satisfaction in a suitable manner.

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

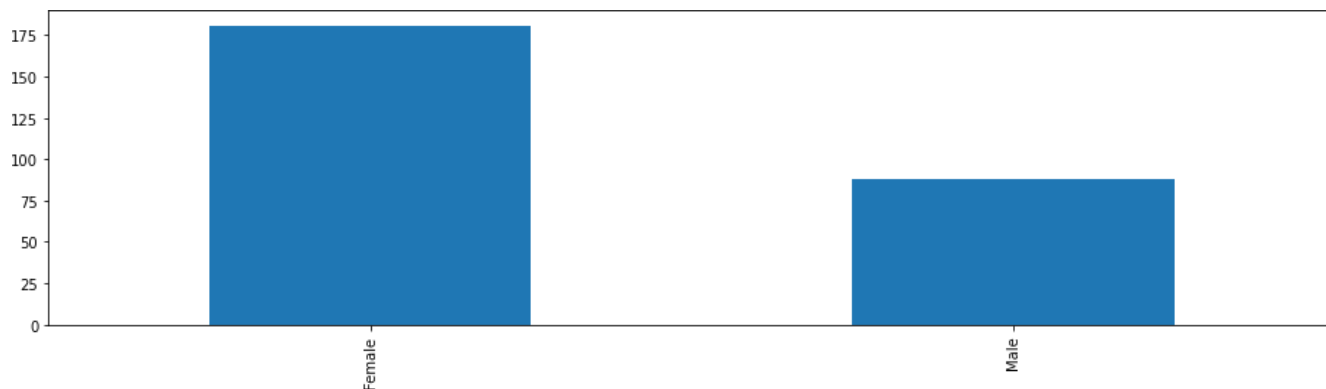
EDA Process And Visualization



Exploratory Data Analysis

Customer Related Information

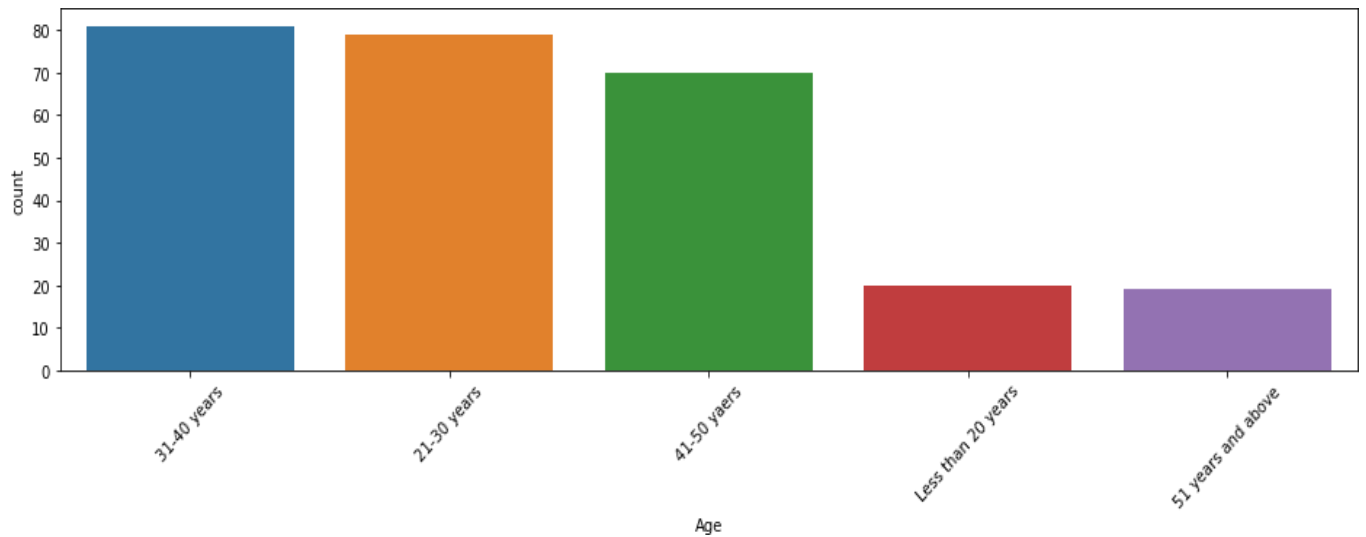
<AxesSubplot:>



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

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



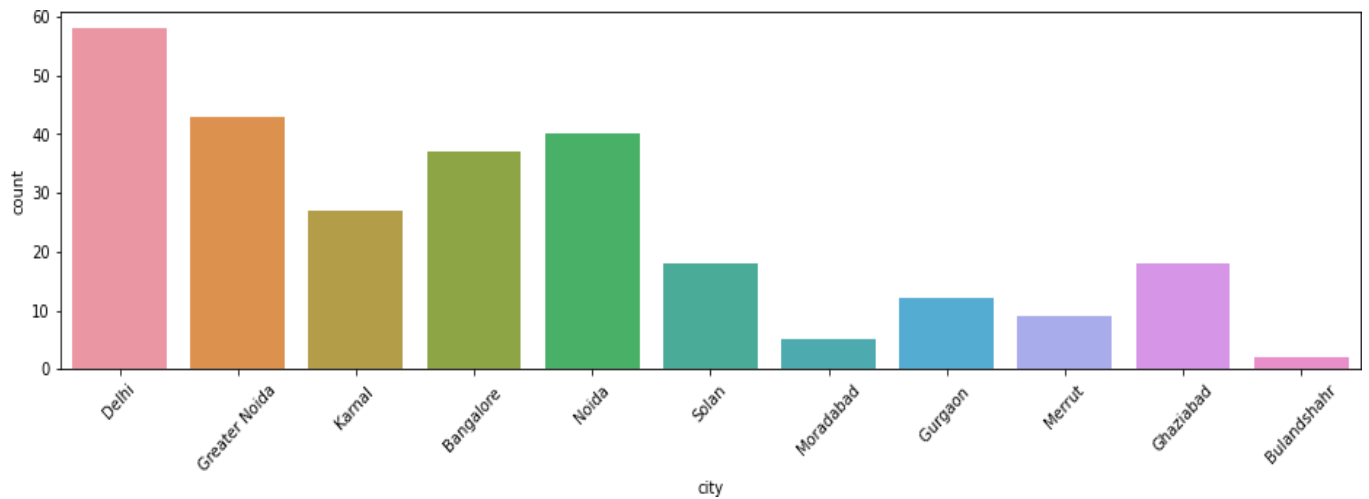


```
31-40 years      81
21-30 years      79
41-50 yaers      70
Less than 20 years  20
51 years and above  19
Name: Age, dtype: int64
```

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.

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

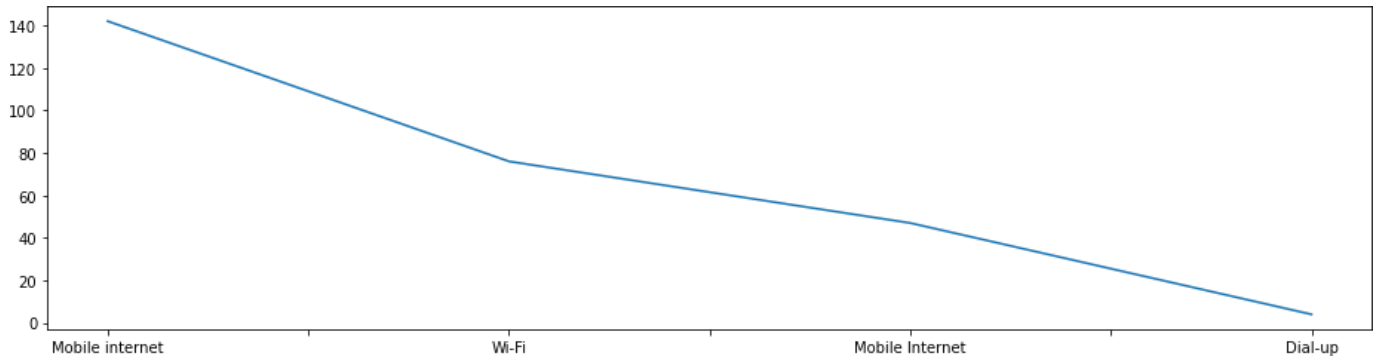


```
Delhi          58
Greater Noida  43
Noida          40
Bangalore      37
Karnal         27
Solan          18
Ghaziabad      18
Gurgaon        12
Merrut         9
Moradabad      5
Bulandshahr    2
Name: city, dtype: int64
```

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

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

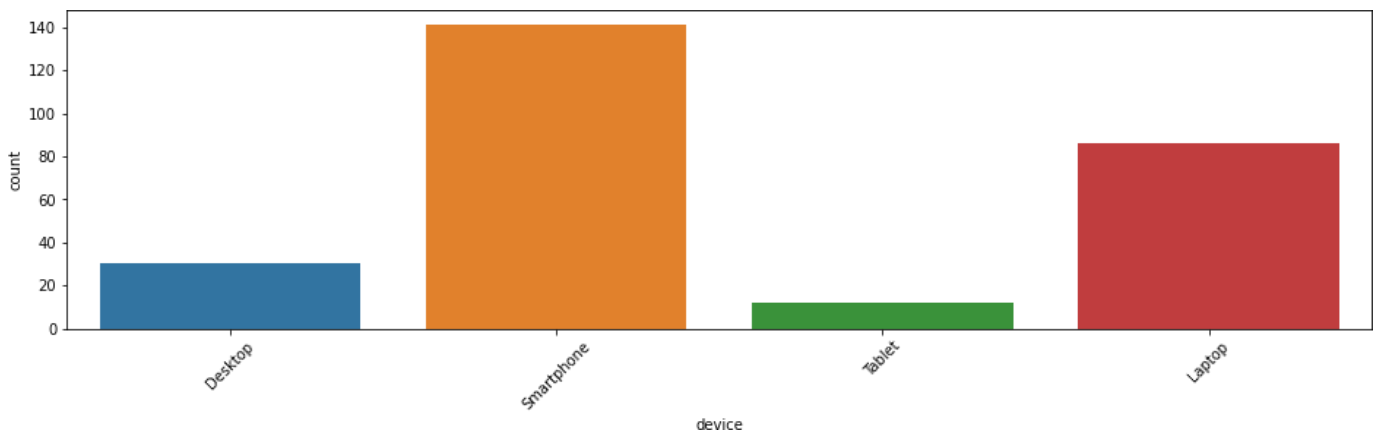




```
Mobile internet    142
Wi-Fi              76
Mobile Internet    47
Dial-up            4
Name: How do you access the internet, dtype: int64
```

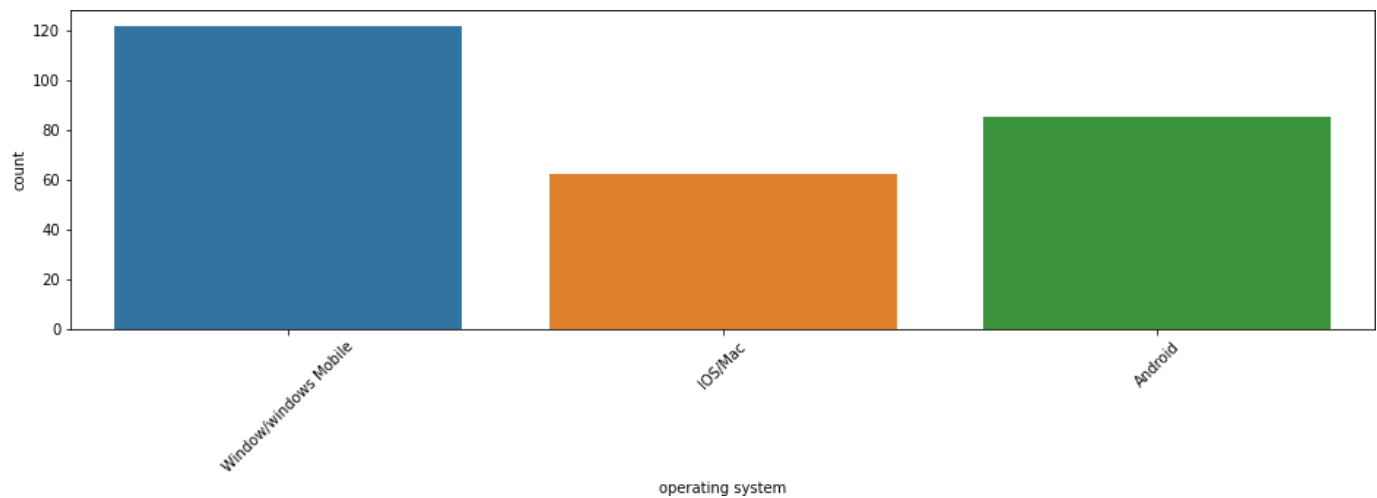
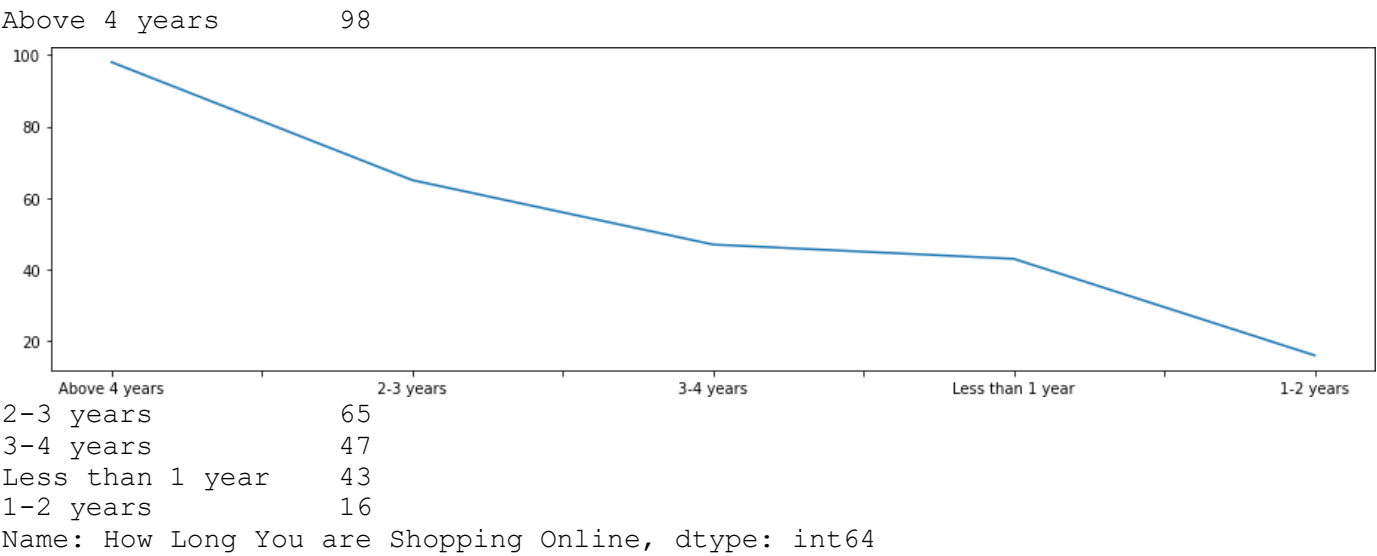
Checking the number of people using which device for online shopping

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



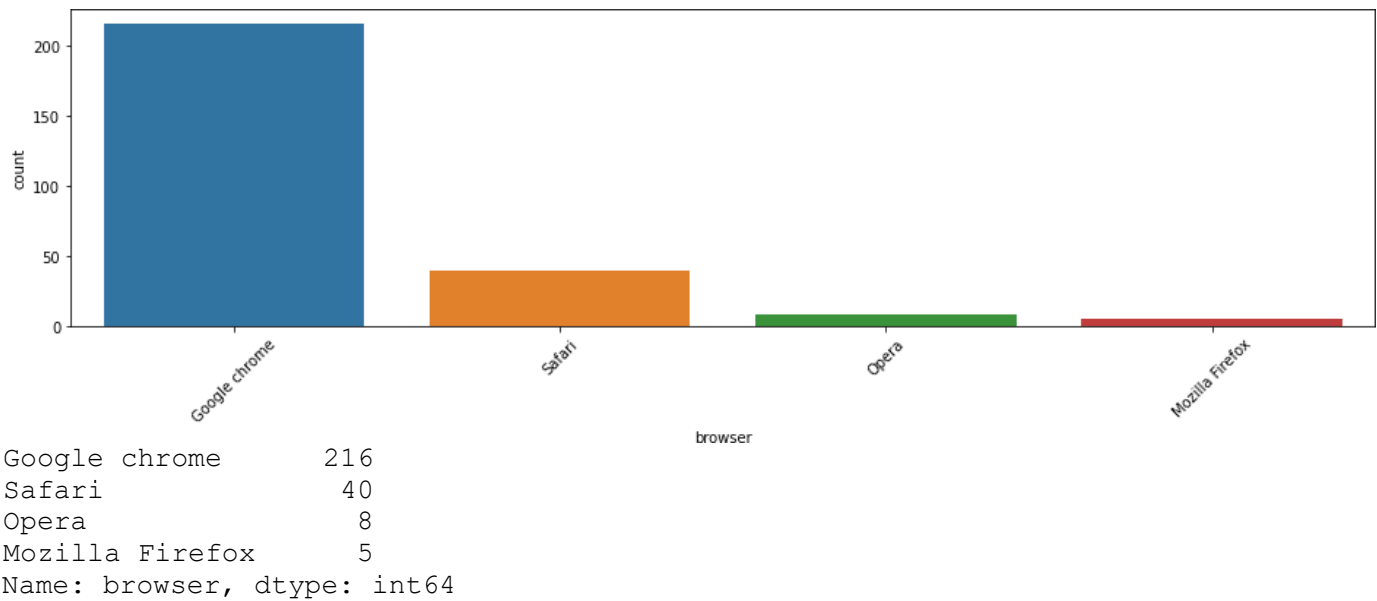
```
Smartphone    141
Laptop        86
Desktop       30
Tablet        12
Name: device, dtype: int64
```

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.



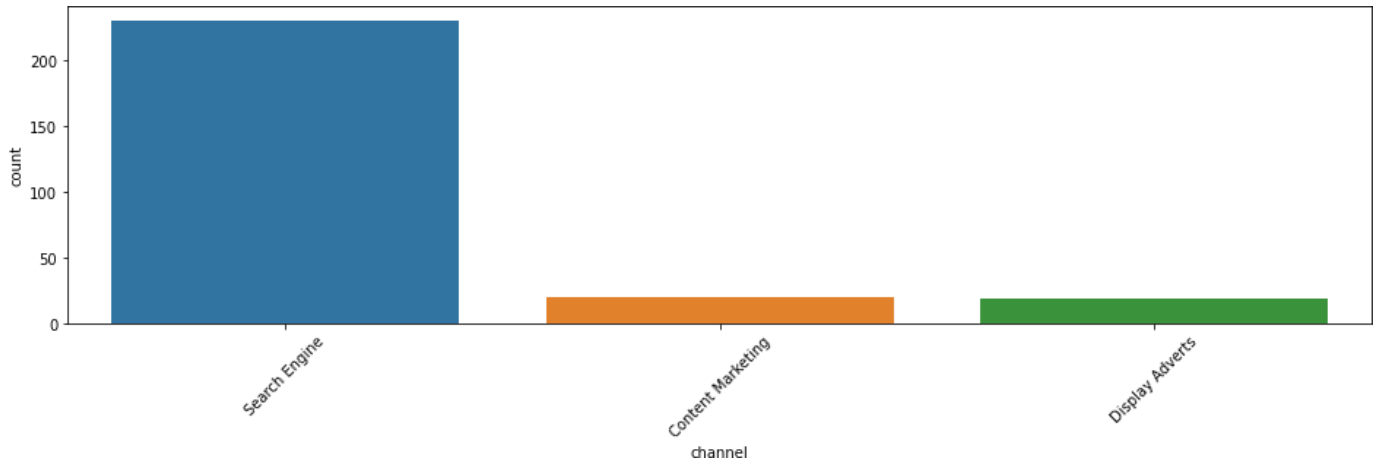
Window/windows Mobile 122
Android 85
IOS/Mac 62
Name: operating system, dtype: int64

checking which browser preferred by people for online shoppings



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.



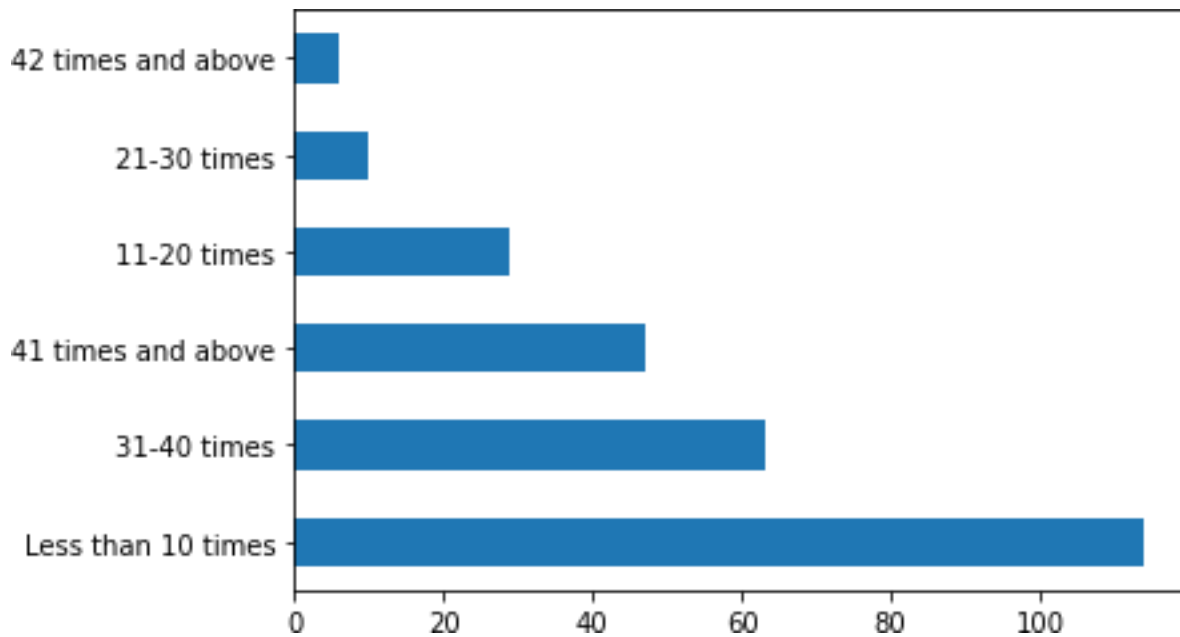


```
Search Engine      230
Content Marketing  20
Display Adverts    19
Name: channel, dtype: int64
```

Conclusion from Customer Related Information Analysis

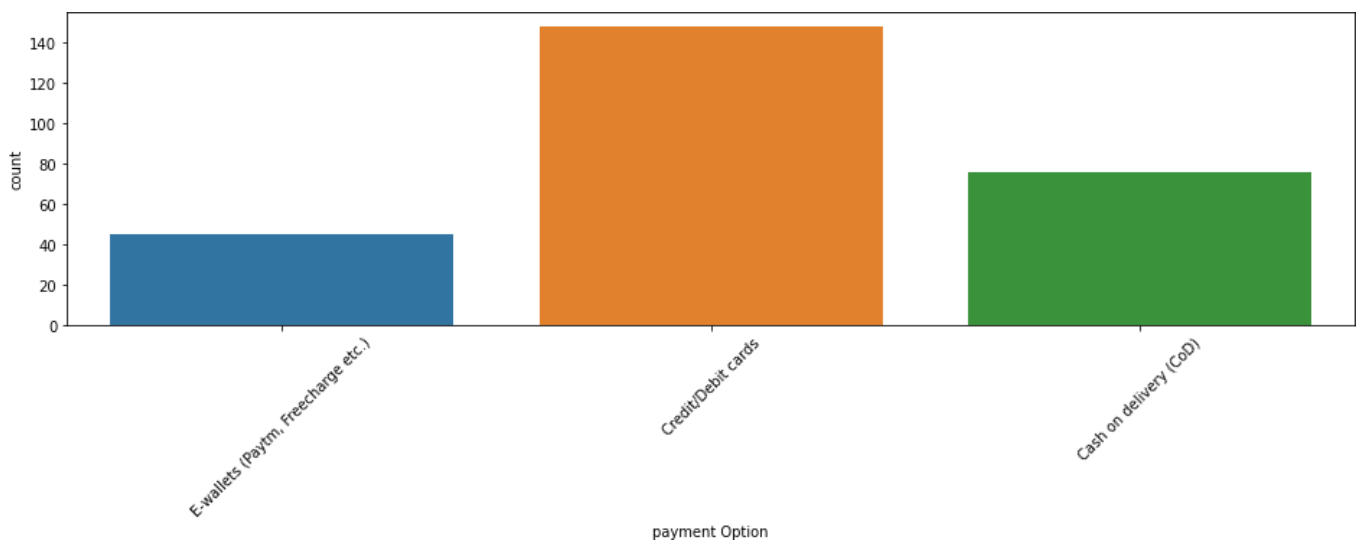
- 1) In people doing online shopping Females are more as compared to Males.
- 2) People in the age group from 21 to 50 are doing more online shopping as compared to other age groups.
- 3) Delhi Topped in the city list where a greater number of people doing online shopping.
- 4) Mostly people are using 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()
```



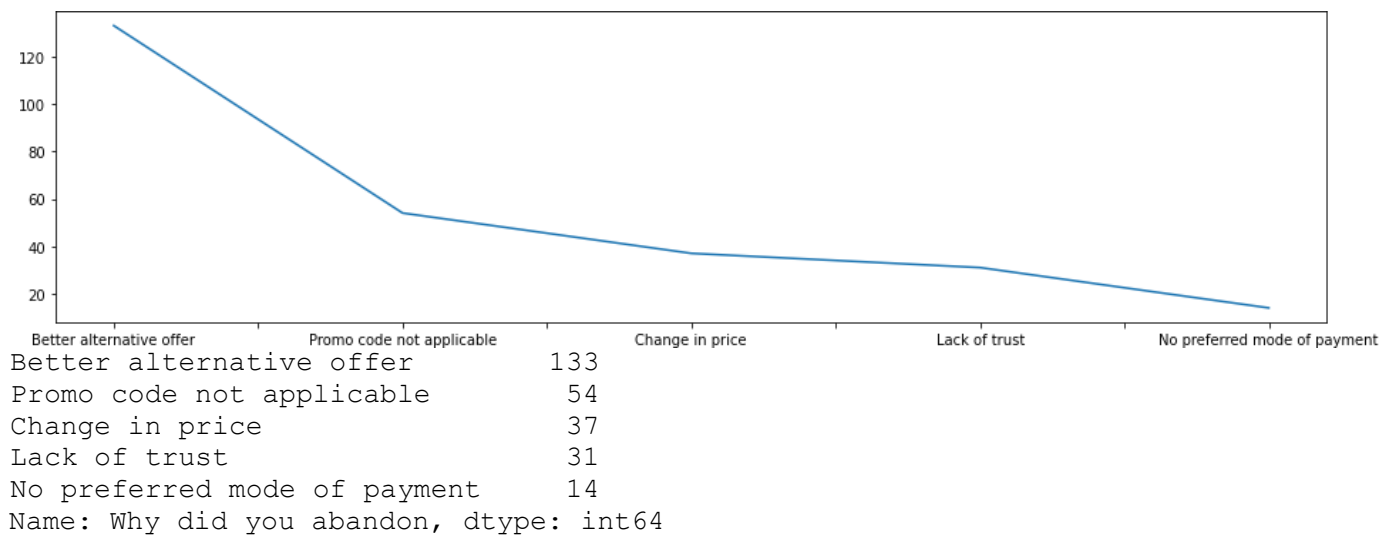
Most customers fall under the category of less than 10 orders per year, around the same number fall under the category where no of orders is more than 30

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

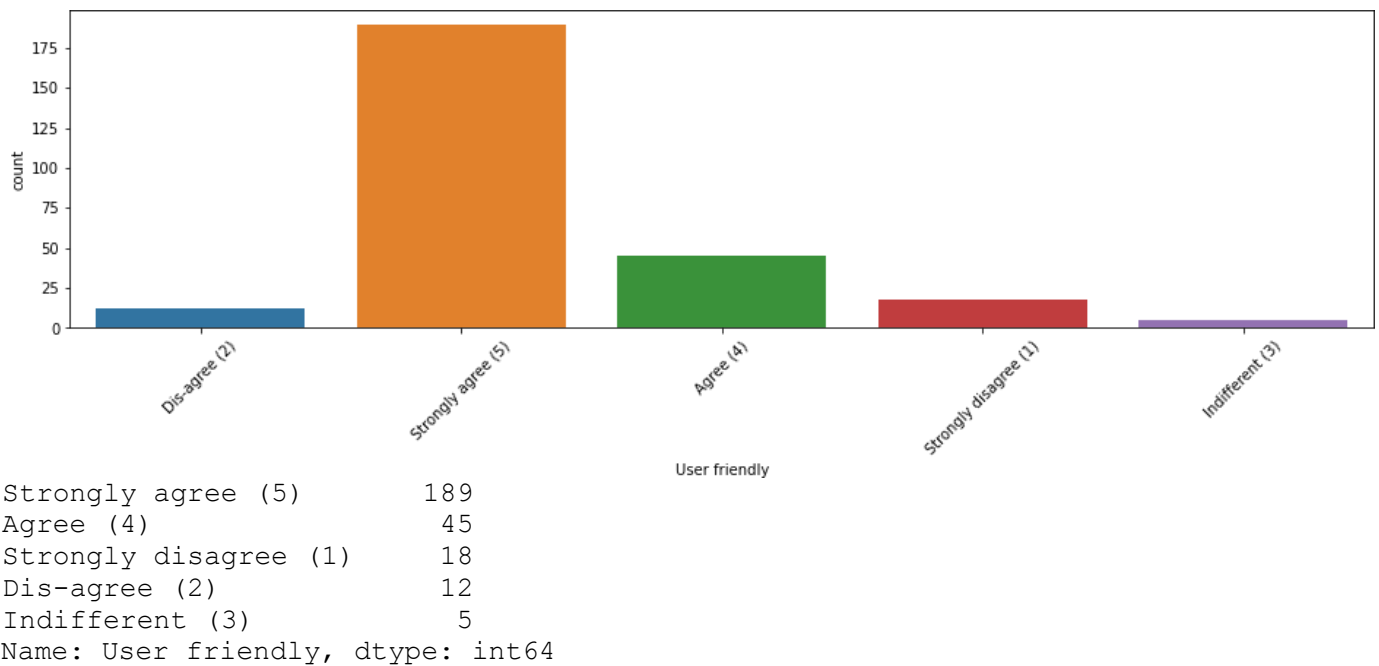


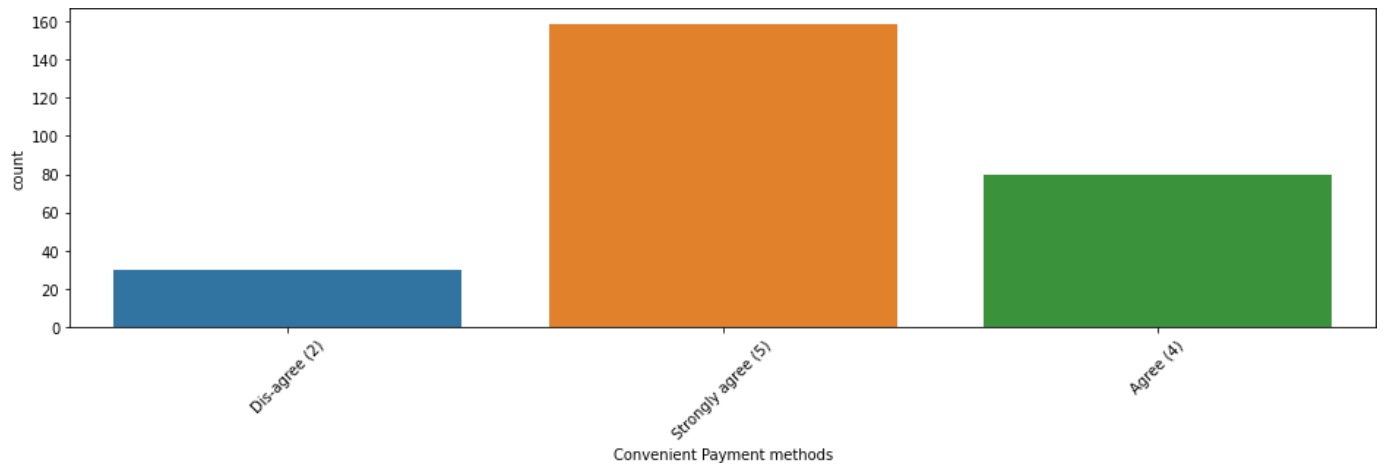
Credit/Debit cards	148
Cash on delivery (CoD)	76
E-wallets (Paytm, Freecharge etc.)	45
Name: payment Option, dtype: int64	

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

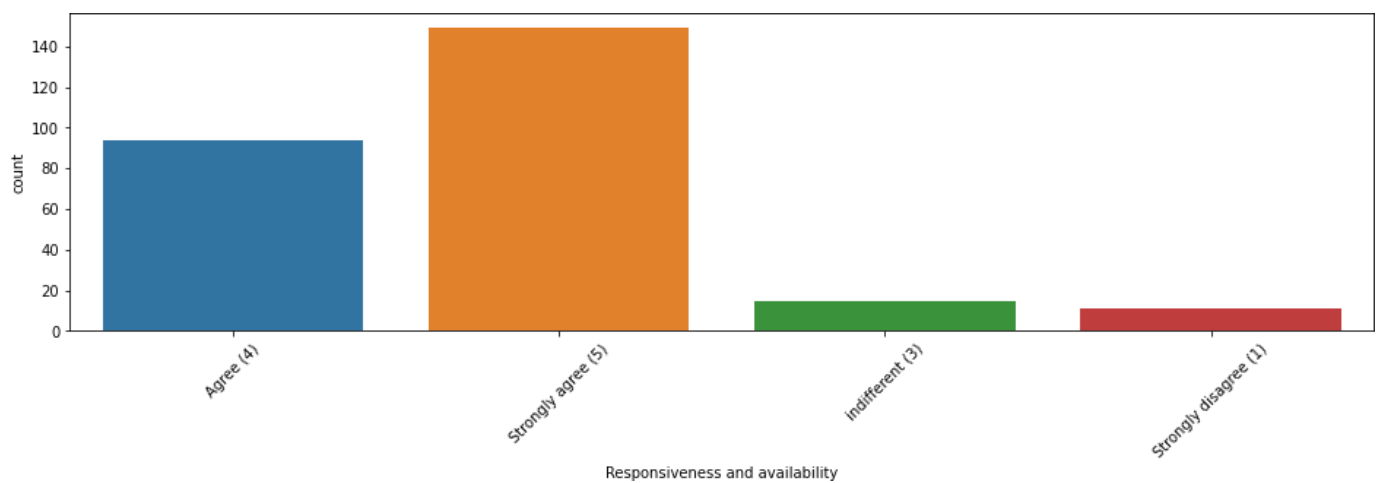


Now we are analysing the Feed-Back from Customers



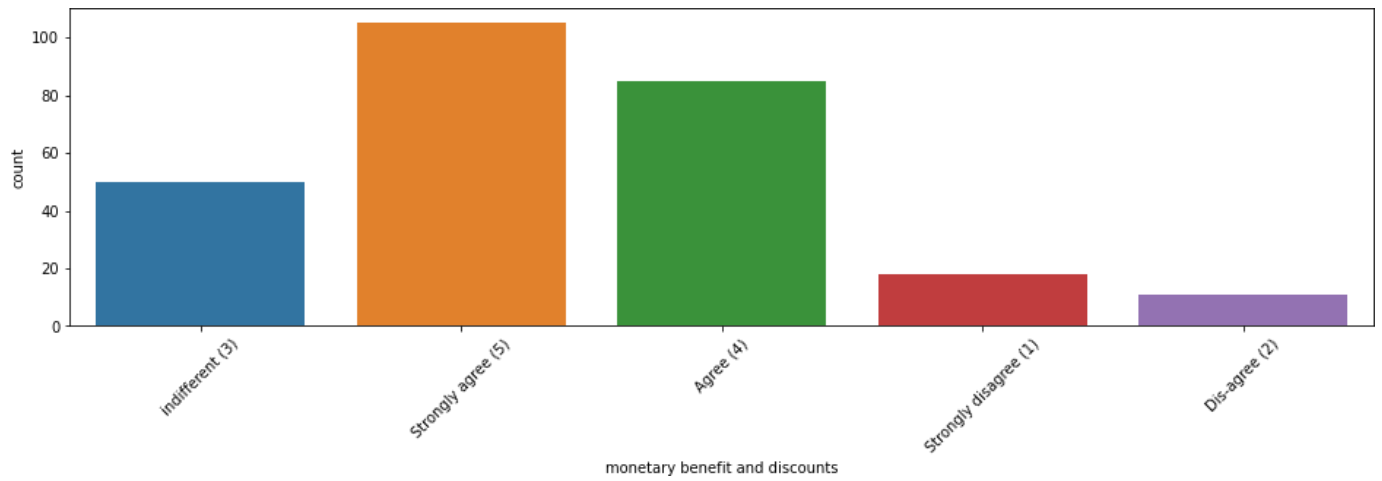


```
Strongly agree (5)    159
Agree (4)             80
Dis-agree (2)         30
Name: Convenient Payment methods, dtype: int64
```

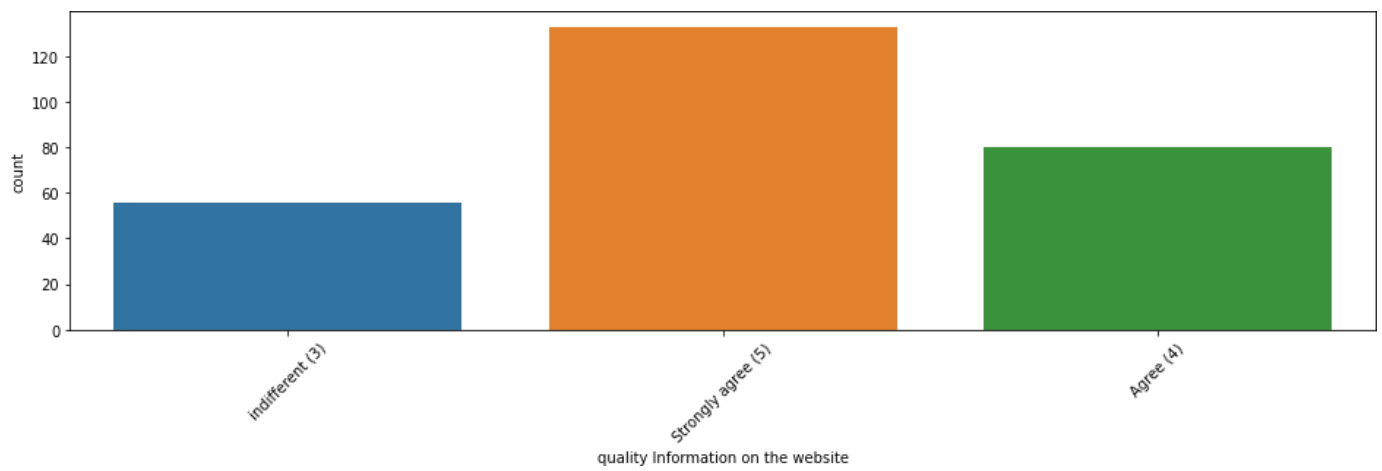


```
Strongly agree (5)    149
Agree (4)             94
indifferent (3)       15
Strongly disagree (1)  11
Name: Responsiveness and availability, dtype: int64
```

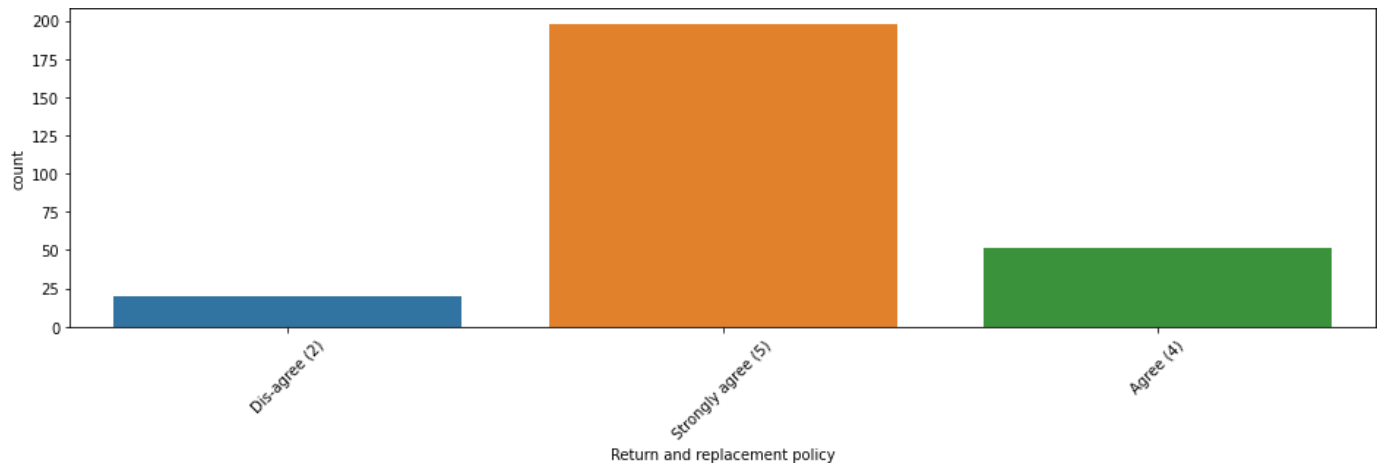




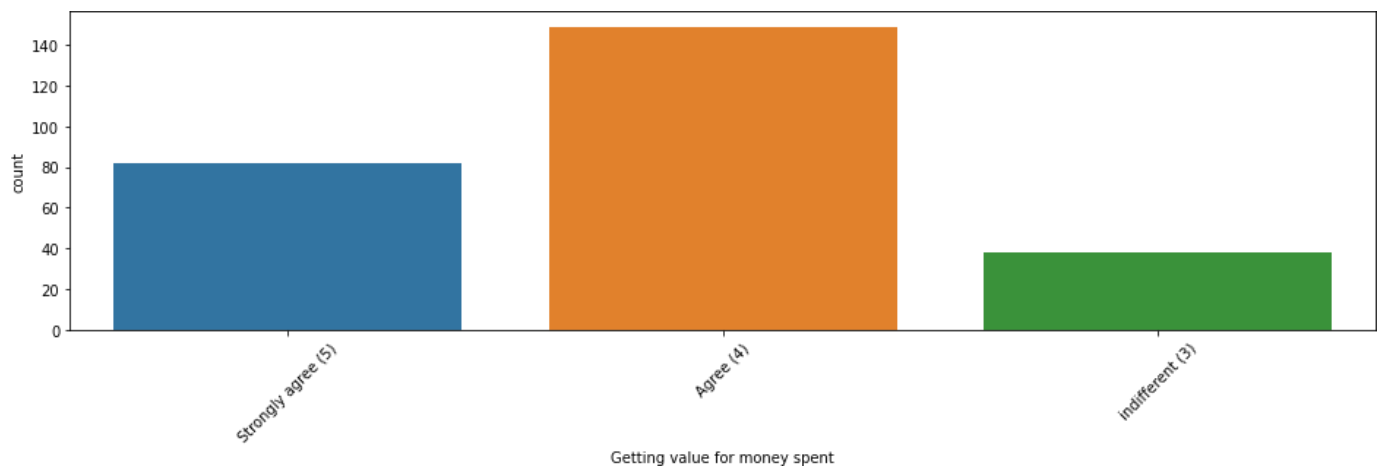
```
Strongly agree (5)      105
Agree (4)               85
indifferent (3)         50
Strongly disagree (1)   18
Dis-agree (2)           11
Name: monetary benefit and discounts, dtype: int64
```



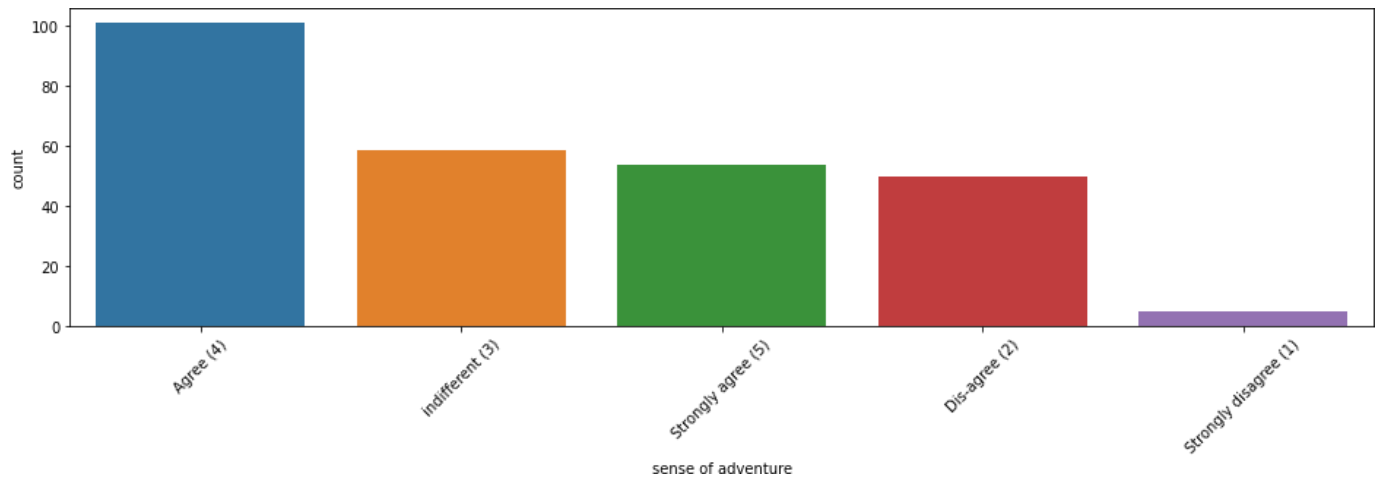
```
Strongly agree (5)      133
Agree (4)               80
indifferent (3)         56
Name: quality Information on the website, dtype: int64
```



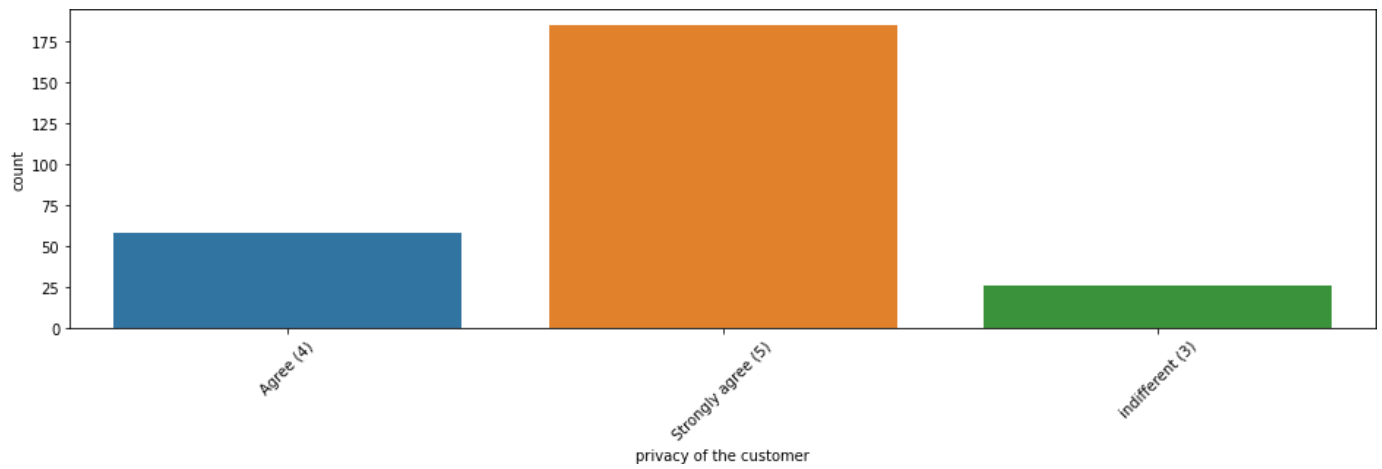
```
Strongly agree (5)    198
Agree (4)             51
Dis-agree (2)         20
Name: Return and replacement policy, dtype: int64
```



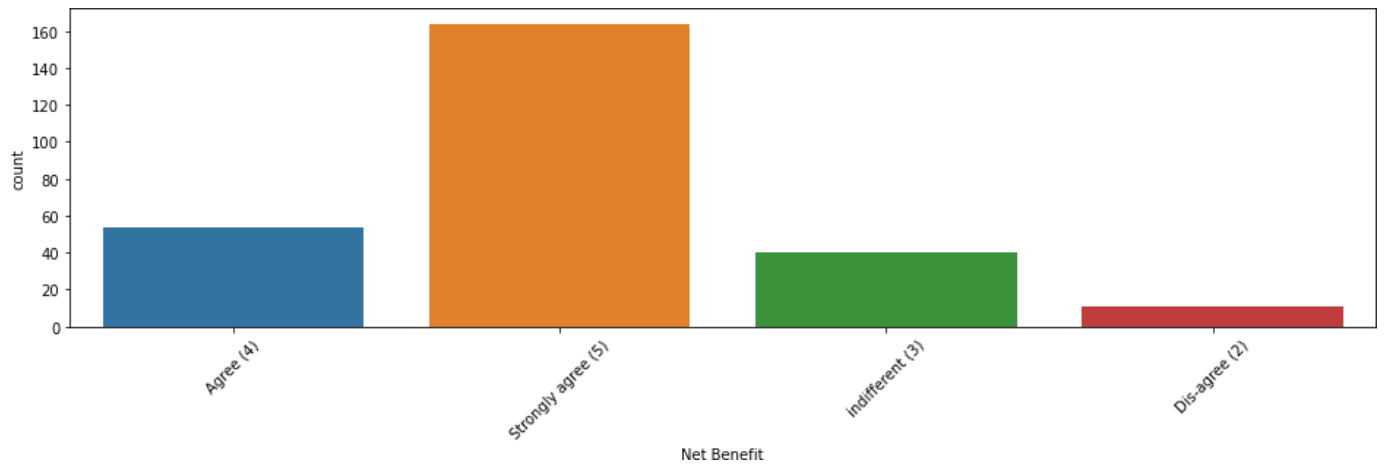
```
Agree (4)             149
Strongly agree (5)    82
indifferent (3)       38
Name: Getting value for money spent, dtype: int64
```



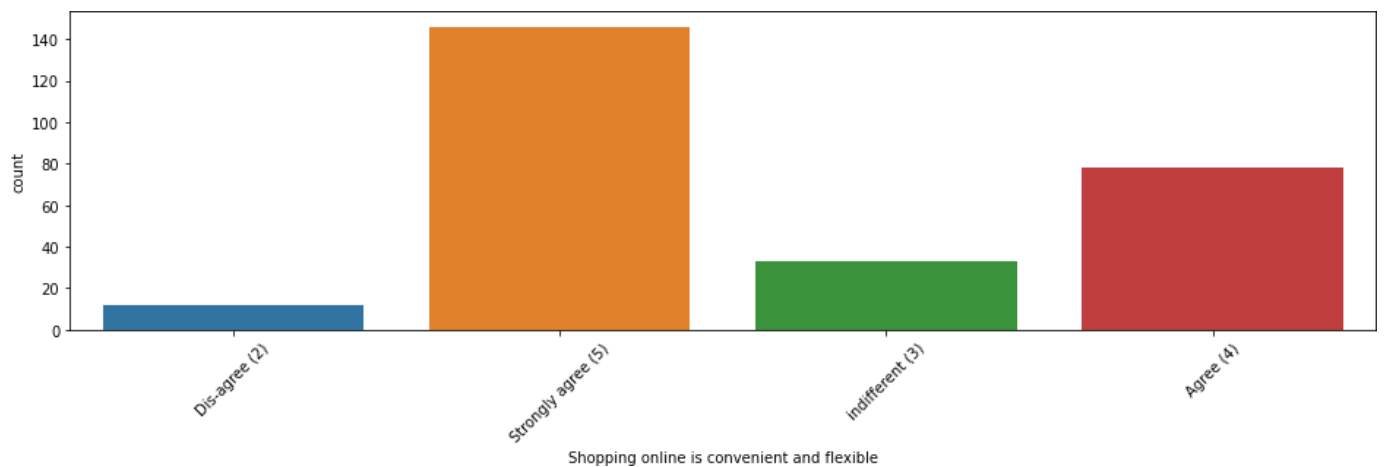
```
Agree (4)          101
indifferent (3)    59
Strongly agree (5)  54
Dis-agree (2)      50
Strongly disagree (1)  5
Name: sense of adventure, dtype: int64
```



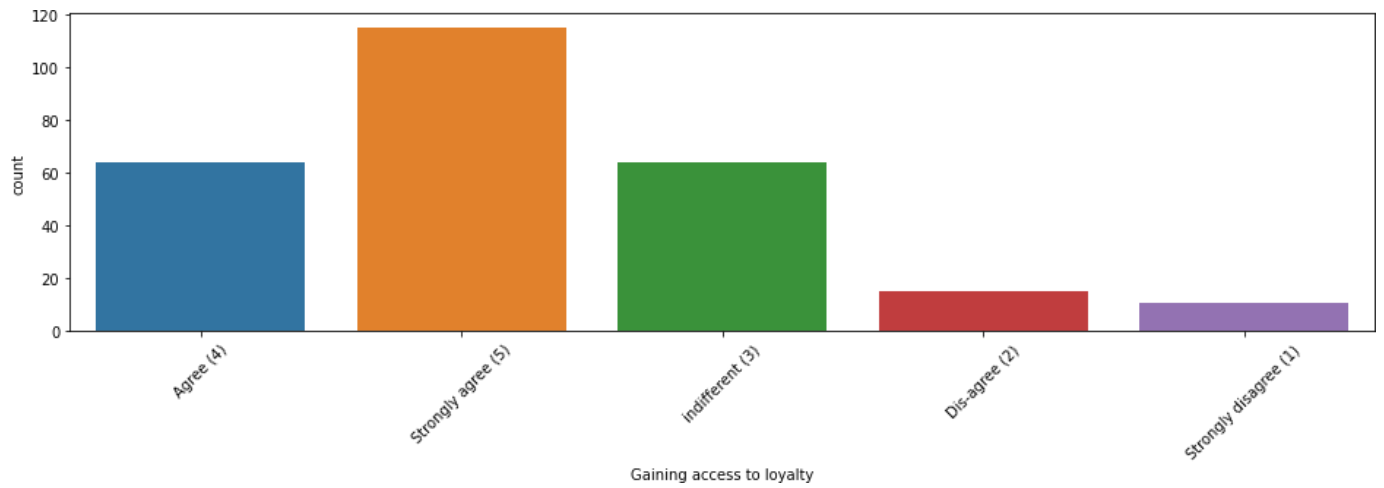
```
Strongly agree (5)  185
Agree (4)           58
indifferent (3)     26
Name: privacy of the customer, dtype: int64
```

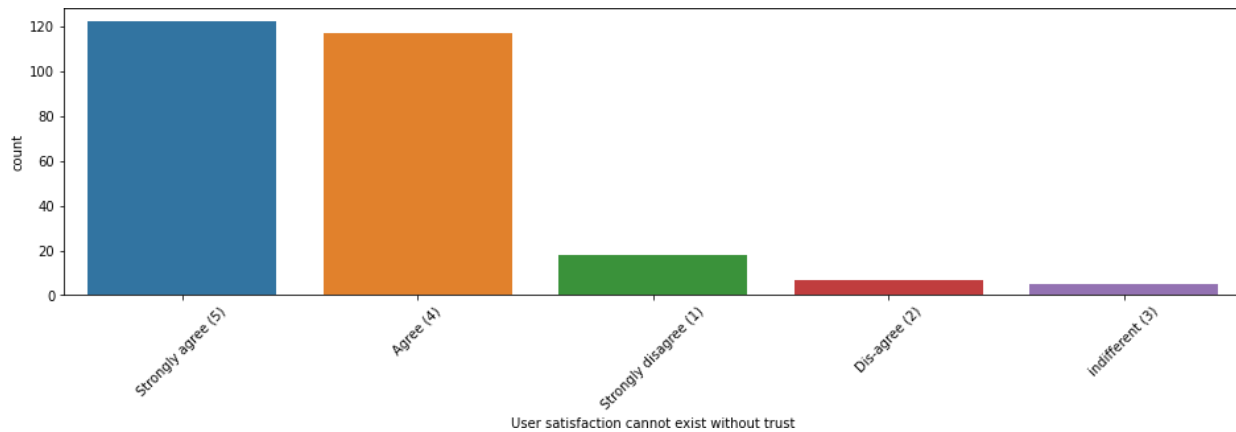
```
Strongly agree (5)    164
Agree (4)             54
indifferent (3)       40
Dis-agree (2)         11
```



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

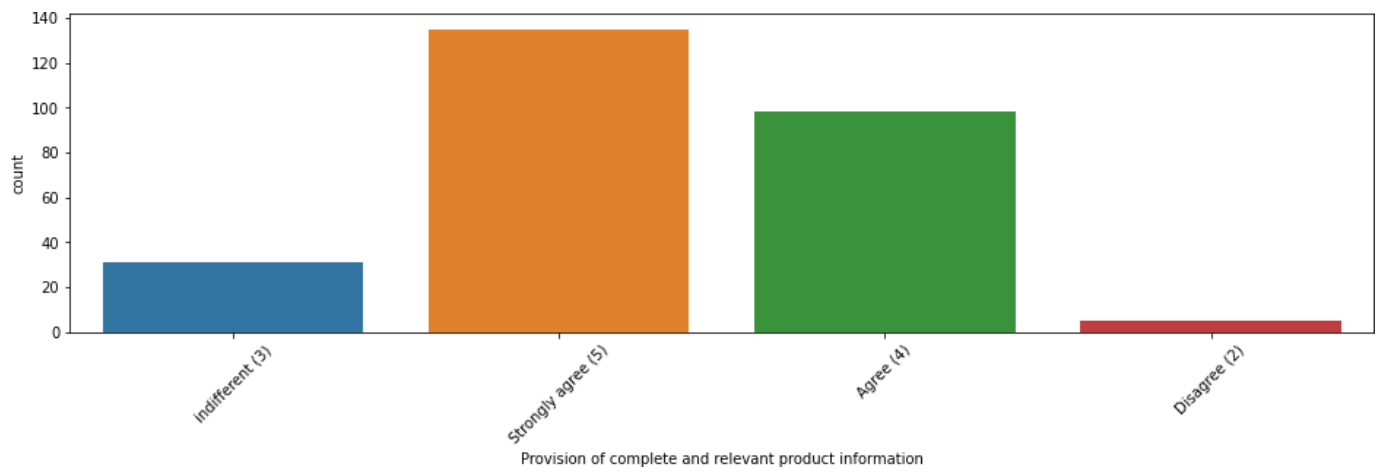


```
Strongly agree (5)      115
indifferent (3)        64
Agree (4)              64
Dis-agree (2)          15
Strongly disagree (1)  11
Name: Gaining access to loyalty, dtype: int64
```

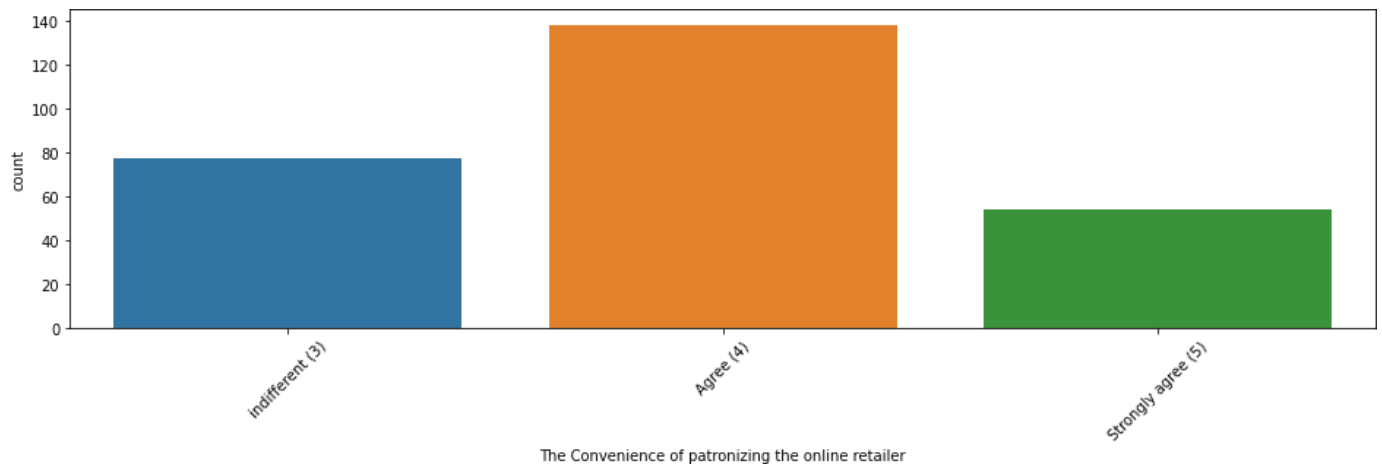


```
Strongly agree (5)      122
Agree (4)              117
Strongly disagree (1)   18
Dis-agree (2)           7
indifferent (3)         5
Name: User satisfaction cannot exist without trust, dtype: int64
```

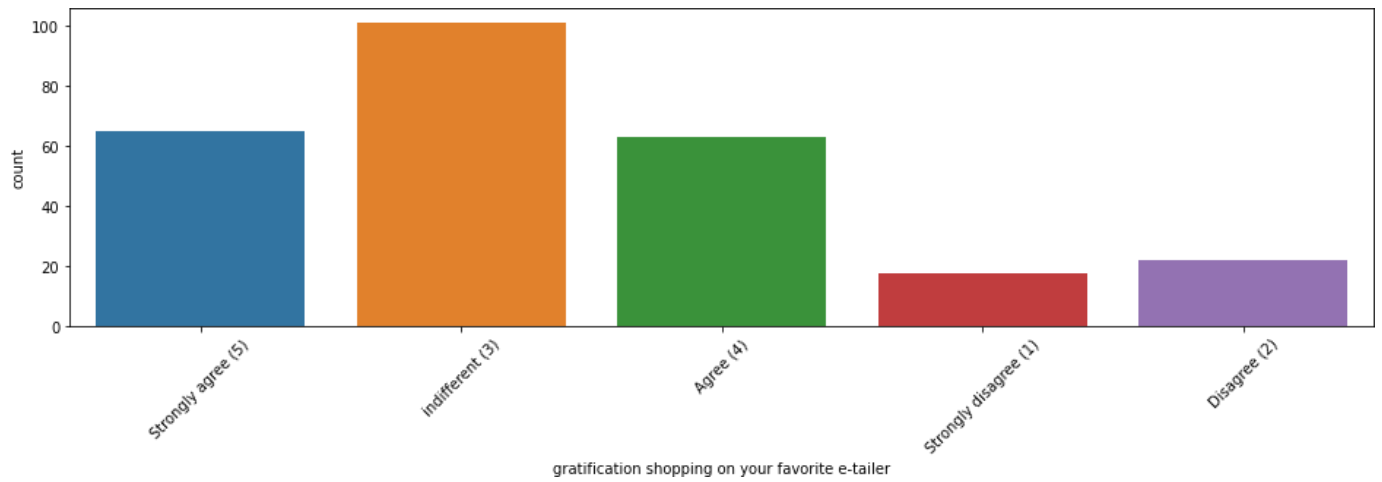




```
Strongly agree (5)    135
Agree (4)             98
indifferent (3)       31
Disagree (2)          5
Name: Provision of complete and relevant product information, dtype: int64
```



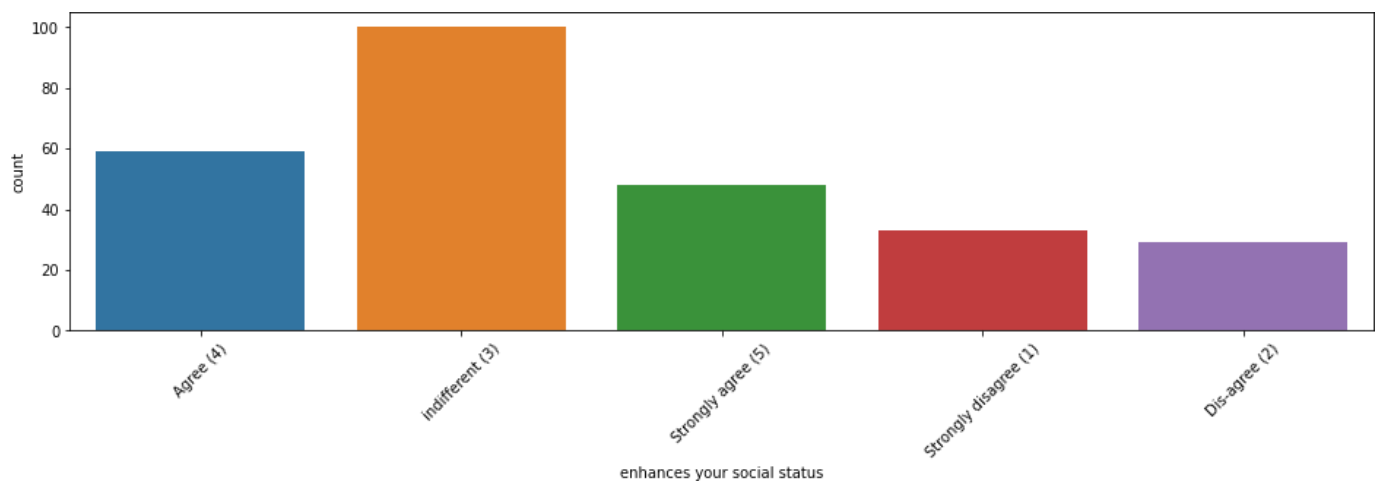
```
Agree (4)             138
indifferent (3)       77
Strongly agree (5)    54
Name: The Convenience of patronizing the online retailer, dtype: int64
```



```

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

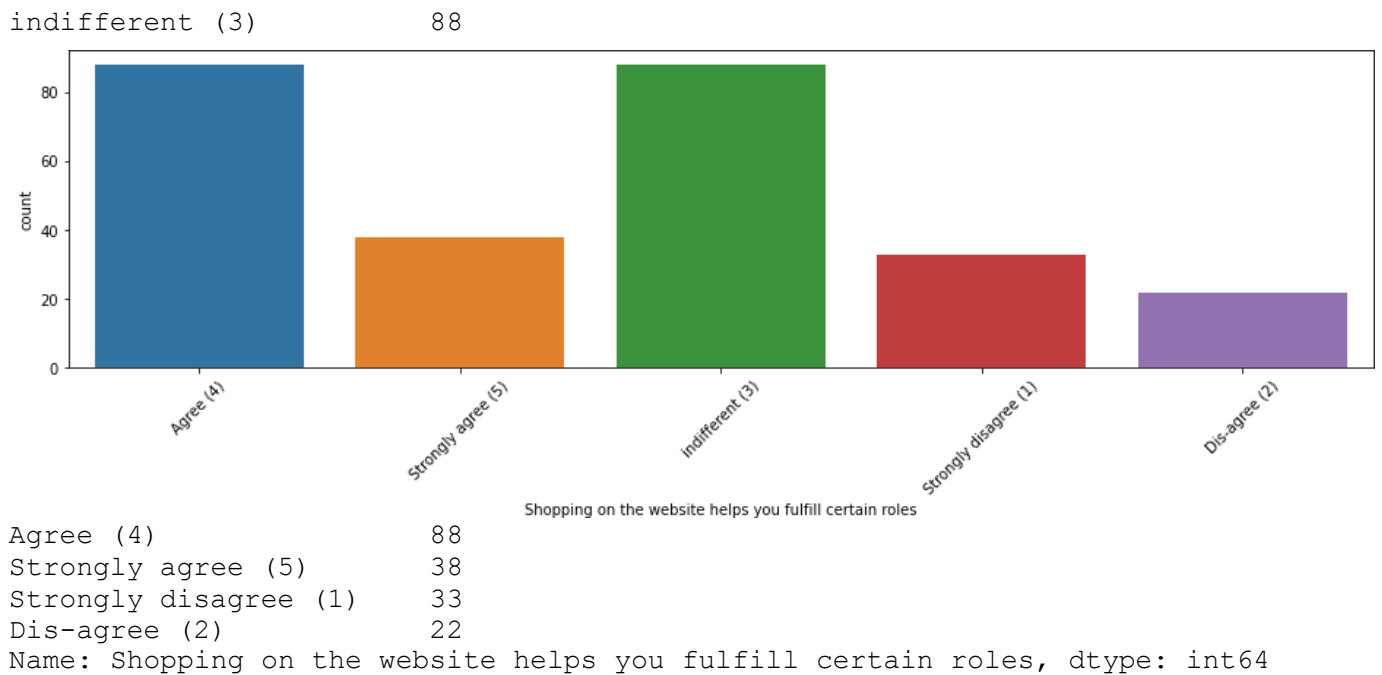
```



```

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

```



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.

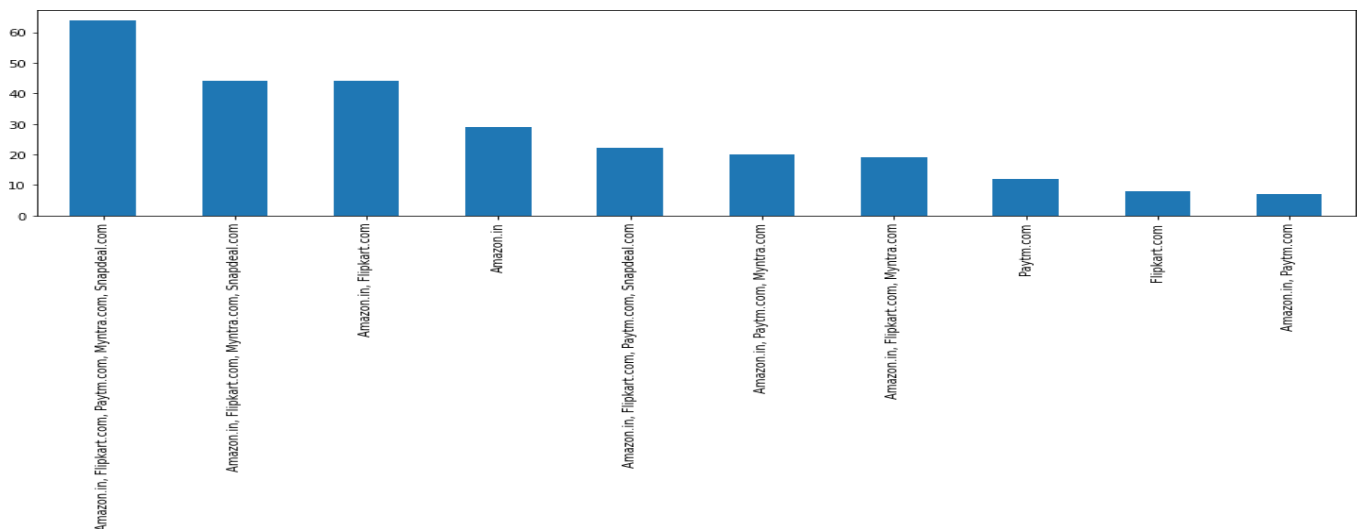
16 The Convenience of patronizing the online retailer.

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

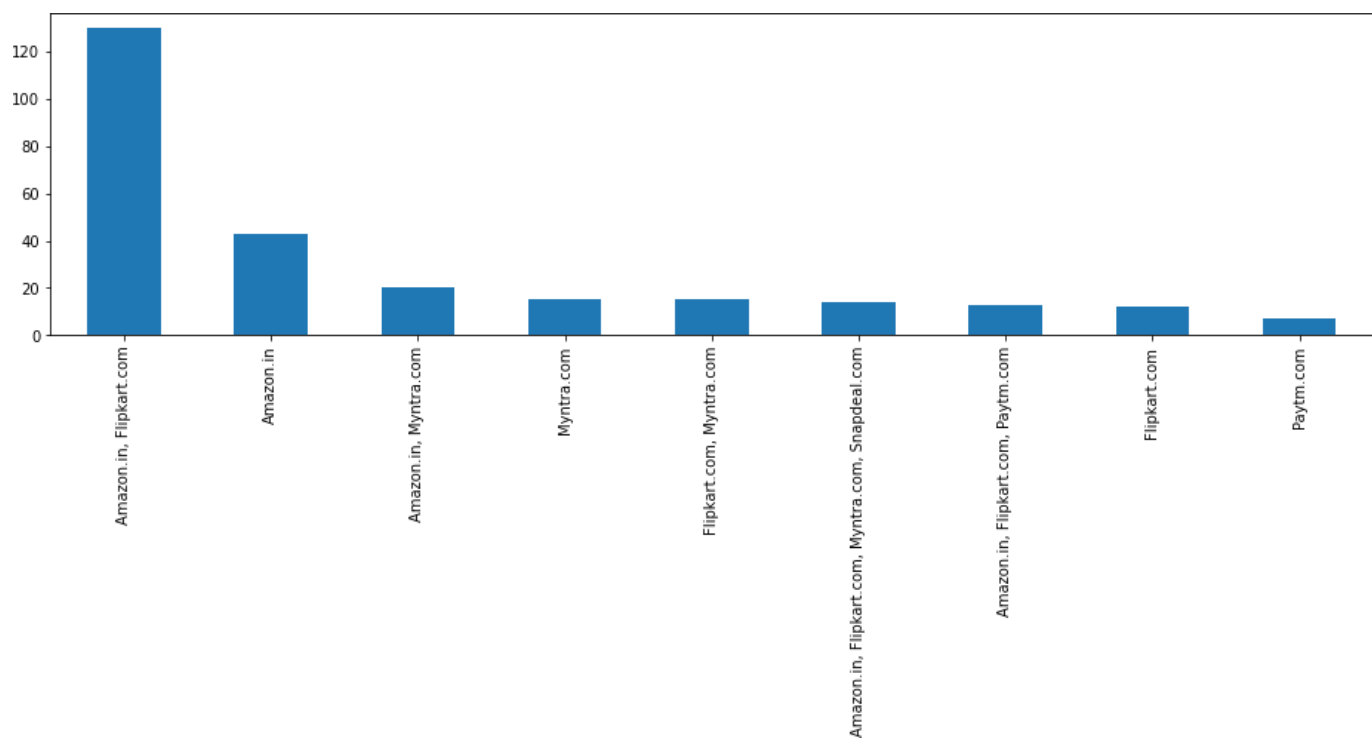


```

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
  
```

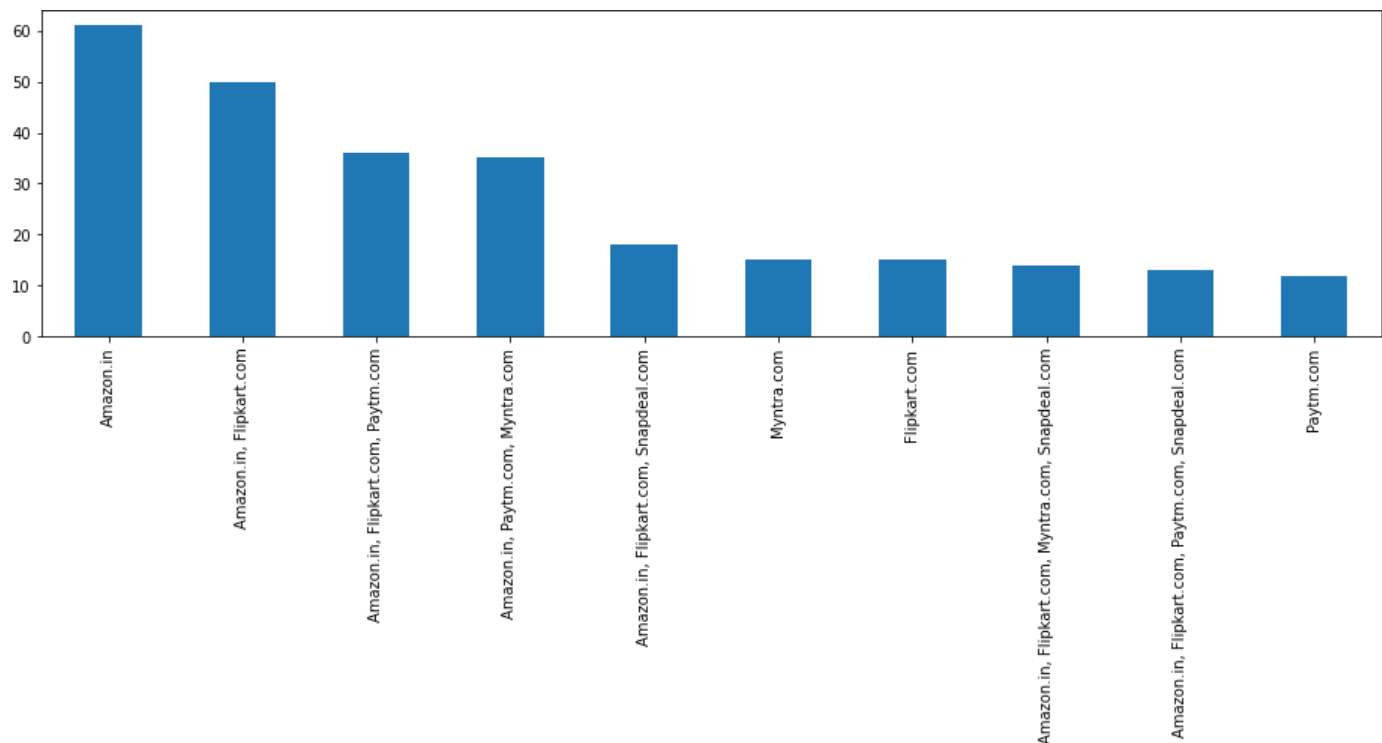
As per above graph, Majority of the customers are using Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com as It is Easy to use Websites and as our earlier analysis on device using category shows that Most of the people are using Smartphone and all this online platform has their own mobile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



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.



```
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
```

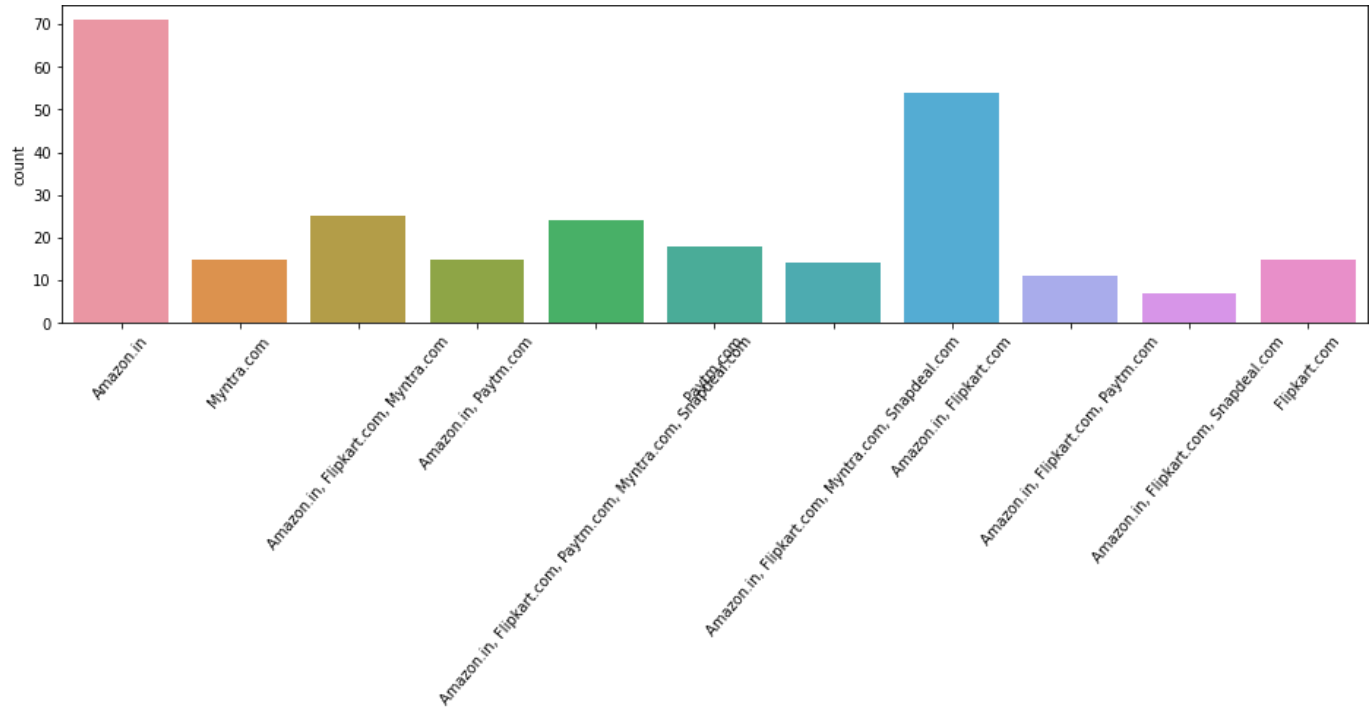
For Reliability of the website or application

61 out of 269 customers choose amazon and

50 out of 269 customers choose amazon and flipkart

Amazon.in71

Amazon.in, Flipkart.com54



Privacy of customers' information25

Amazon.in, Flipkart.com, Myntra.com24

Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com18

Paytm.com15

Myntra.com15

Amazon.in, Paytm.com15

Flipkart.com14

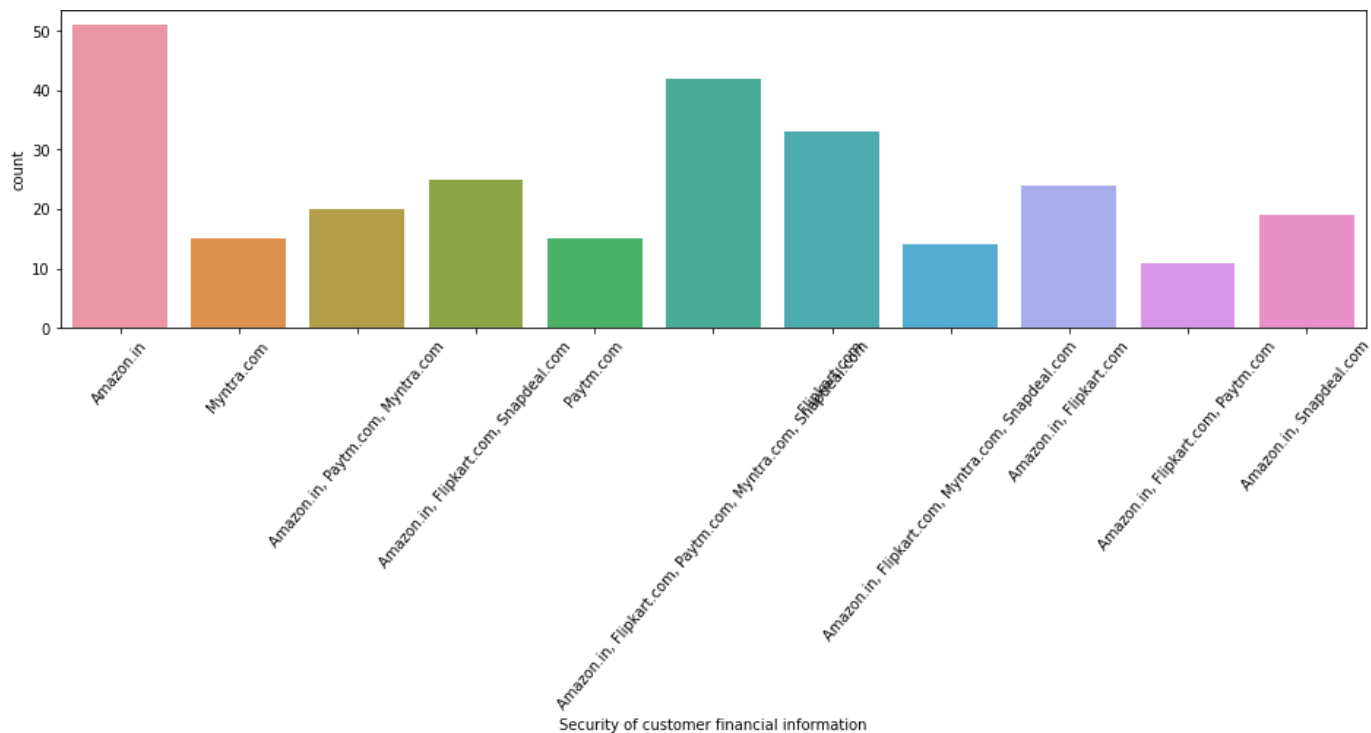
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com11

Amazon.in, Flipkart.com, Paytm.com7

Amazon.in, Flipkart.com, Snapdeal.com

Name: Privacy of customers' information, dtype: int64

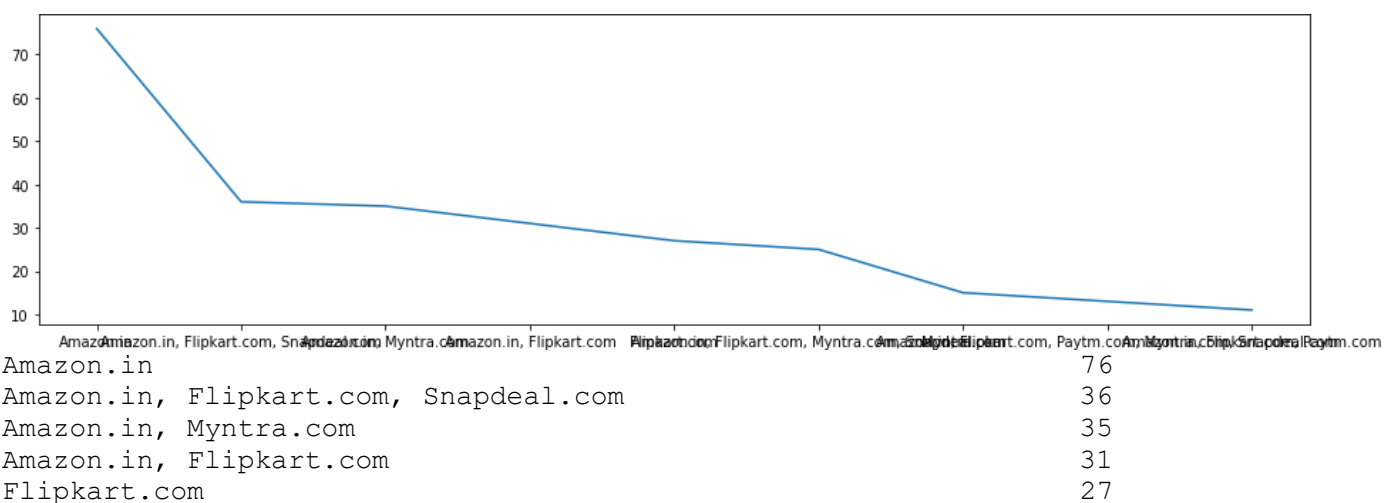




```

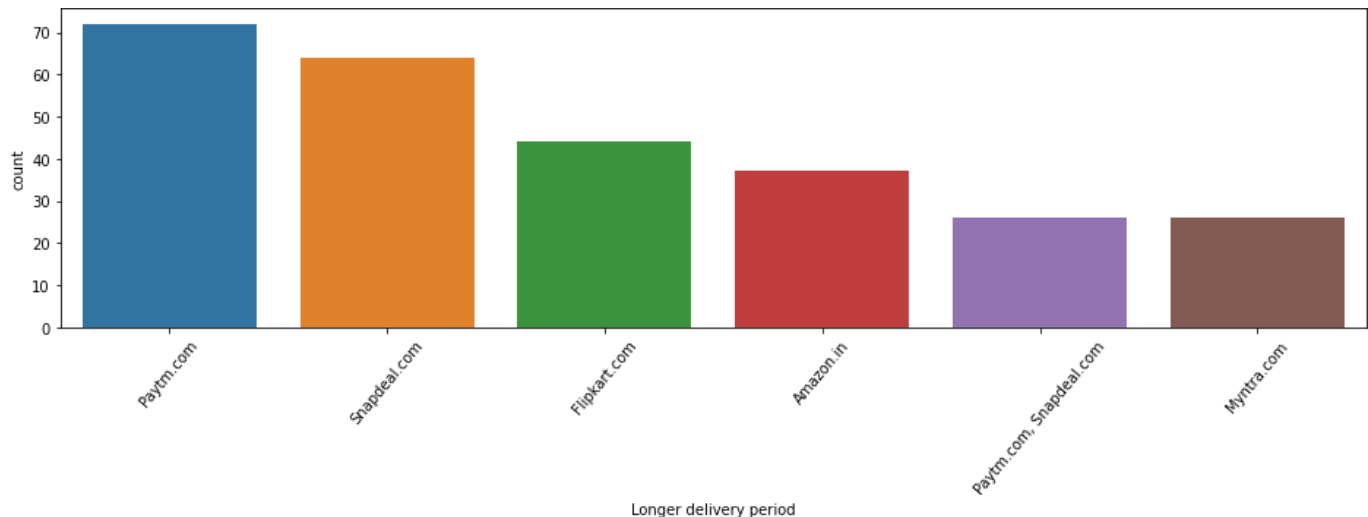
Amazon.in 51
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com 42
Flipkart.com 33
Amazon.in, Flipkart.com, Snapdeal.com 25
Amazon.in, Flipkart.com 24
Amazon.in, Paytm.com, Myntra.com 20
Amazon.in, Snapdeal.com 19
Myntra.com 15
Paytm.com 15
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com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

```



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

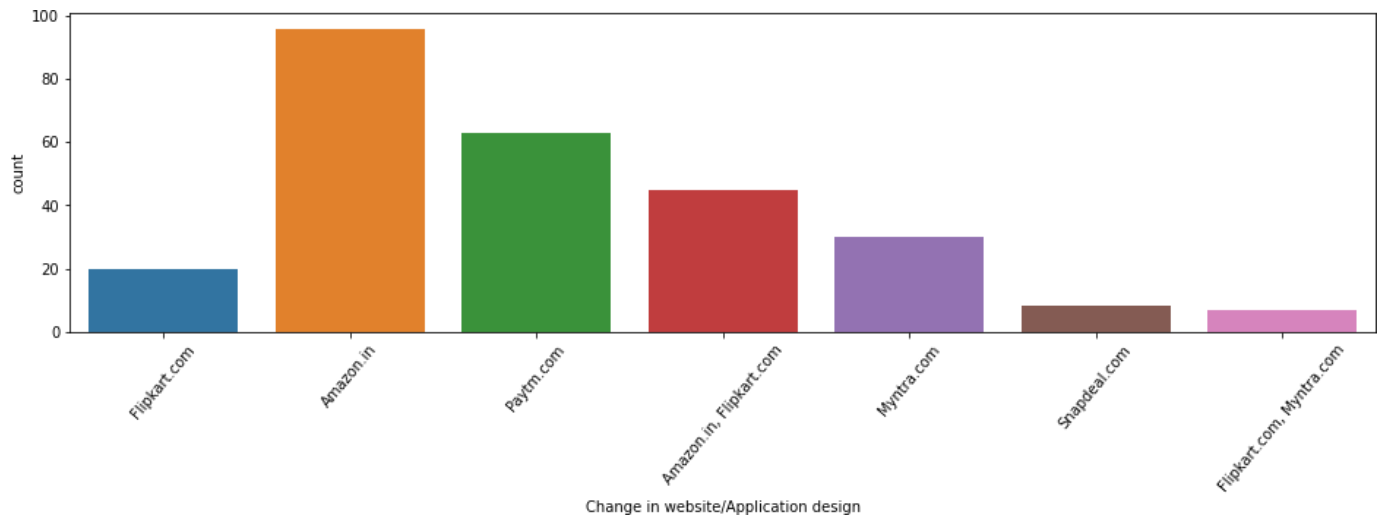


Longer delivery period

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

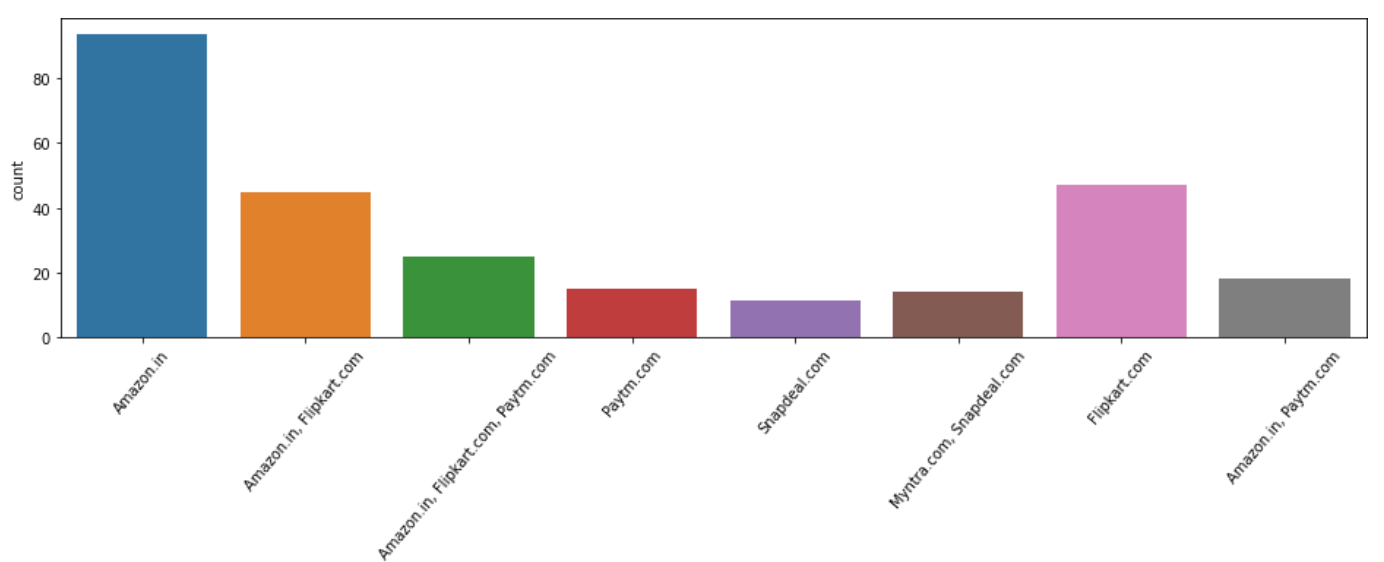


```

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.



```

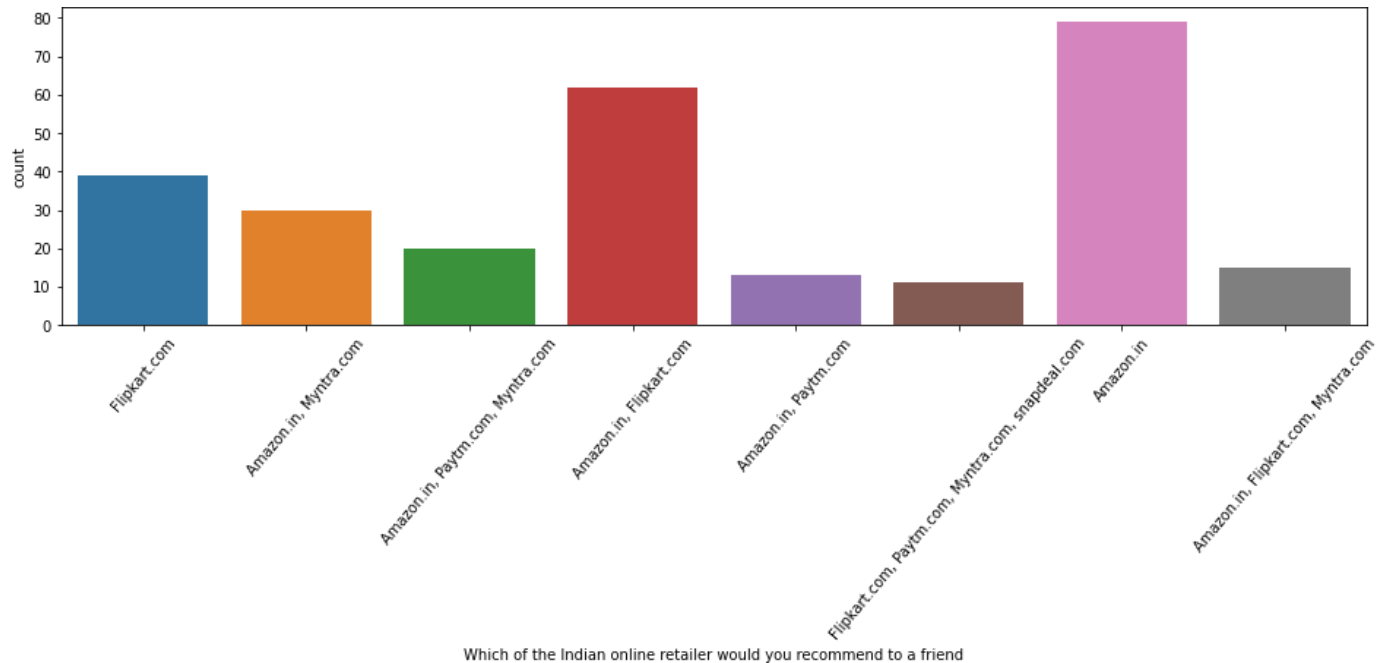
Amazon.in          94
Flipkart.com       47
Amazon.in, Flipkart.com  45
Amazon.in, Flipkart.com, Paytm.com  25
Amazon.in, Paytm.com  18
Paytm.com          15

```

Myntra.com, Snapdeal.com14

Snapdeal.com11

Name: Website is as efficient as before, dtype: int64



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 analysis 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.