CUSTOMER RETENTION CASE STUDY

ACKNOWLEDGMENT

Firstly, I would like to thank FlipRobo Technologies for giving me the opportunity to work on this project. Also, I would like to thank the DataTrained team, especially Shankargouda Tegginmani sir for providing me the knowledge and guidance which helped me a lot to work on this project.

References:

https://stackoverflow.com/

https://seaborn.pydata.org/

INTRODUCTION

- ## Business Problem Framing

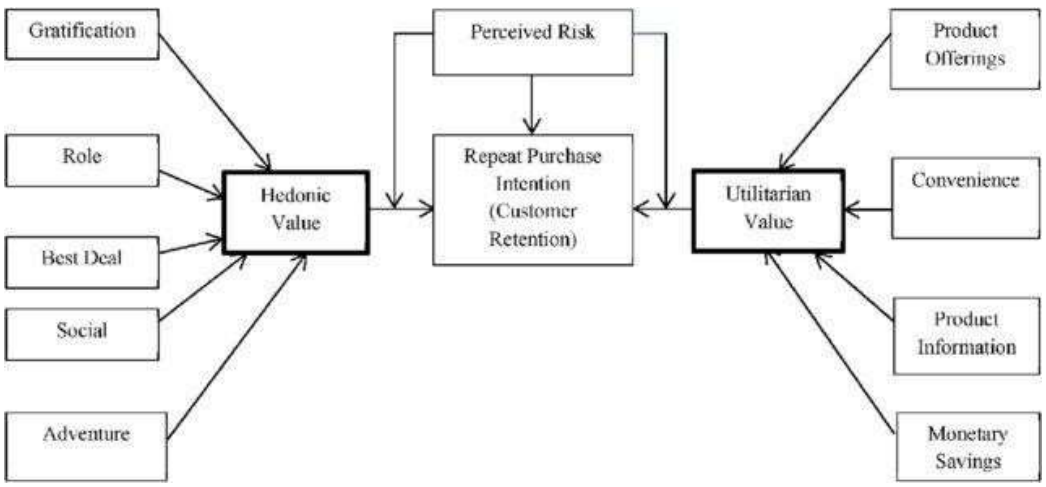
  The objective of this project was to perform data analysis on the customer retention dataset from Indian e-commerce customers and produce valuable insights which will help to retain the customers.

- ## Conceptual Background of the Domain Problem

  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
  - ✓ Net benefit.



- Review of Literature

  We need to apply our analytical skills to give findings and conclusions in detailed data analysis written in jupyter notebook .

  Only data analysis is required.

- Motivation for the Problem Undertaken
  - The main objective of taking this project was to enhance my analytical skills.
  - This project also given me the exposure to the real world problem solving mechanism.

Analytical Problem Framing

- Data Sources and their formats

  The dataset is provided by the FlipRobo Technologies. The data is collected from the Indian online shoppers through conducting survey.

  There are two sheets in the dataset one is detailed and second is encoded in the excel file.

- Data Preprocessing Done

  We've followed the below mentioned steps for the data preprocessing:

  - **Checked for null or missing values in the dataset:** We found that there were no missing values in the dataset.
  - **Renamed the column names:** We've renamed the columns to make our analysis easy and simple.
  - EDA was performed on the complete dataset to get the insights.

- Data Inputs- Logic- Output Relationships

  We've used various virtualization techniques to get the insights from the dataset.

Importing the required libraries:

```
In [2]: import numpy as np
        import pandas as pd
        import seaborn as sns
        import matplotlib.pyplot as plt
        %matplotlib inline

        import warnings
        warnings.filterwarnings('ignore')
```

- Hardware and Software Requirements and Tools Used

  Hardware configuration:

  Operating System: Windows 10

  System Type: 64-bit operating system, x64-based processor

  Processor: AMD Ryzen 5 3550H with Radeon Vega Mobile Gfx

  2.10 GHz

  RAM: 8.00 GB

  Software & Tools:

  a) Jupyter Notebook
  b) Python
  c) Pandas
  d) Numpy
  e) Seaborn
  f) Matplotlib

- Visualizations

  Below are the visualizations made from the dataset:

  1. Gender:

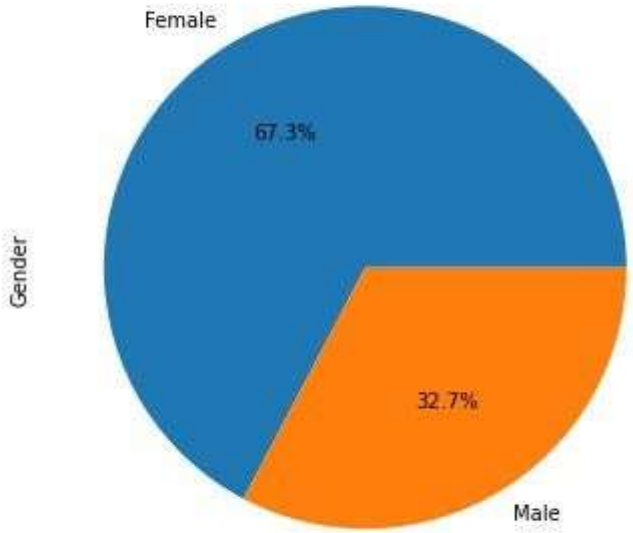
1. Gender

```
# Checking the value counts of Gender column

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

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

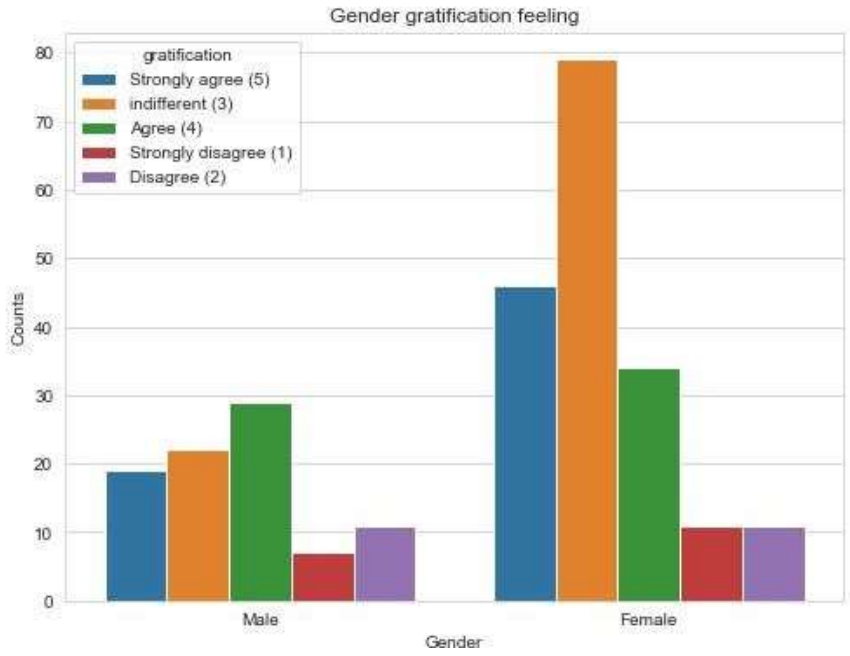
```
# Plotting pie plot to show the distribution of gender column

plt.figure(figsize=[6,6])
df['Gender'].value_counts().plot.pie(autopct = '%.1f%%')
```

```
<AxesSubplot:ylabel='Gender'>
```



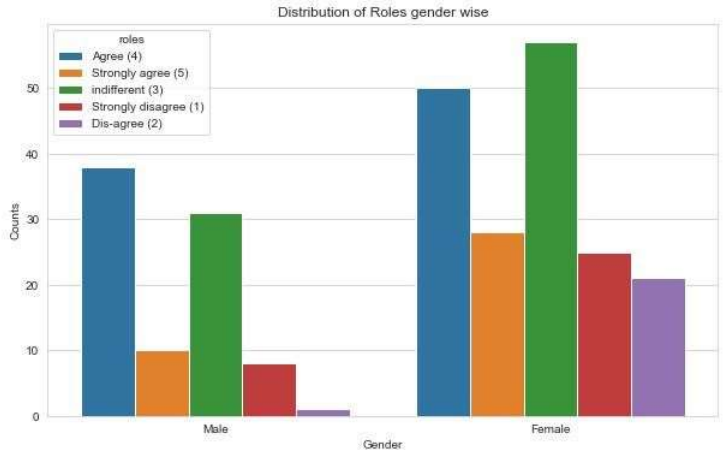
- The number of female customers is more than male customers
- We can say that females are more intrested in online shopping than males.

```
# Plotting bar graph to show the relationship between Gender and Gratification

plt.figure(figsize=[8,6])
sns.set_style(style='whitegrid')
sns.countplot(x=df['Gender'], hue=df['gratification'], data =df)
plt.xlabel('Gender')
plt.ylabel('Counts')
plt.title('Gender gratification feeling')
plt.show()
```



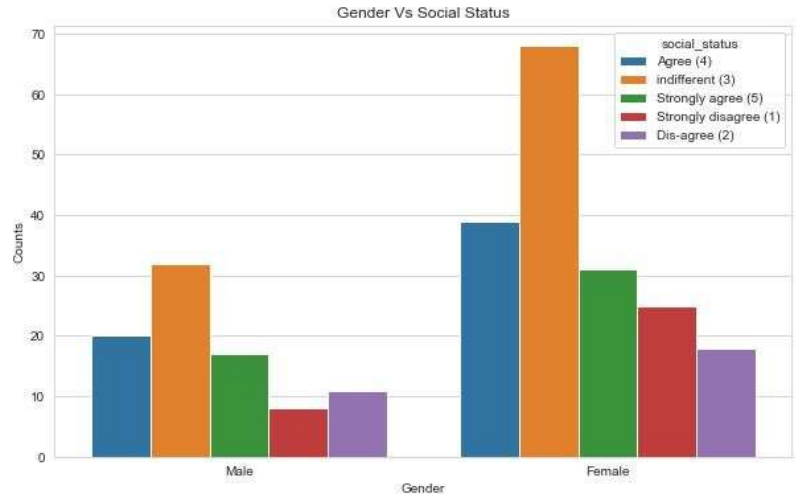
- From the graph, we can say that females customers are more engaged in online shopping as compared to male customers.
- Analysis for Male customers:
  - Most of the male customers agrees that they feel gratification shopping on their favorite e-tailer.
  - Very few male customers strongly disagree.
- Analysis for the female customers:
  - Most female customers feel indifferent while shopping online.
  - Approx 10 female customers strongly disagree and disagree while shopping online.

```
# Plotting graph to show the distribution if the customers feel shopping on the website helps them fulfill certain roles. (Gender

plt.figure(figsize=[10,6])
sns.countplot(x=df['Gender'], hue=df['roles'], data=df)
plt.xlabel('Gender')
plt.ylabel('Counts')
plt.title('Distribution of Roles gender wise')
plt.show()
```



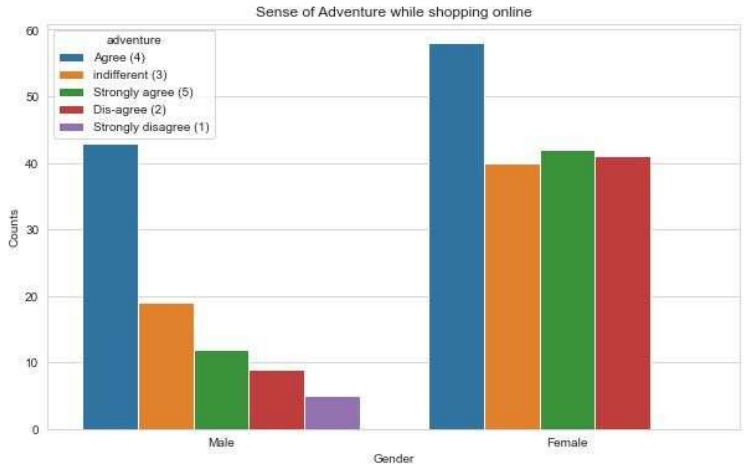
- Analysis for the male customers:
  - Maximum male customers agree that shopping on the website helps them fulfill certain roles.
  - Very few (negligiable) male disagree with this.
- Analysis for the female customers:
  - Most of the female customers feel indifferent while shopping online.

```
# Plotting graph to show gender wise distribution who feels shopping online enhances their social status.

plt.figure(figsize=[10,6])
sns.countplot(x=df['Gender'], hue=df['social_status'], data=df)
plt.ylabel('Counts')
plt.xlabel('Gender')
plt.title('Gender Vs Social Status')
plt.show()
```



- The distribution graph shows that most of the customers(Males and females) feel indifferent whether shopping online enchances the social status.
- Majority of the customers feels shopping online enhances the social status.

```
# Plotting graph to show the customers view on shopping on the website gives them the sense of adventure

plt.figure(figsize=[10,6])
sns.countplot(x=df['Gender'], hue=df['adventure'], data =df)
plt.xlabel('Gender')
plt.ylabel('Counts')
plt.title('Sense of Adventure while shopping online')
plt.show()
```



- maximum of the customers (Male+Female) agrees that shopping on the website gives them the sense of adventure.
- In tha case of Male customers the percentage is more whom feels shopping on the website gives them the sense of adventure.
- In the case of Female customers the percentage is less.

2. Age:

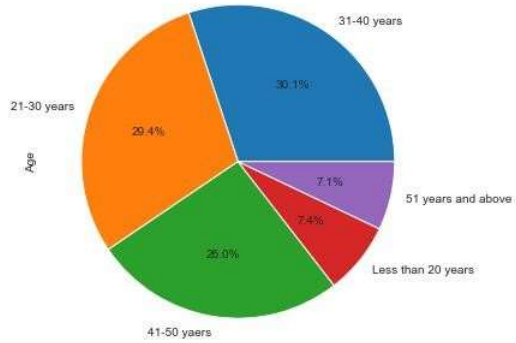
```
# Checking for the value counts of the Age column.

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

```
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
```

- We've 5 categories:
  - Less than 20 years.
  - 21-30 years.
  - 31-40 years.
  - 41-50 years.
  - 51 years and above.

```
# Plotting pie plot to show the distribution of column 'Age'
plt.figure(figsize=[6,6])
df['Age'].value_counts().plot.pie(autopct= '%0.1f%%')
```

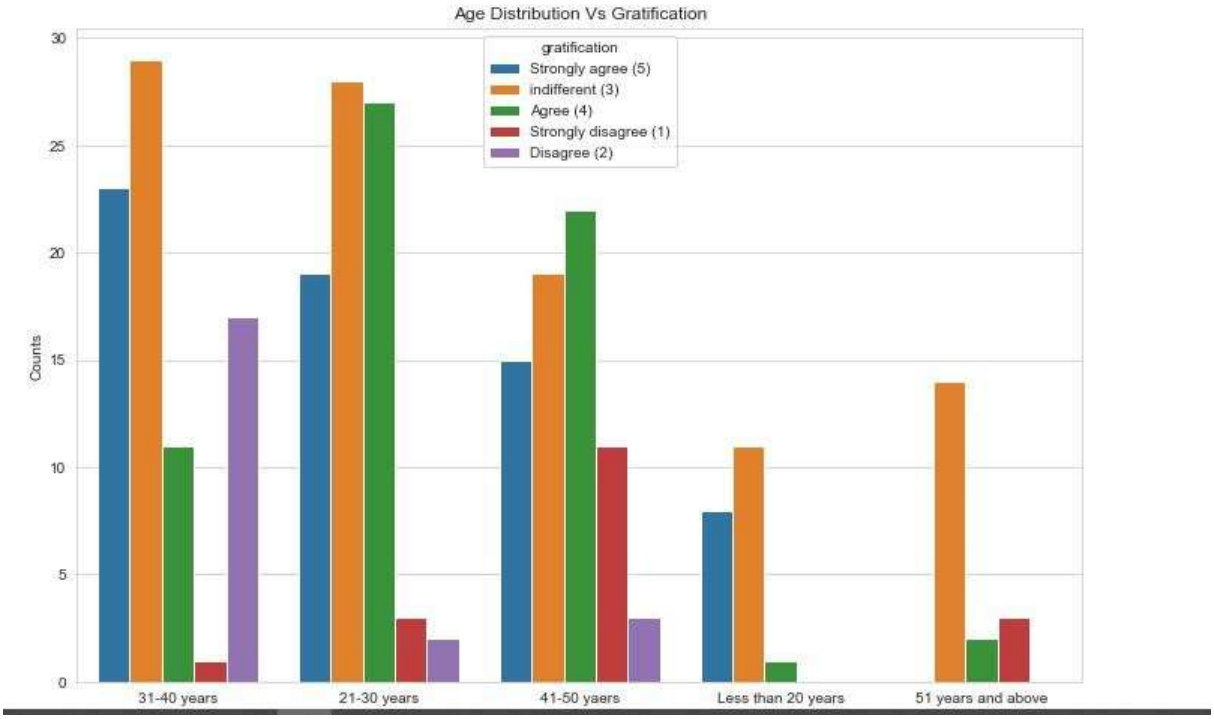
```
<AxesSubplot:ylabel='Age'>
```



Observations:

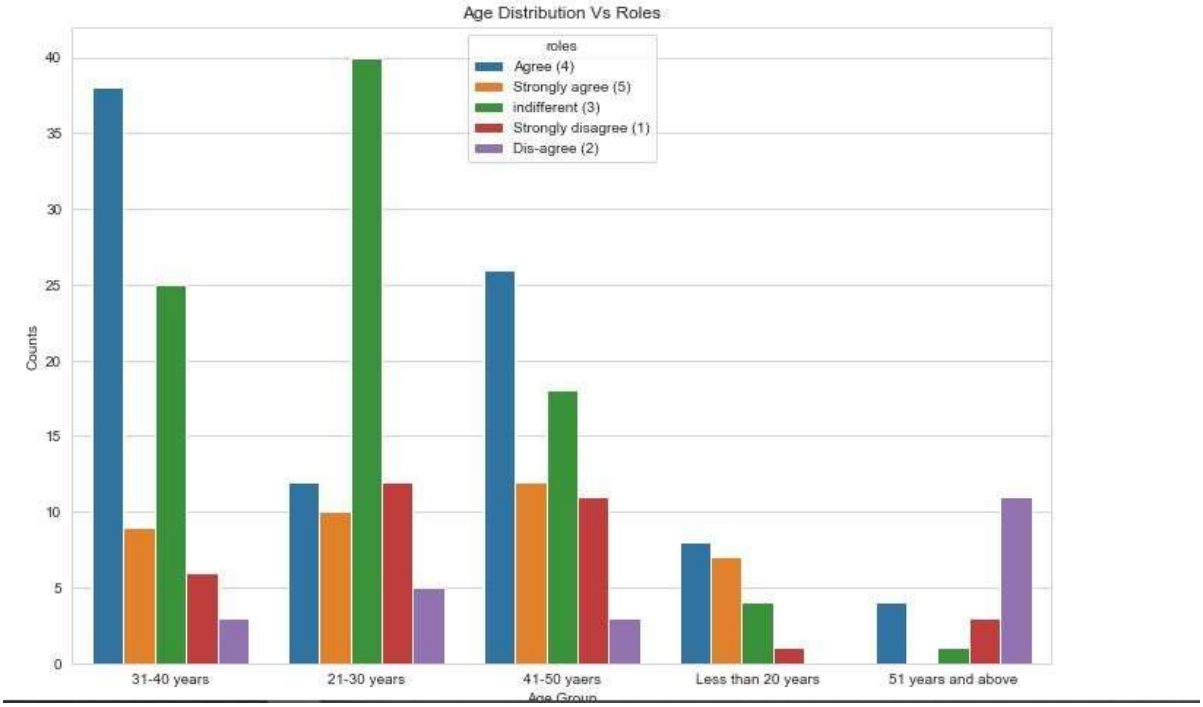
- The persons whose age lies between 21 to 50 have maximum chance that they will prefer online shopping. We can say this is because of the persons in the age group 21 to 50 are more tech svvy.
- Persons above the age of 50 years have minimum chance of shopping online becuase they are not so much tech svvy.
- Persons below the age of 20 years have also minimum chance of shopping online as may be they don't have credit or debit cards.

```
plt.figure(figsize=[12,8])
sns.countplot(df['Age'], hue=df['gratification'], data=df)
plt.xlabel('Age Group')
plt.ylabel('Counts')
plt.title('Age Distribution Vs Gratification')
plt.show()
```



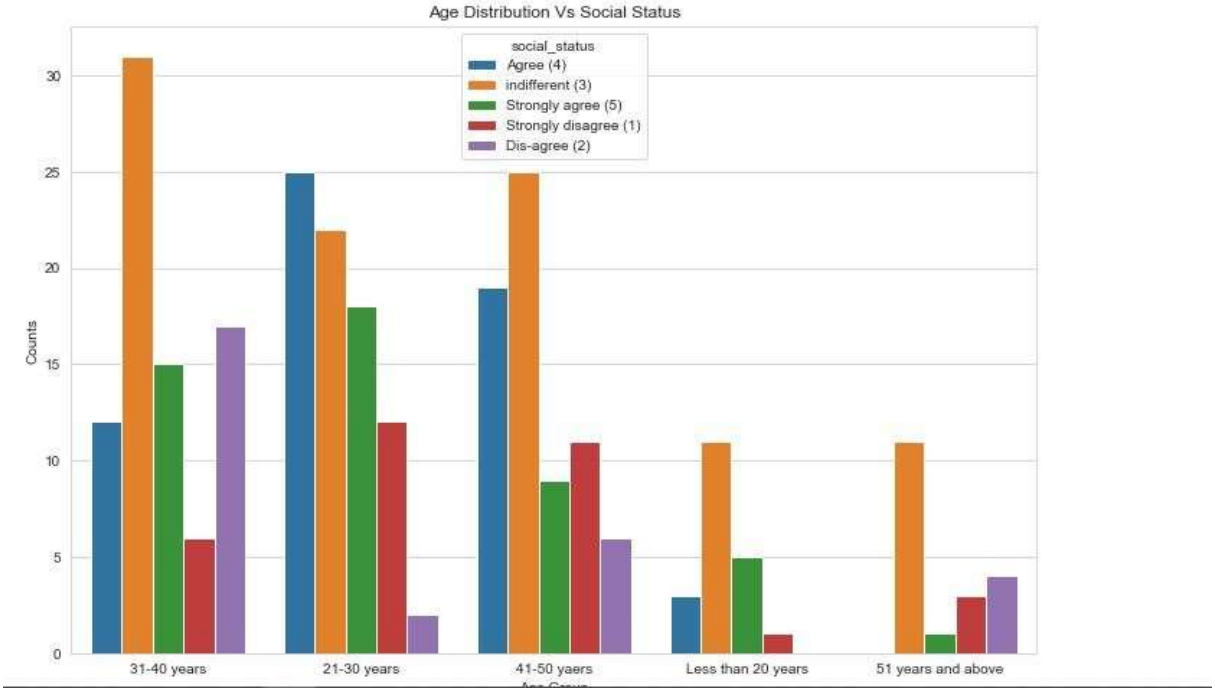
- For the age group of 21 to 40 years most of the persons are indiffernet that shopping online gives them feeling of gratification or not.
- Most of the persons of age group 41 to 50 years feel gratification if they shop online.
- Foe the age below 20 years and above 50 years most of the persons are indifferent.

```
plt.figure(figsize=[12,8])
sns.countplot(df['Age'], hue=df['roles'], data=df)
plt.xlabel('Age Group')
plt.ylabel('Counts')
plt.title('Age Distribution Vs Roles')
plt.show()
```



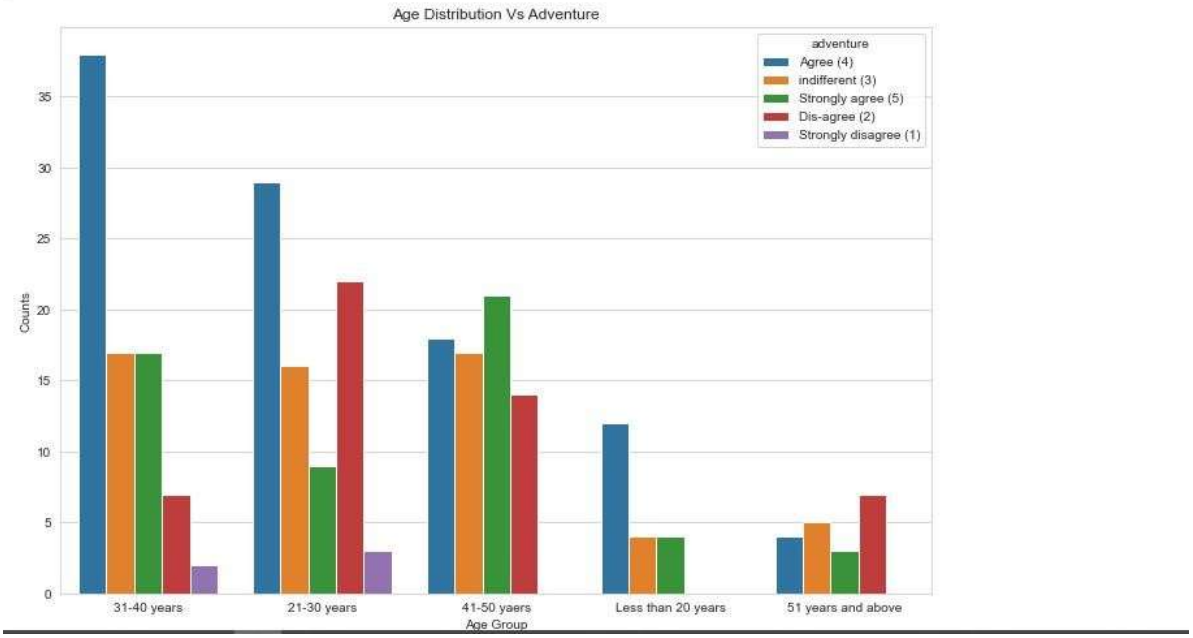
- For the age group of 31 to 40 and 41 to 50 years most of the customers agrees that shopping online helps them fulfill certain roles.
- For the age group of 21 to 30 years most of the customers are indifferent that shopping online helps them fullfill certain roles.
- Customers below the age of 20 years also agrees that shopping online helps them fulfill certain roles.
- Customers above the age of 50 years disagree with this.

```
plt.figure(figsize=[12,8])
sns.countplot(df['Age'], hue=df['social_status'], data=df)
plt.xlabel('Age Group')
plt.ylabel('Counts')
plt.title('Age Distribution Vs Social Status')
plt.show()
```



- Most customers of the age group 31 to 40 years, 41 to 50 years, below 20 years and above 51 years are indifferent that shopping online enhances social status.
- Most customers of the age group 21 to 30 years agrees that shopping online enhances social status.

```
plt.figure(figsize=[12,8])
sns.countplot(df['Age'], hue=df['adventure'], data=df)
plt.xlabel('Age Group')
plt.ylabel('Counts')
plt.title('Age Distribution Vs Adventure')
plt.show()
```



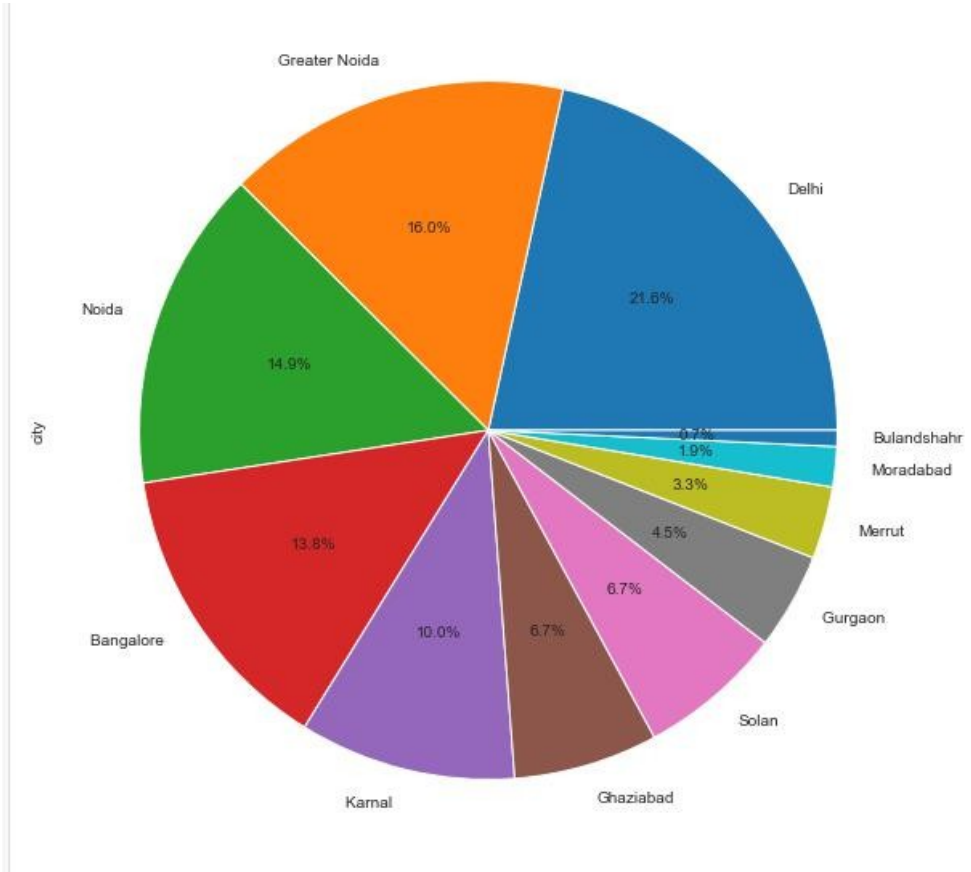
Observations:

- For the age group 21 to 40 most of the customers agrees that shopping online gives them sense of adventure.
- Customers below the age of 20 also feels shooping online gives sense of adventure.
- Customers from the age group 41 to 50 years most of them think they are strongly agree that shopping online give sense of adventure.
- Customers above the age of 51 years strongly disagree that shopping online give sense of adventure.

3. City:

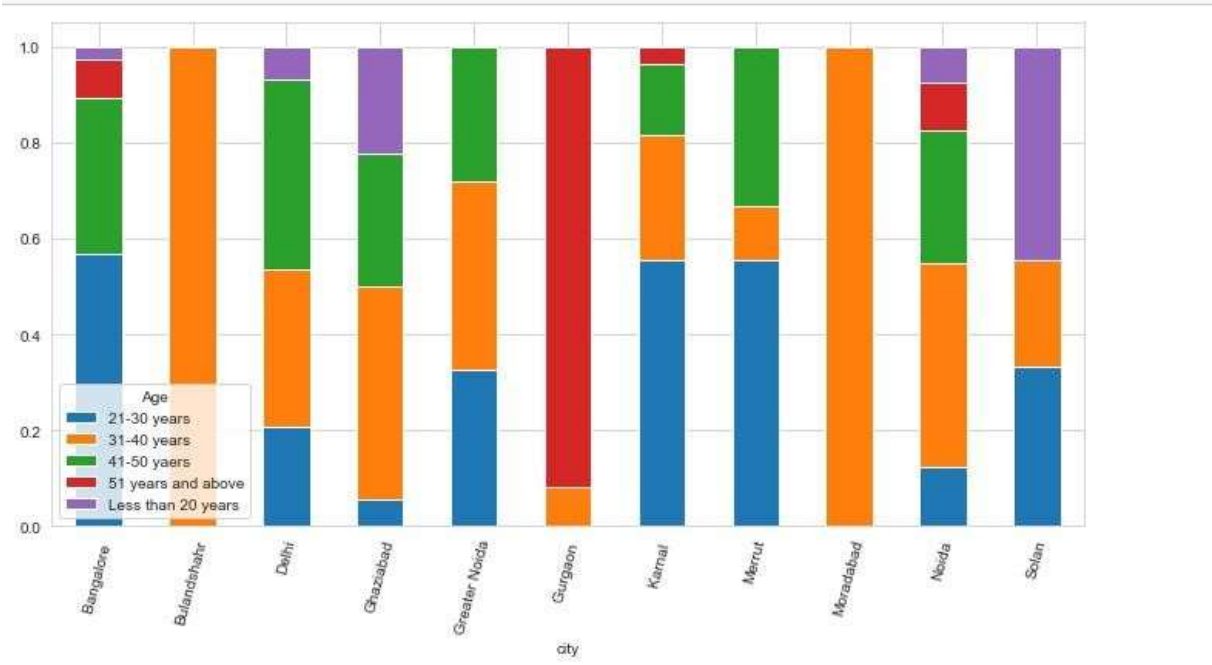
```
Delhi           58
Greater Noida   43
Noida           40
Bangalore       37
Karnal          27
Ghaziabad       18
Solan           18
Gurgaon         12
Merrut           9
Moradabad        5
Bulandshahr      2
Name: city, dtype: int64
```

- In the dataset we have the data for the cities Delhi, Greater Noida, Noida, Bangalore, Karnal, Ghaziabad, Solan, Gurgaon, Merrut, Moradabad and Bulandshahr.



Oservations:

- Customers from Delhi having the maximum chance of online shopping.
- From the graph we can say that, Tier 1 cities (Delhi, Bangalore) have more chance of online shopping followed by Tier 2 and Tier 3 cities having the low chance of online shopping.



Observations:

- More than 50% customers of the city Bangalore, Karnal, and Merrut who prefer to shop online lies in the age group 21 to 30 years.
- For the cities Bulandshahr and Moradabad most of the customers are from the age group of 31 to 40 years(These cities contribute least to the dataset).
- For the city Gurgaon, 51 years and above ccustomers are more active, followed by 31 to 40 years.
- For the city Solan most of the customers are less than 20 years old, followed by 21 to 40 years.
- For the city Delhi, most of the customers are from the age group 41 to 50 years, followed by 31 to 40 years, and 21 to 30 years.
- For the city Ghaziabad, most of the customers are from the age group 31 to 40 years, followed by 41 to 50 years, less than 20 years and 21 to 30 years.
- For the cities Greater Noida and Noida, most of the customers are of age group 31to 40 years.

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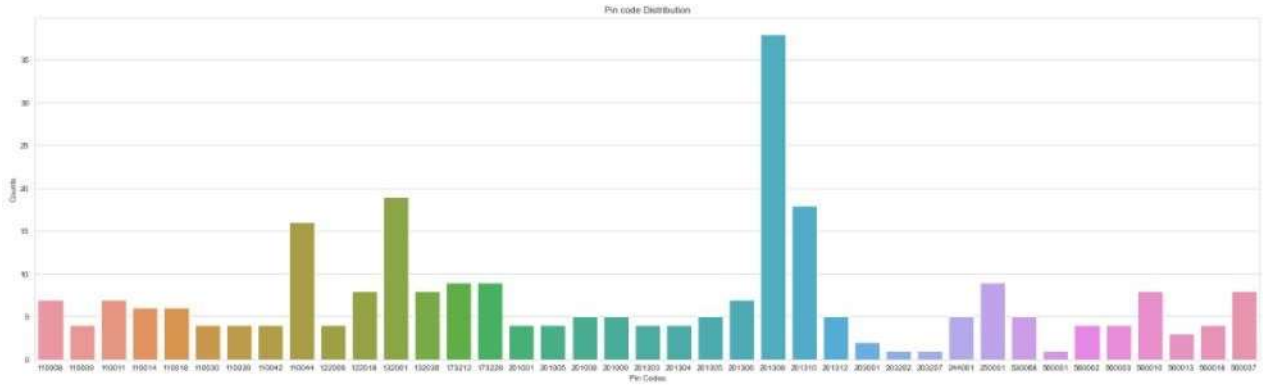
4. <u>Pincode:</u>



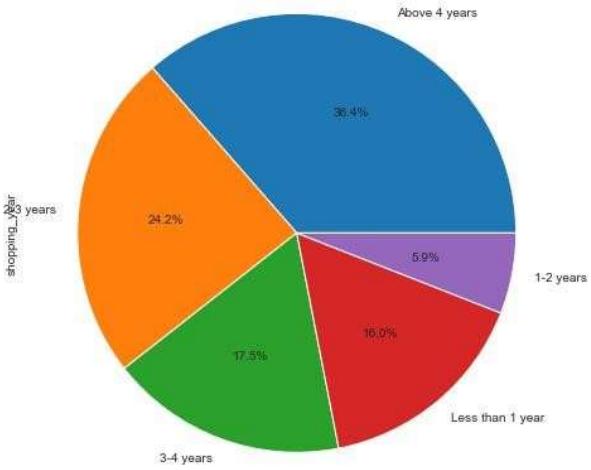
- From pincode "201308" (the pincode belongs to Noida city) maximum cutomers shop online.
- From pincode '132001' (the pincode belongs to Karnal city) is the 2nd highest city from where the customers shop online.
- From pincode '201310' (the pincode belongs to Greater Noida city) is the 3rd highest city from where customers shops online.
- Customers from pincode '203202', '203207 (Gautam Buddha Nagar city area), and '560001' (Bangalore city area) shop online very rarely.

---

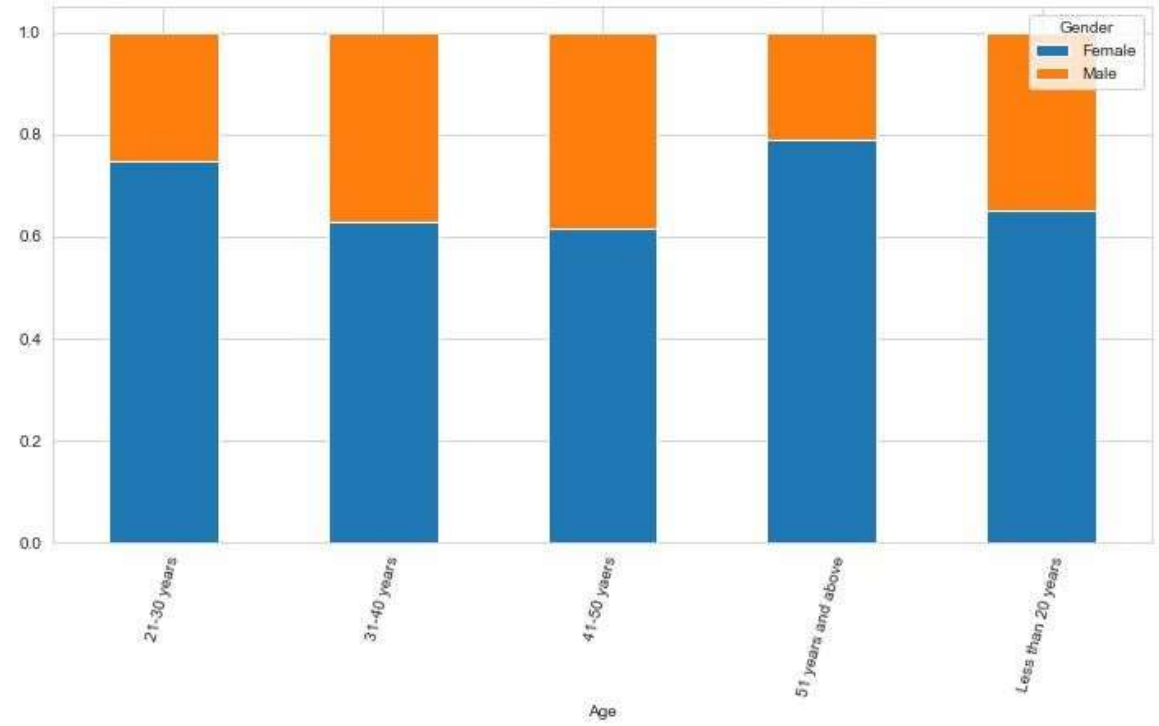
5. Shopping Year:

```
Above 4 years       98
2-3 years           65
3-4 years           47
Less than 1 year    43
1-2 years           16
Name: shopping_year, dtype: int64
```

- We have total 5 shopping years groups:
  - customers who are shopping online from less than 1 year.
  - customers who are shopping online from 1 to 2 years.
  - customers who are shopping online from 2 to 3 years.
  - customers who are shopping online from 3 to 4 years.
  - customers who are shopping online from above 4 years.



- Most of the customers are shopping online for more than 4 years, followed by 2 to 3 years, 3 to 4 years, less than 1 years and 1 to 2 years.



- For age group 51 years and above the approx 80% customers are females.
- For age group 31 to 40 years and less than 20 years approx 60% customers are females.
- For the age group 21 to 30 approx 75% customers are females.

So, we can say that female customers shops online more than male customers.

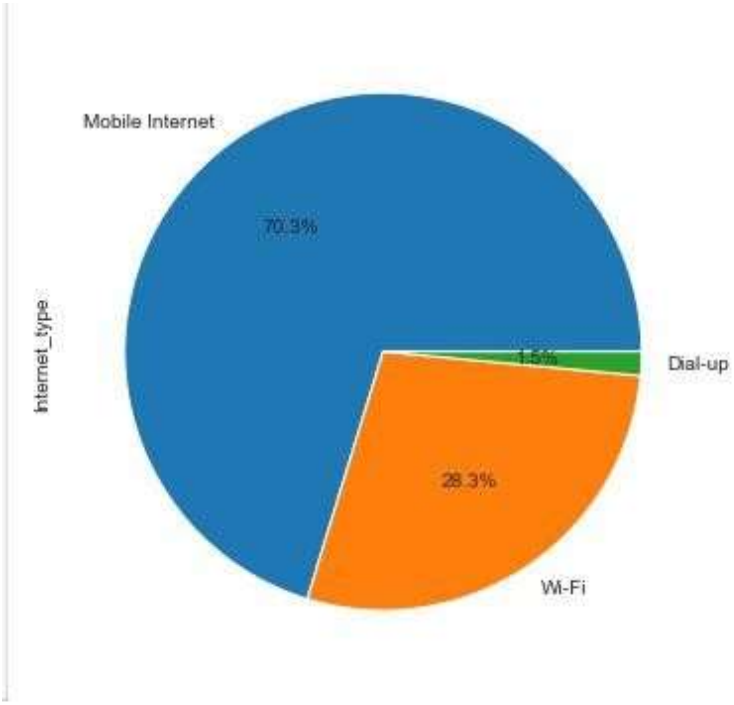
6. Let's check for the type of internet used by the customers to shop online:

```
df['Internet_type'].value_counts()
```

```
Mobile internet    142
Wi-Fi               76
Mobile Internet     47
Dial-up              4
Name: Internet_type, dtype: int64
```

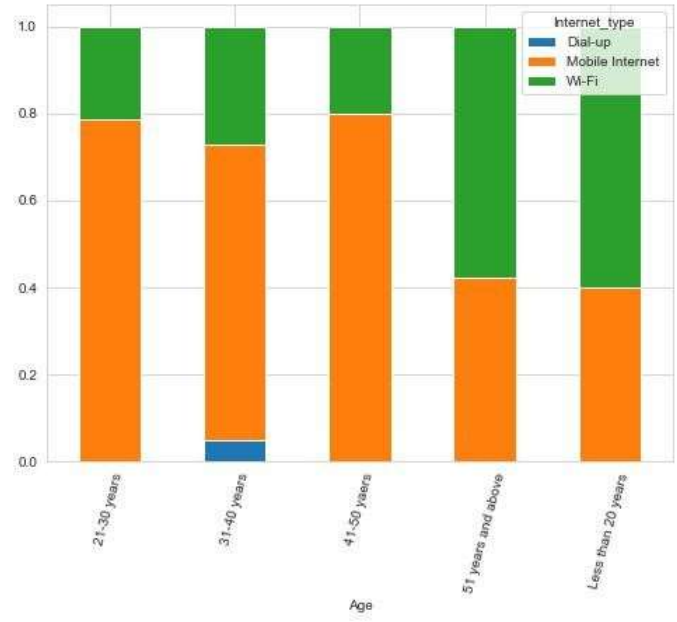
```
# As Mobile internet and Mobile Internet is same. We'll replace 'Mobile  internet' to 'Mobile Internet' to make it single.

df['Internet_type'].replace({'Mobile internet':'Mobile Internet'}, inplace=True)
```



- More than 70% customers uses mobile internet to shop online.
- Appprox 28% customers uses wifi to shop online.
- Dial-up internet is used by very few customers (only approx 2%).

7. Age wise distribution of internet type used by the customers:



- Dial-up internet is used by very few customers who are from age group 31 to 40 years.
- Customers less than 20 years and more than 51 years uses wifi internet more than mobile internet.
- All other customers uses mobile internet more than wifi to shop online.
- Approx 80% of customers from the age group 21 to 30 years and 41 to 50 years uses mobile internet to shop online.

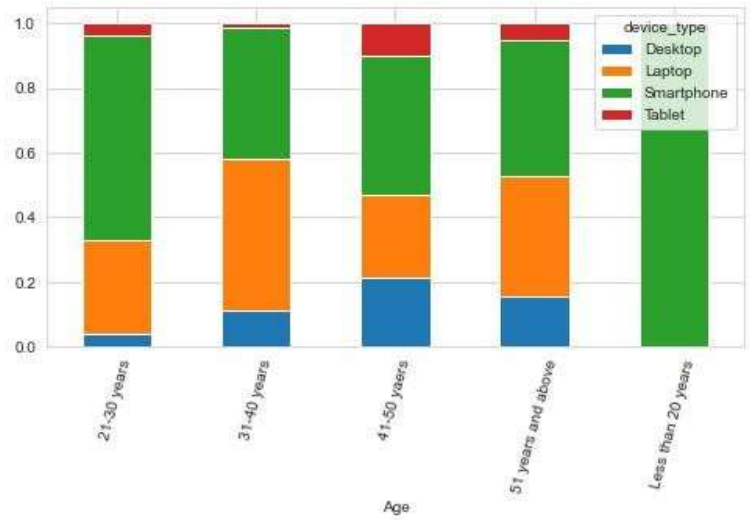
8. Let's check for the devices used by the customers to shop online:

```
# Checking for the value count of the devices

df['device_type'].value_counts()
```

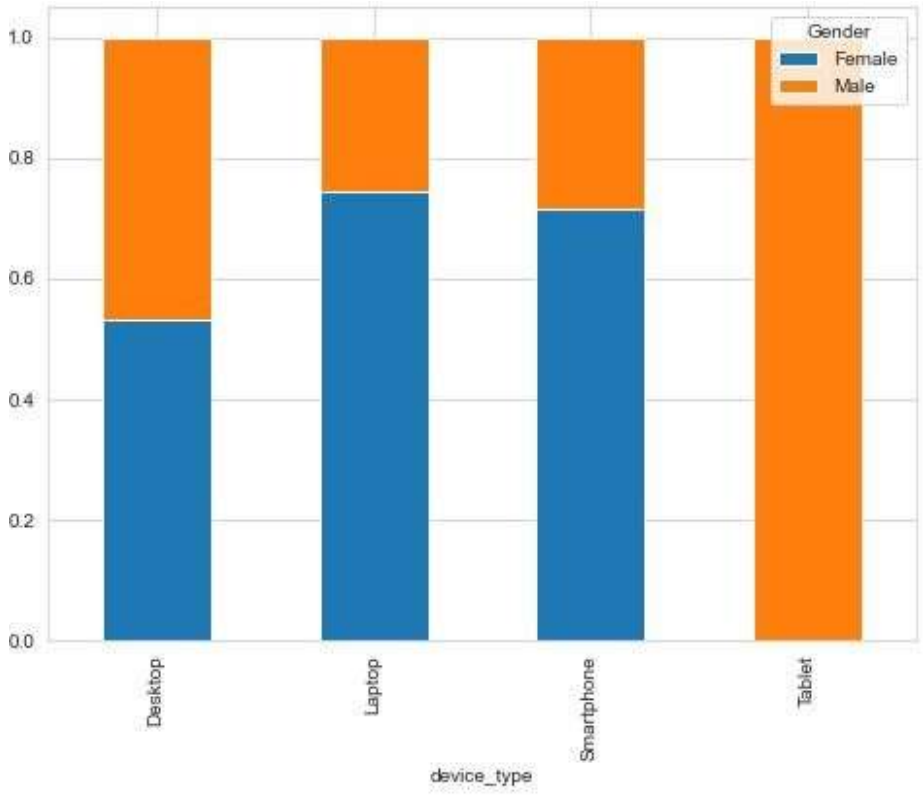
```
Smartphone    141
Laptop         86
Desktop        30
Tablet         12
Name: device_type, dtype: int64
```

- The above table shows that most of the customers usees smartphone to shop online.



Observations:

- Less than 20 years customers uses smartphone to shop online.
- We can also say that smartphone is common devices which is used by all the age group customers to shop online.
- By the age group of 21 to 30 years, smartphone is mostly used device to shop online.
- Tablet and desktop is used by very few customers to shop online.
- Smartphone and laptop is mostly used to shop online by the customers.



- Tablet is only used by the male customers.
- Desktop is equally used by male and female customers.
- Female customers generally use smartphone and laptop to shop online.

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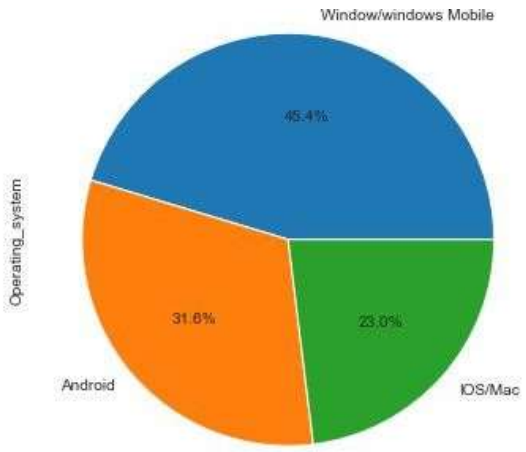
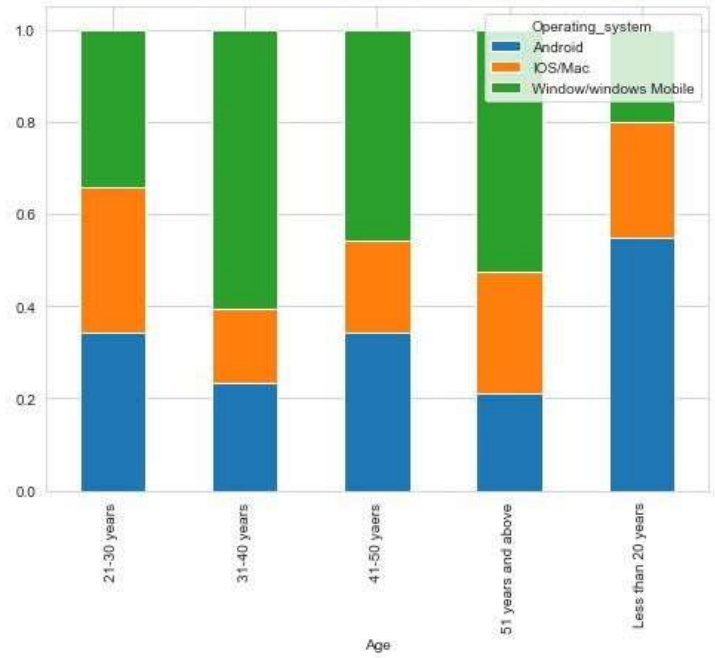
9. <u>Checking for the operating system used by the customers:</u>



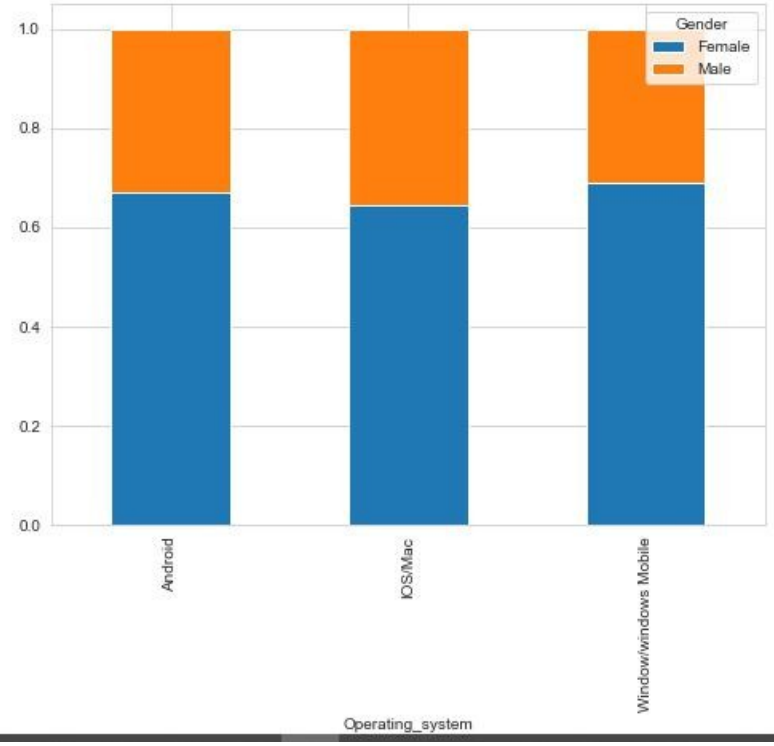
- More than 45% customers uses window or window mobile to shop online.
- Android operating systems are used by approx 32% customers.
- IOS/Mac operating systems are used by approx 23% customers.



- Customers belonging to age group 21 to 30 years, uses Android, IOS/Mac, and Window/Windows Mobile almost equally.
- Approx 60% customers belonging to age group 31 to 40 years uses Window/Windows Mobile to shop online.
- Among the customers who belong to age group less than 20 years, Android operating system is mostly used.

```
# Checking for the gender wise operating system used by the customers

os_gender = pd.crosstab(df.Operating_system, df.Gender, normalize='index')
os_gender.plot.bar(stacked=True, figsize=[8,6])
plt.show()
```



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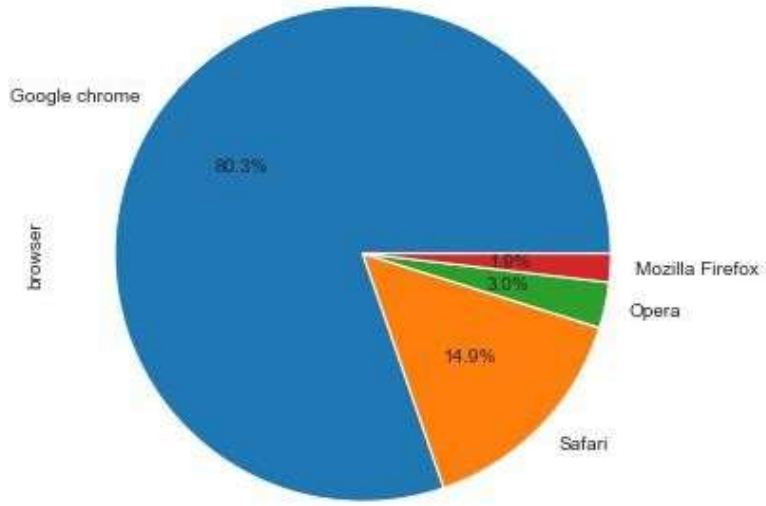
10. Checking for the browser used by the customers to shop online:



- Google chrome is commonly used browser among the customers.(approx 80%)
- Safari is the second most popular browser among the customers.

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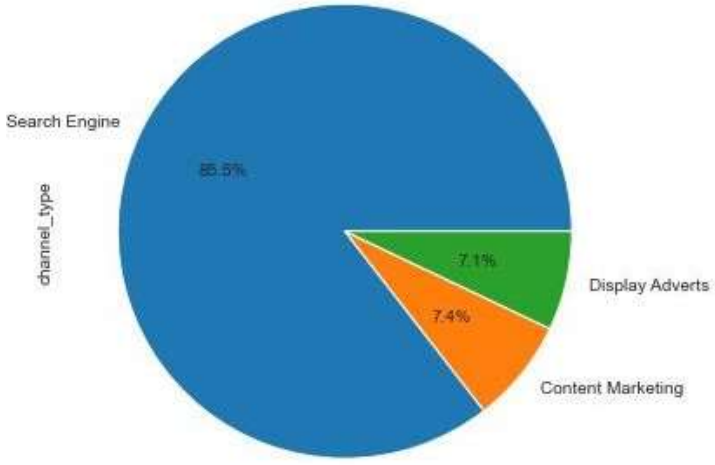
11. Checking for the channel followed by the customers to arrive at their favorite online store for the first time:



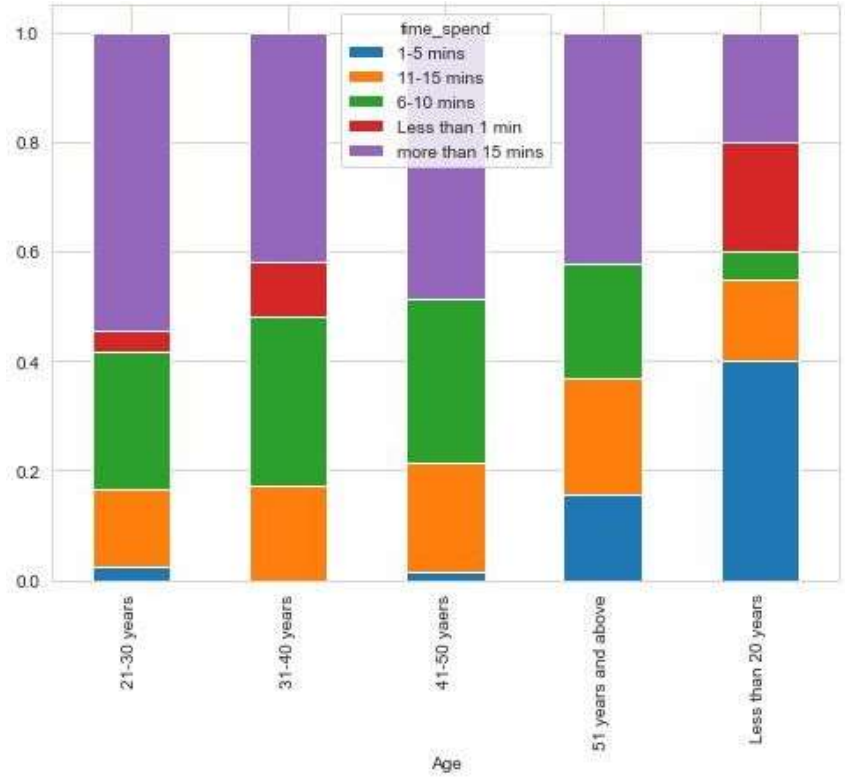
- more than 85% customers uses search engine to arrive at their favourite online store to shop online.

---

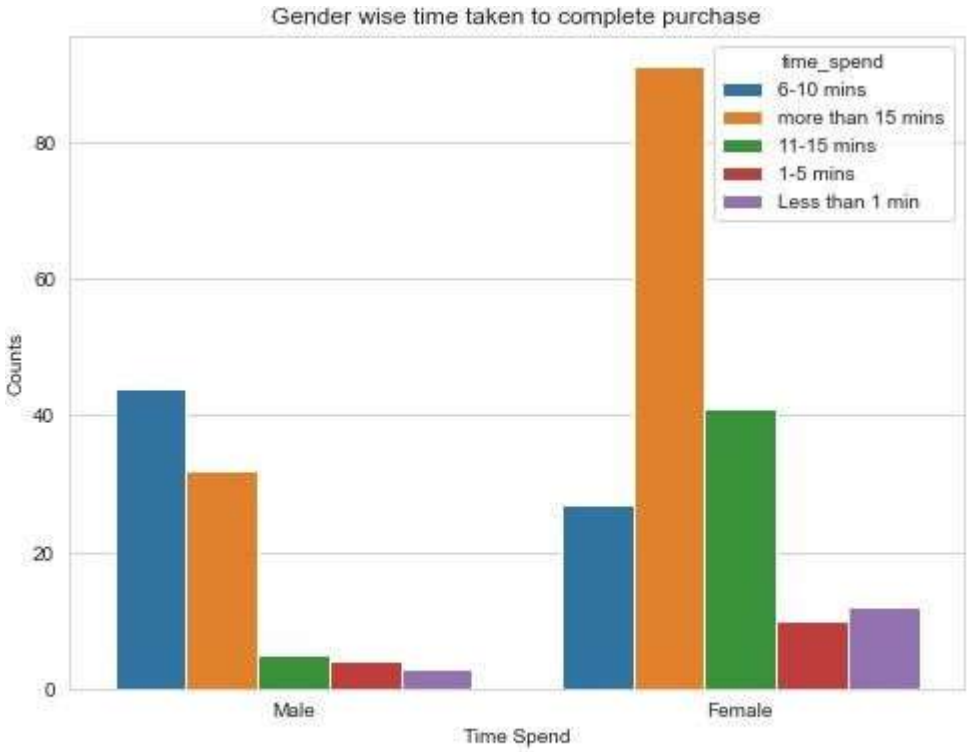
12. Let's check for the time spend by the customers before making any purchase:

```
more than 15 mins    123
6-10 mins             71
11-15 mins            46
Less than 1 min       15
1-5 mins              14
Name: time_spend, dtype: int64
```

- Maximum customers explore the e-store for more than 15 minutes before making any purchase.



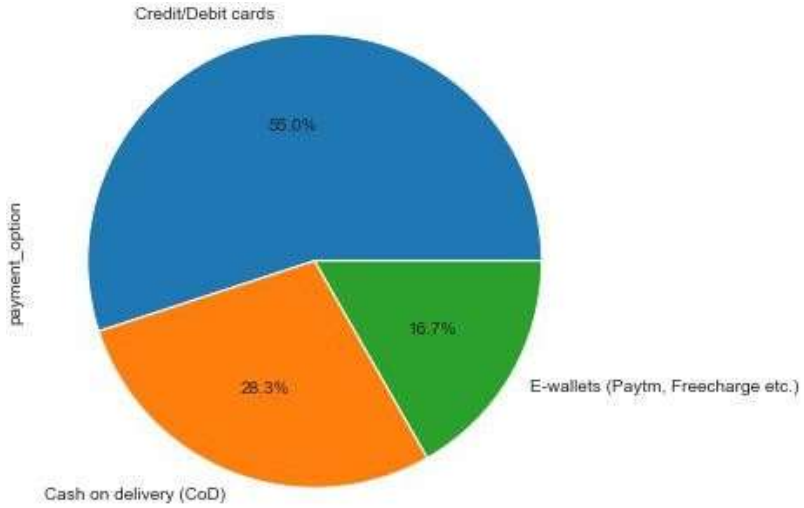
- Customers with the age less than 20 years spend less time to make the purchase from the e-store.
- 21 to 30 years customers takes maximum time to make the purchase.



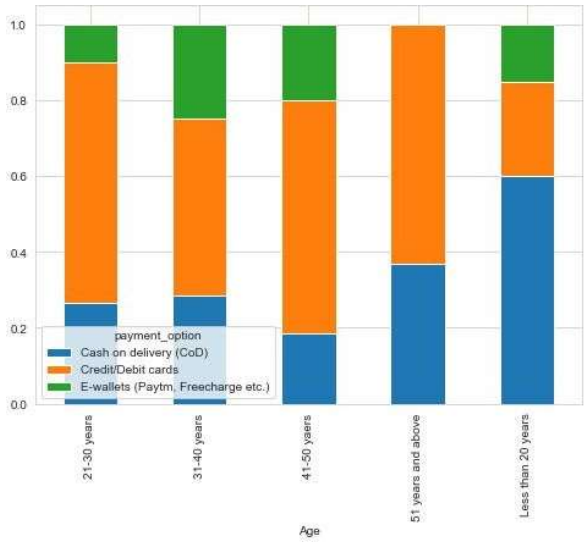
- Female customers spend more time on e-store to make a purchase than male.

---

13. <u>Checking for the preferred payment Options:</u>



- Maximum customers uses online method to make the payment while shopping online.
- Credit/Debit card payment option is most popular payment method among the customers to shop online.



- Most of the customers whose age is less than 20 years use cash on delivery (COD) option to make the payment. This may be because they might not have the access to credit/decit cards.
- 51 years and above customers do not use E-wallets to make payment. This shows that E-wallets are not popular among the age group of 50 years and above.

- Credit/Debit cards is the most popular payment option among both the genders.

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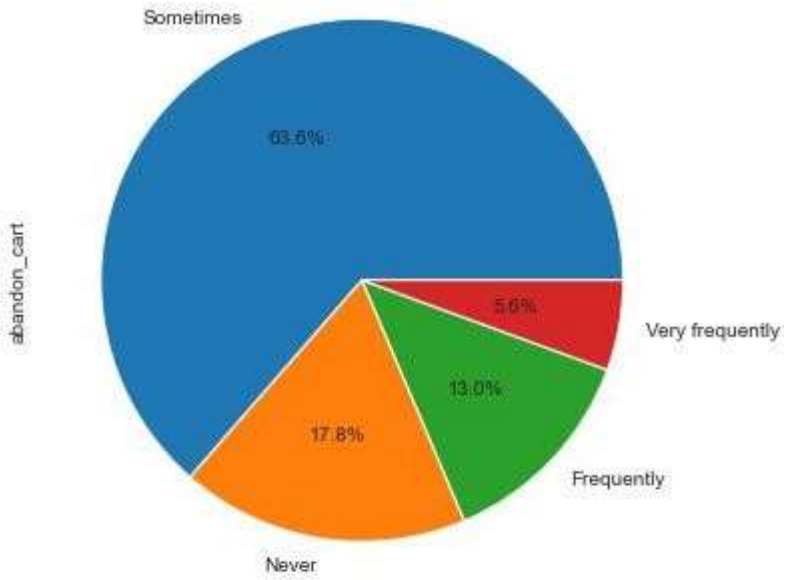
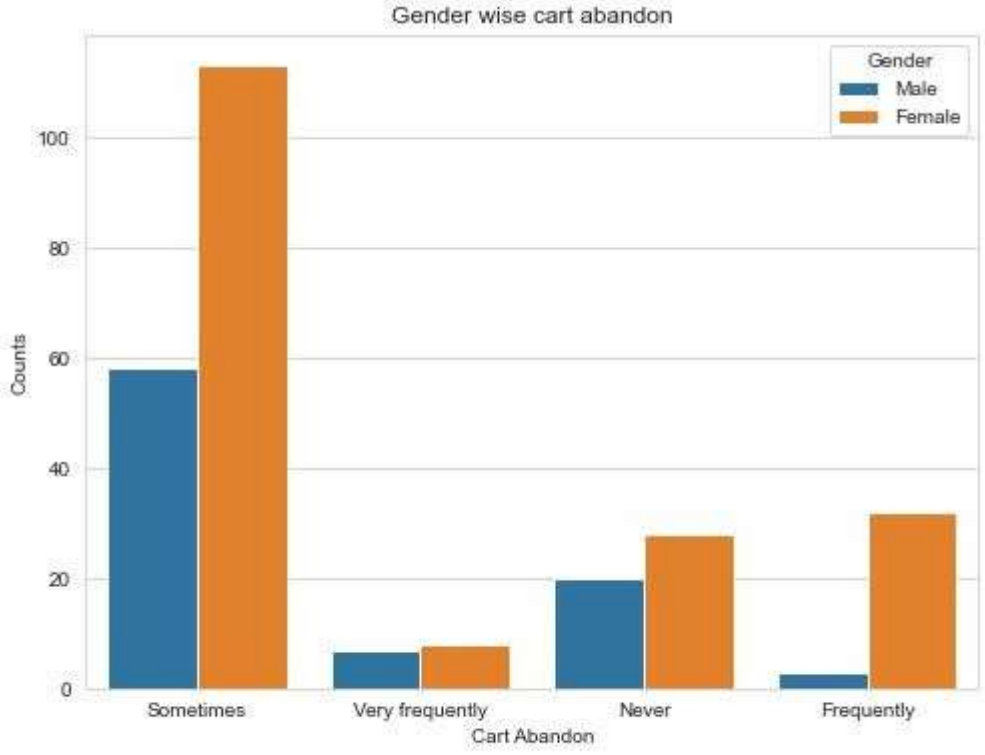
14. Let's check how frequently customers abandon shopping cart:



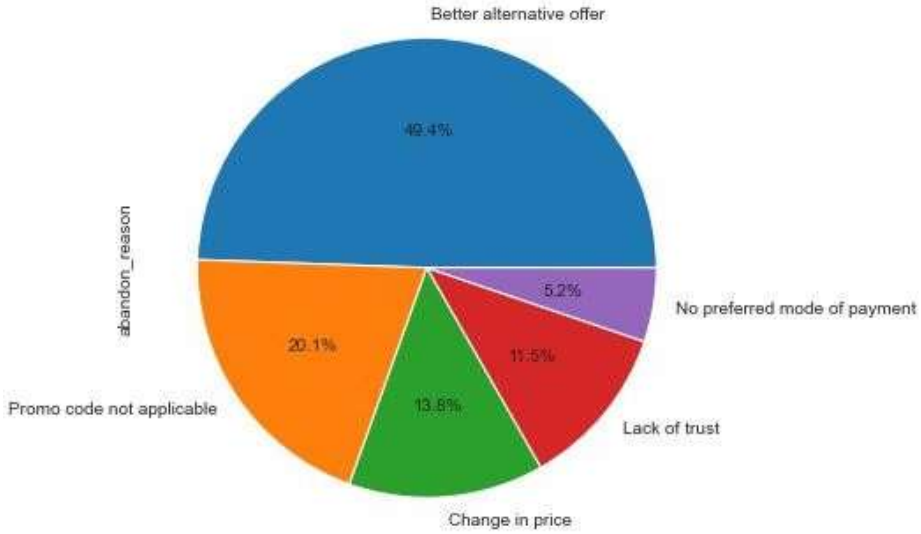
- Approx 64% of customers rarely abandon shopping cart.
- Approx 18% of customers never abandon shopping cart.



- As compared to male female customers, frequently abandon the shopping cart.

---

15. Let's check why customers abandon shopping cart:



- Approx 50% customers abandon shopping cart because they get better alternative offers.
- Approx 20% customers abandon shopping cart because they were not able to apply the promo code.
- Approx 11.5% customers abandon shopping cart because of lack of trust.

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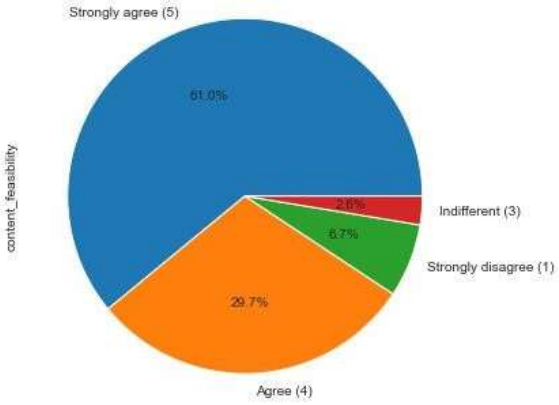
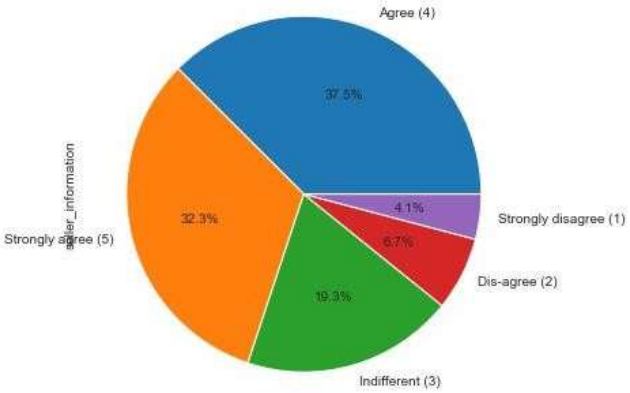
16. Let's check if the customers think content on the website must be easy to read and understand:



- 61% customers strongly agree that the content on the website must be easy to read and understand.
- Approx 30% customers agree that the content on the websote must be easy to read and understand.
- This shows that the content on the website of the e-store must be easy to read and understand as more than 90% customers agree with this.

---

17. Let's check how information on the listed seller and product helps customer for purchase decision:



- As checked approx 32% cutomers strongly agree and approx 38% customers agree that complete information on listed seller and product being offered is important for purchase decision.

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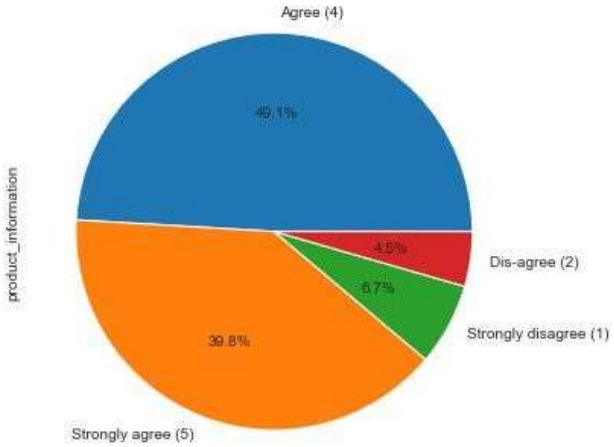
18. All relevant information on listed products must be stated clearly



- The above pie graph clearly shows that it is very important to state all the relevant information on listed products very clearly.

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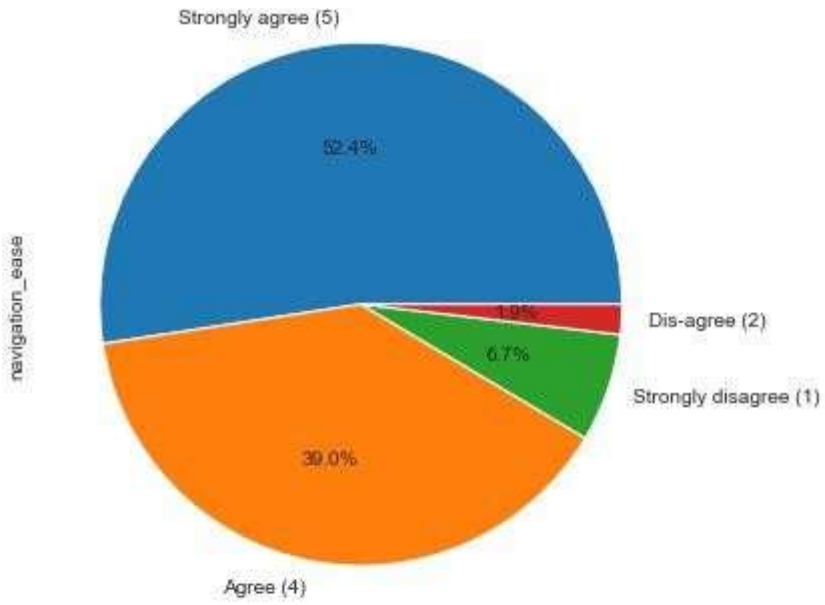
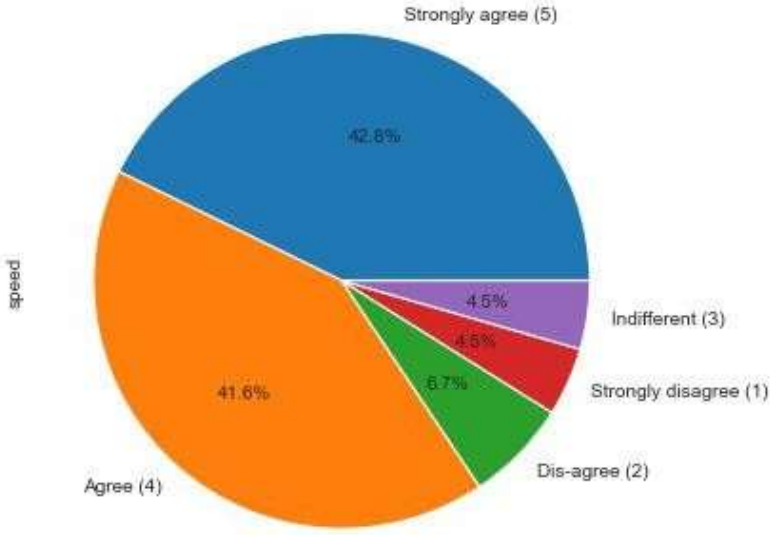
19. Ease of navigation in website:



- The above graph clearly shows that navigation in website should be easy.

---

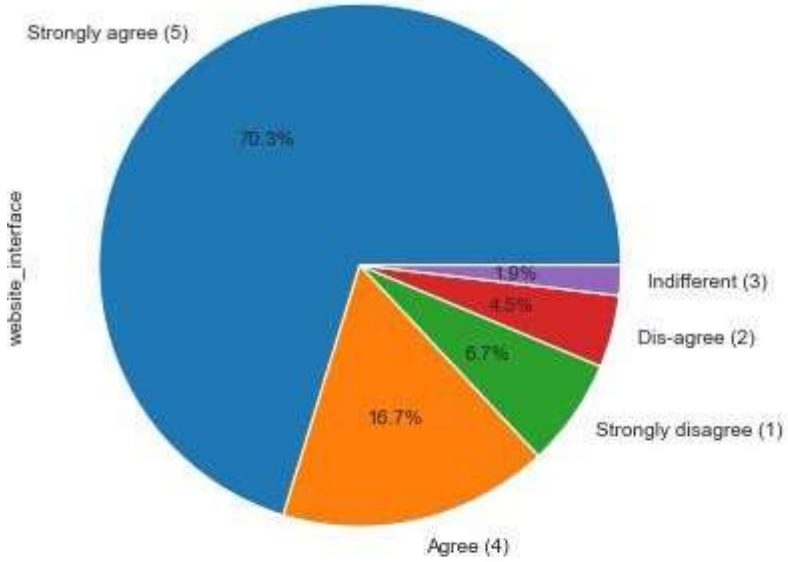
20. Loading and processing speed:



- The graph clearly shows that the loading and processing speed of the website should be fast.

---

21. User friendly Interface of the website:



- The graph clearly shows that the website should have user friendly interface.

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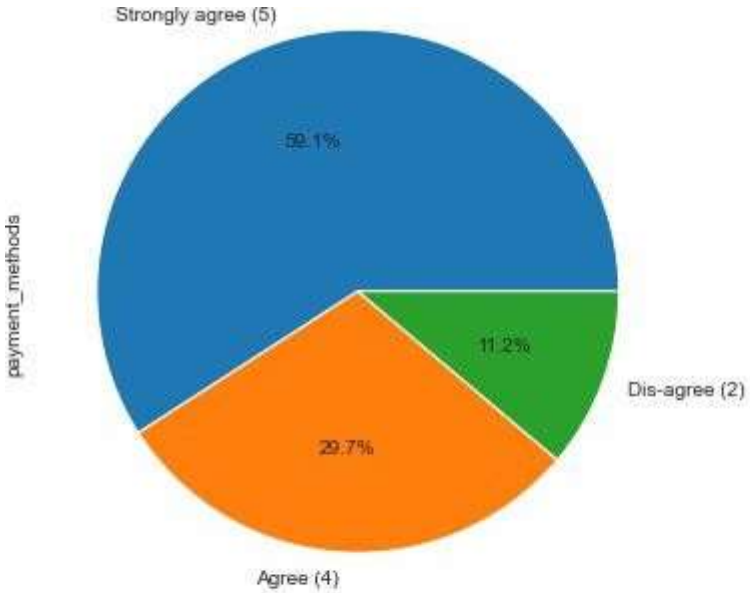
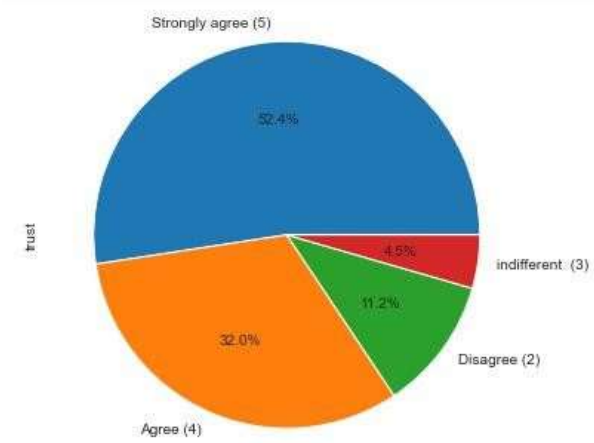
22. Convenient Payment methods:



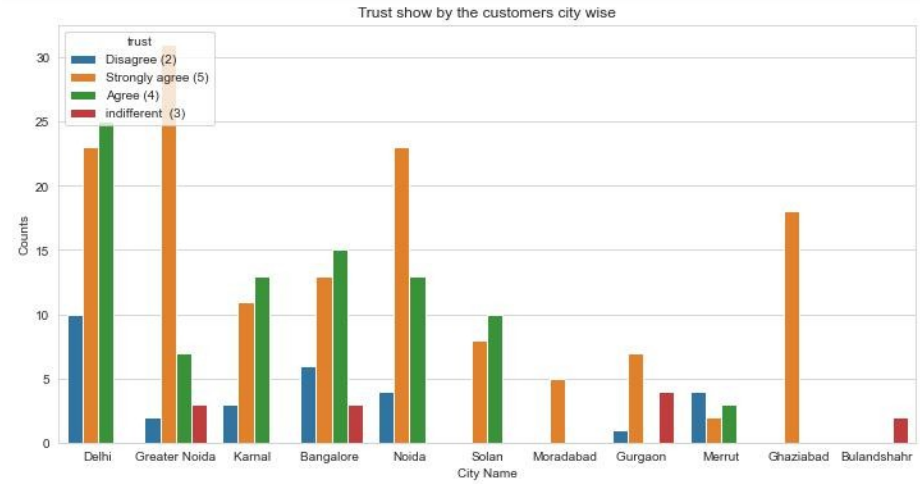
- The graph clearly shows that convenient payment methods helps in online shopping.

---

23. Trust that the online retail store will fulfill its part of the transaction at the stipulated time:



- The graph shows that the customers trust that the online retail store will fulfill its part of the transaction at the stipulated time.



- All the customers from the cities Ghaziabad and Moradabad strongly trust that the online retail store will fulfill its part of the transaction at the stipulated time.
- All customers from the city bulandshahr are indifferent that the online retail store will fulfill its part of the transaction at the stipulated time.
- Most of the customers from the cities Delhi, Karnal, bangalore, and Solan trust that the online retail store will fulfill its part of the transaction at the stipulated time.
- Most of the customers from the cities Greater Noida, Noida, Gurgaon strongly trust that the online retail store will fulfill its part of the transaction at the stipulated time.
- Maximum customers from the city Merrut do not trust that the online retail store will fulfill its part of the transaction at the stipulated time.

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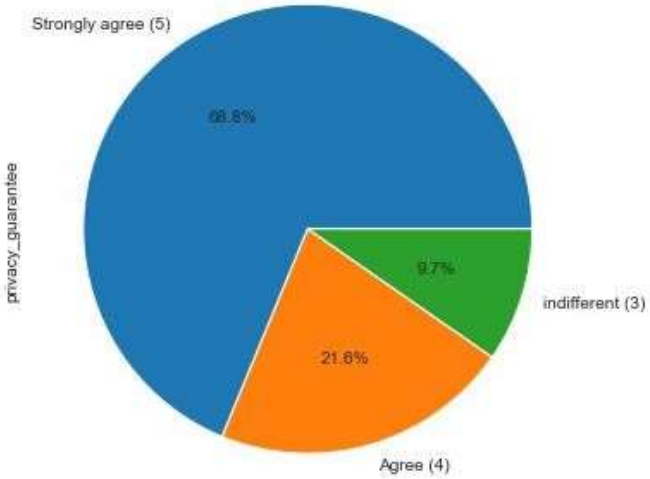
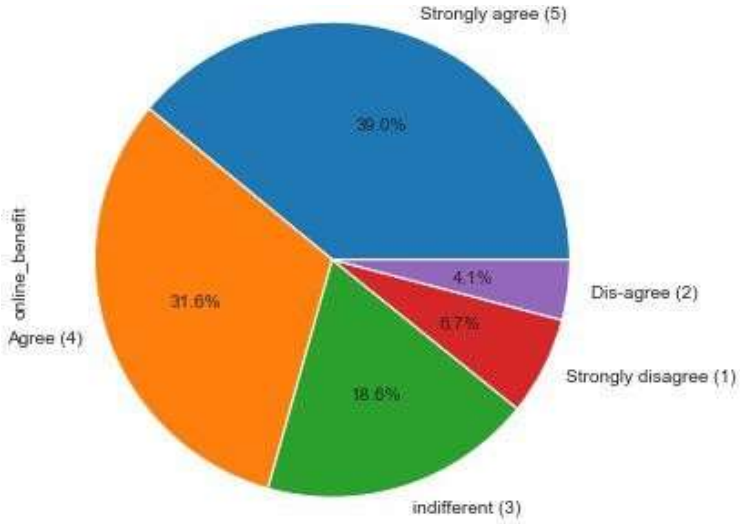
24. Being able to guarantee the privacy of the customer:



- Maximum customers agrees that the online retail stores are being able to guarantee the privacy of the customer.

---

25. Online shopping gives monetary benefit and discounts:



- Most of the customers agrees that online shopping gives them monetary benefit and discounts.

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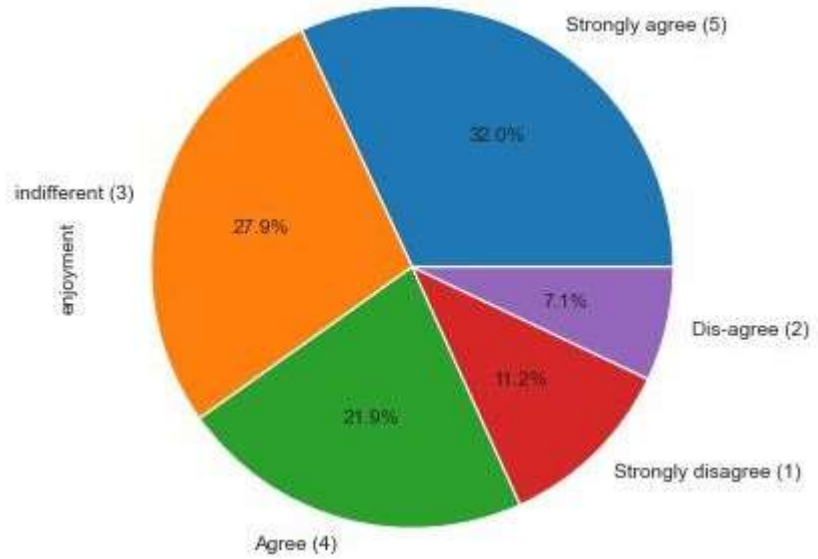
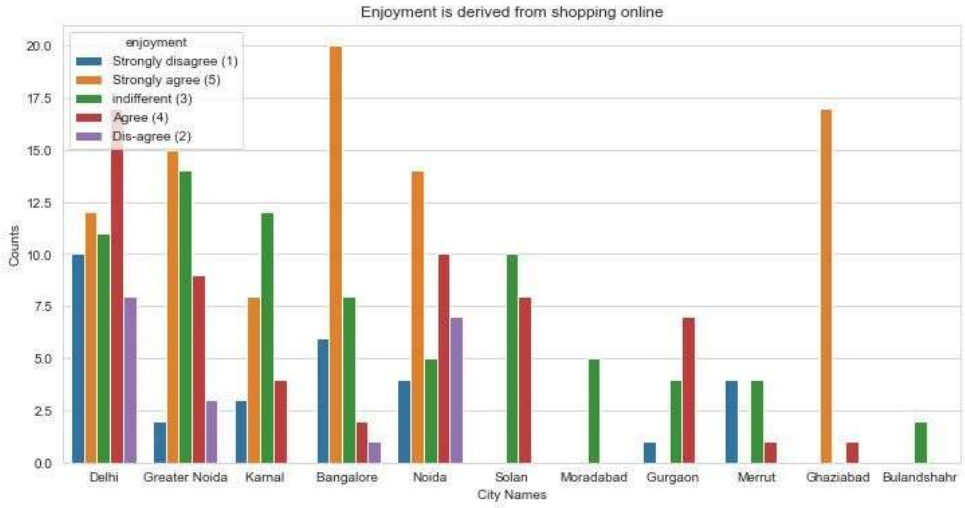
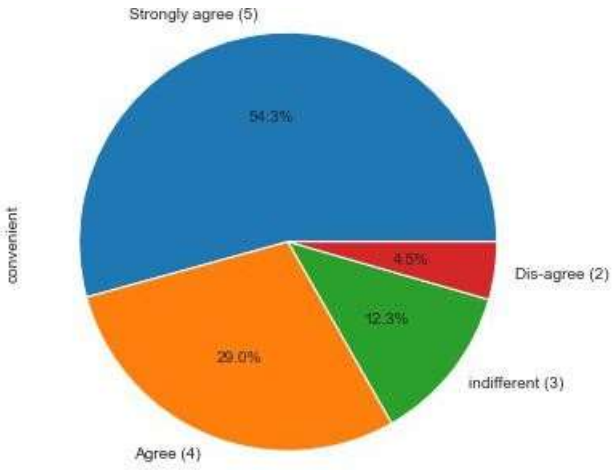
26. Enjoyment is derived from shopping online





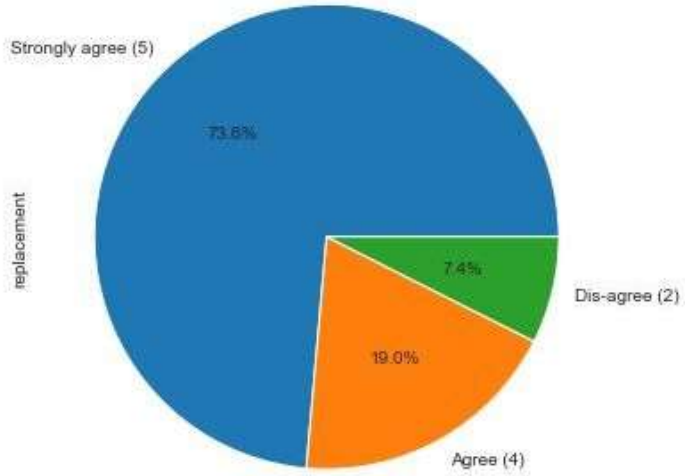
- All the customers from the cities Moradabad and Bulandshahr are indifferent that enjoyment is derived from shopping online.
- Most customers form the cities Karnal and Solan are indifferent that enjoyment is derived from shopping online.
- Most of the customers from the cities Greater Noida, Bangalore, Noida, and Ghaziabad strongly agrees that enjoyment is derived from shopping online.
- Most of the customers from the city Delhi agree that enjoyment is derived from shopping online.
- Most of the customers from the city Meerut are indifferent and strongly disagree that enjoyment is derived from shopping online.

27. Shopping online is convenient and flexible:



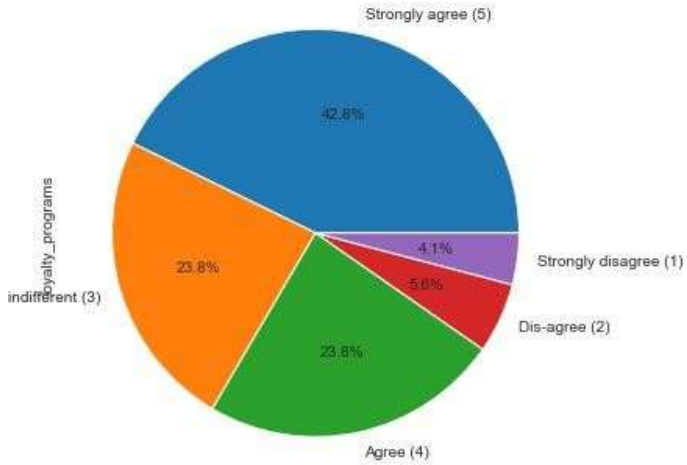
- The graph shows that most of the customers strongly agrees that shopping online is convenient and flexible.

28. Return and replacement policy of the e-retailer is important for purchase decision:



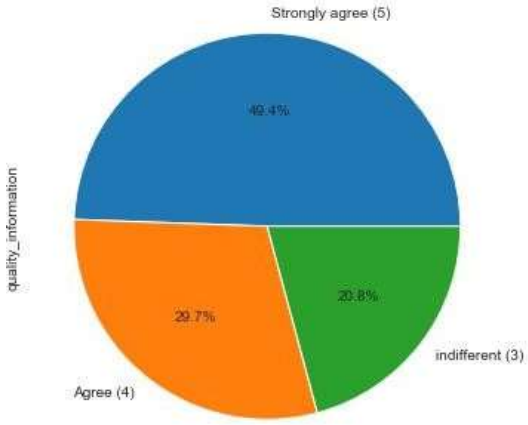
- The graph shows that return and replacement policy of the e-tailer is important for purchase decision.

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



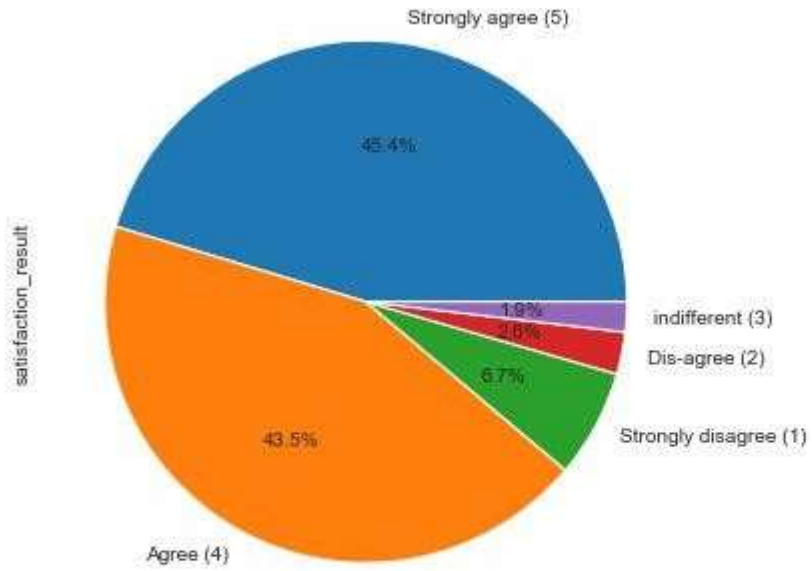
- Approx 43% customers strongly agrees that gaining access to loyalty programs is a benefit of shopping online.
- Approx 245 customers agrees that gaining access to loyalty programs is a benefit of shopping online.
- Only about 4% customers strongly disagress that gaining access to loyalty programs is a benefit of shopping online.
- Approx 6% customers disagree that gaining access to loyalty programs is a benefit of shopping online.
- Approx 24% customers are indifferent.

30. Displaying quality Information on the website improves satisfaction of customers:



- Approx 50% customers strongly agree that displaying quality Information on the website improves satisfaction of customers.
- Approx 30% customers agree with this and 20% customers are indifferent.
- No customers disagree with this.

31. User satisfaction cannot exist without trust:



- Approx 45% customers strongly agree that user satisfaction cannot exist without trust.
- Approx 44% cutomers agree that user satisfaction cannot exist without trust.

Hence, we can say that user satisfaction cannot exist without trust.

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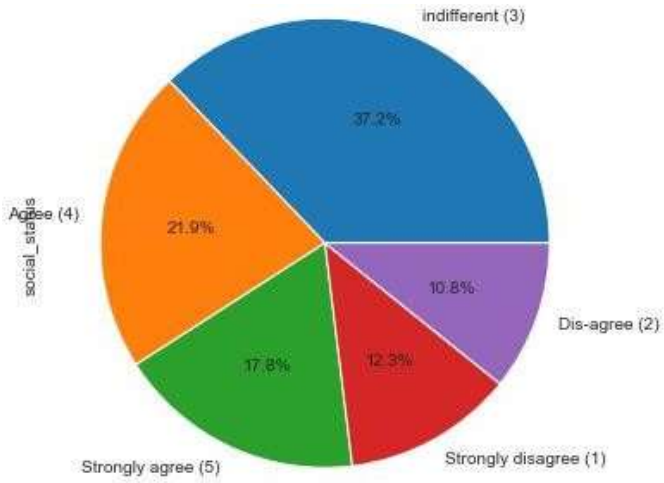
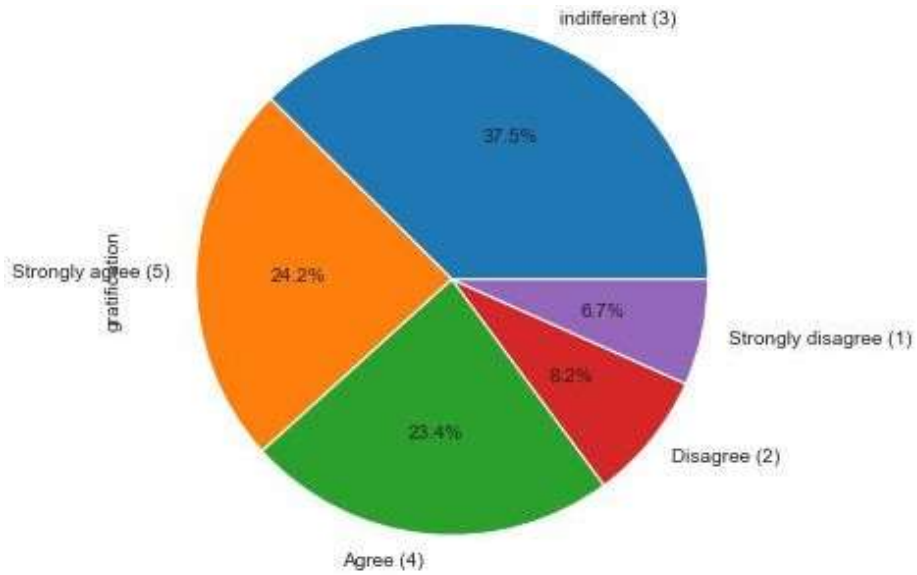
32. Shopping on your preferred e-retailer enhances your social status:



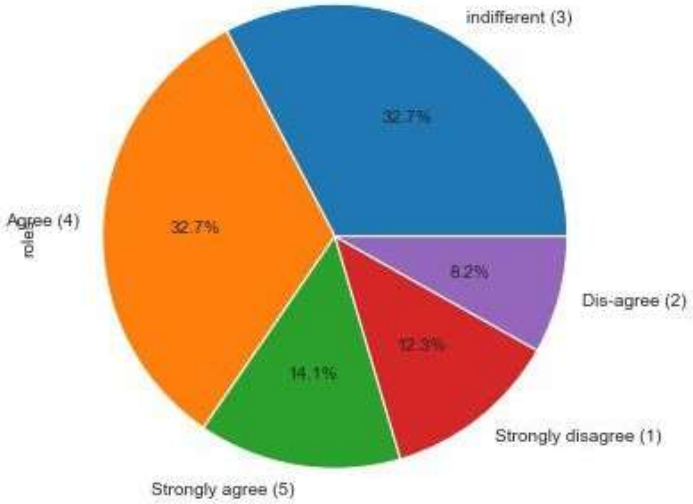
- Most of the customers are indifferent that shopping online enhances social status.

33. You feel gratification shopping on your favorite e-tailer:



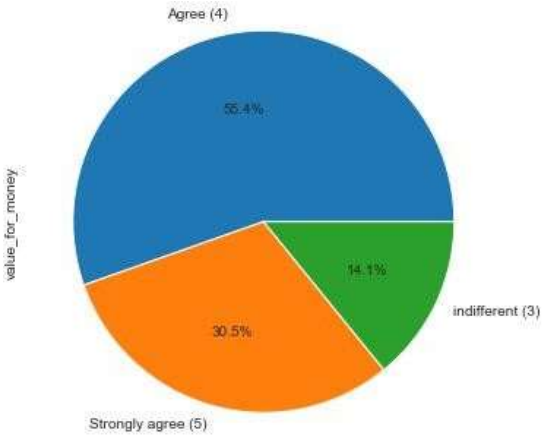
- Most of the users are indifferent that they feel gratification shopping on their favorite e-tailer

34. Shopping on the website helps you fulfill certain roles:



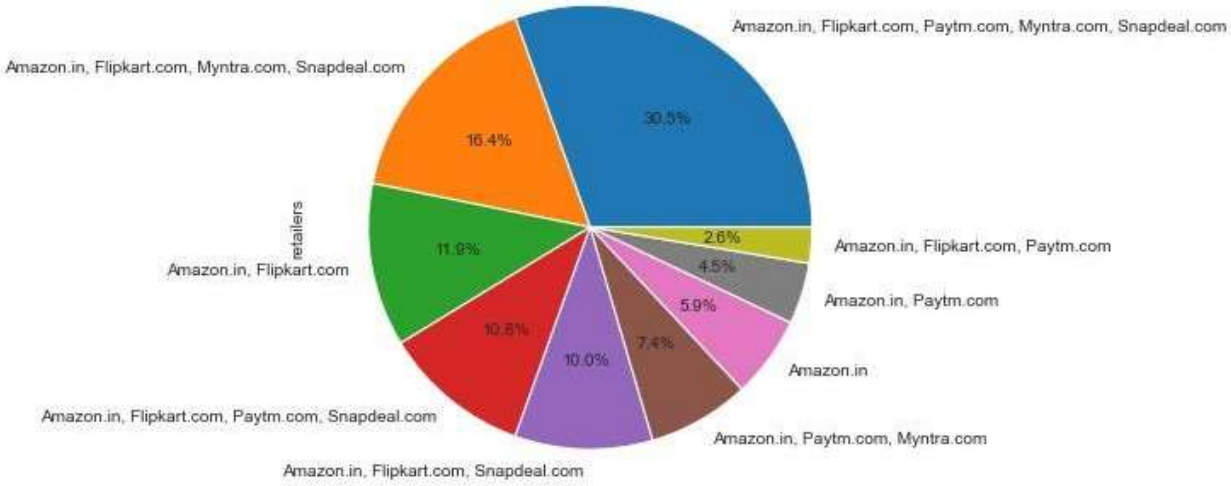
- Approx 33% customers agree that shopping on the website helps you fulfill certain roles.
- Approx 14% customers strongly agree that shopping on the website helps you fulfill certain roles.
- Approx 33% customers are indifferent.

35. Getting value for money spent:



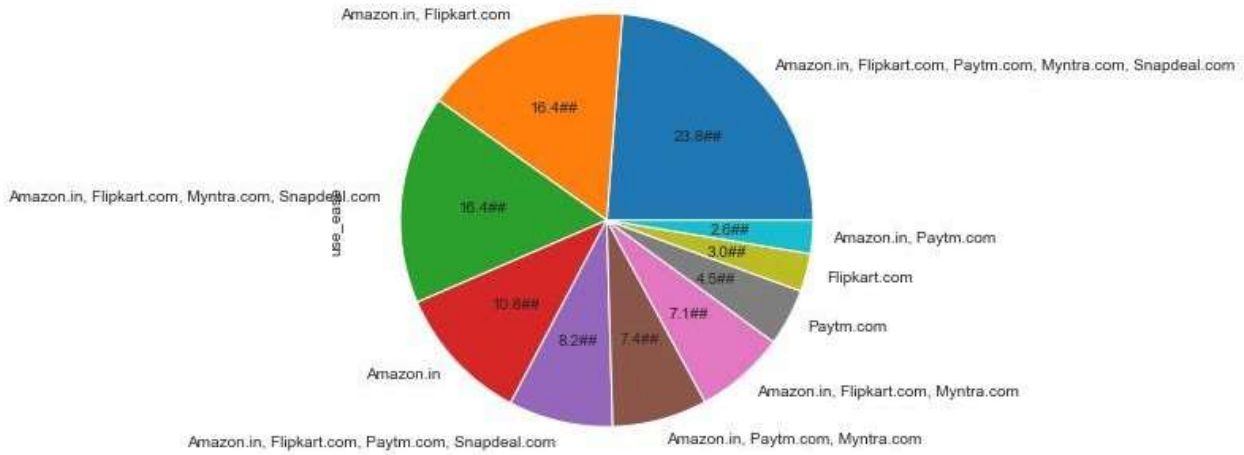
- Approx 55% customers agree that they get value for money spent while shopping online.
- Approx 31% customers strongly agree that they get value for money spent.
- Approx 14% customers are indifferent.
- This clearly shows that most of the customers accept that they get value for the money spend by them on online shopping.

36. From the following, tick any (or all) of the online retailers you have shopped from:



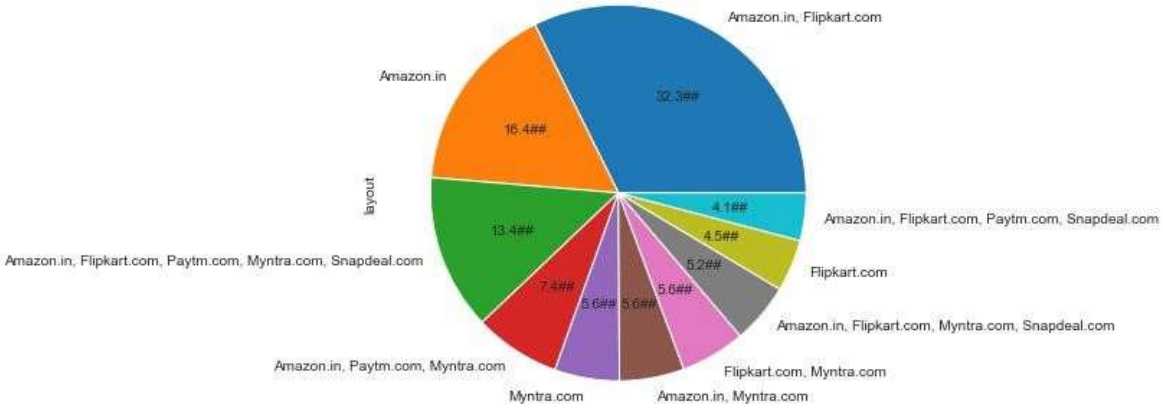
- The above graph shows that most of the customers uses amazon.in to shop online.

37. Easy to use website or application



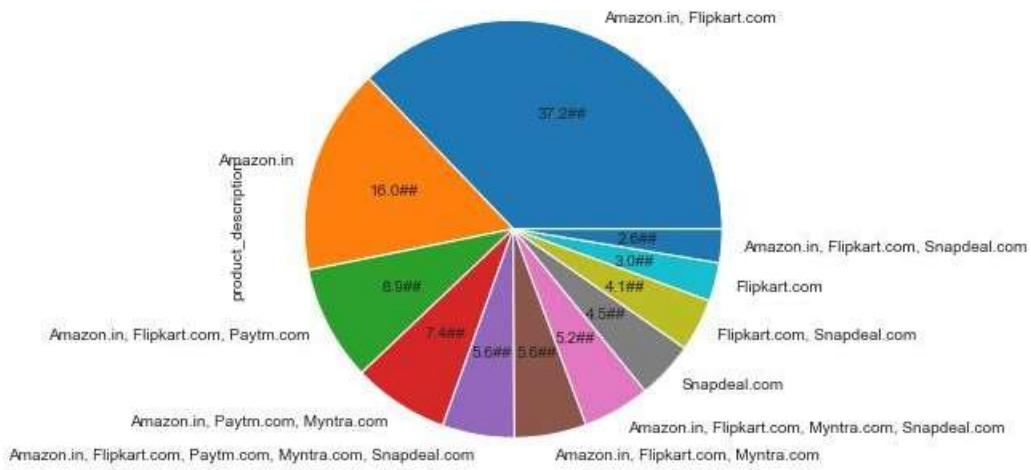
- Almost all customers says that amazon.in website or application is easy to use followed by flipkart.com and paytm.com.

38. Visual appealing web-page layout:



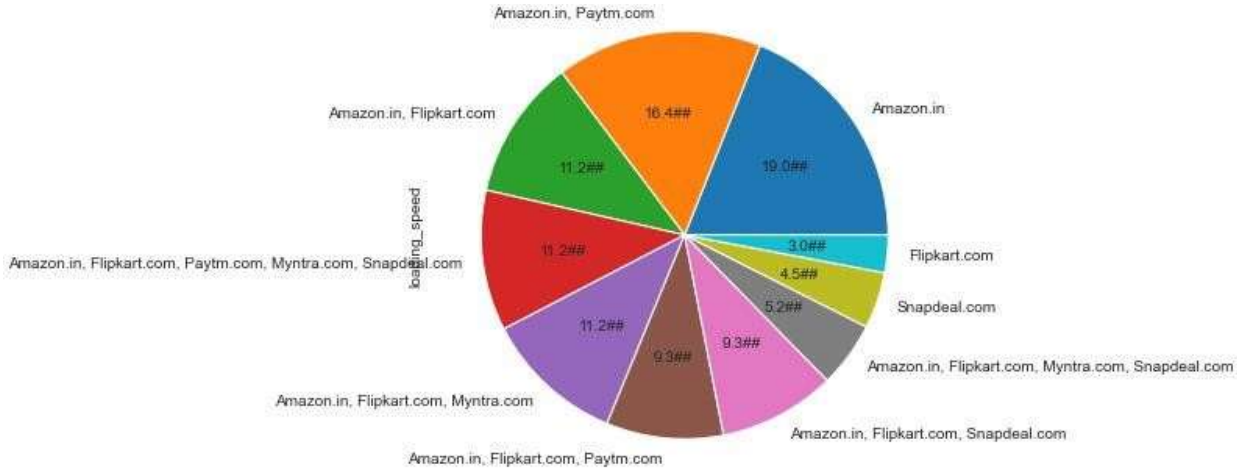
-As per the graph we can say that most of the customers says that amazon.com and flipkart.com have visual appealing web-page layout.

39. Complete, relevant description information of products:



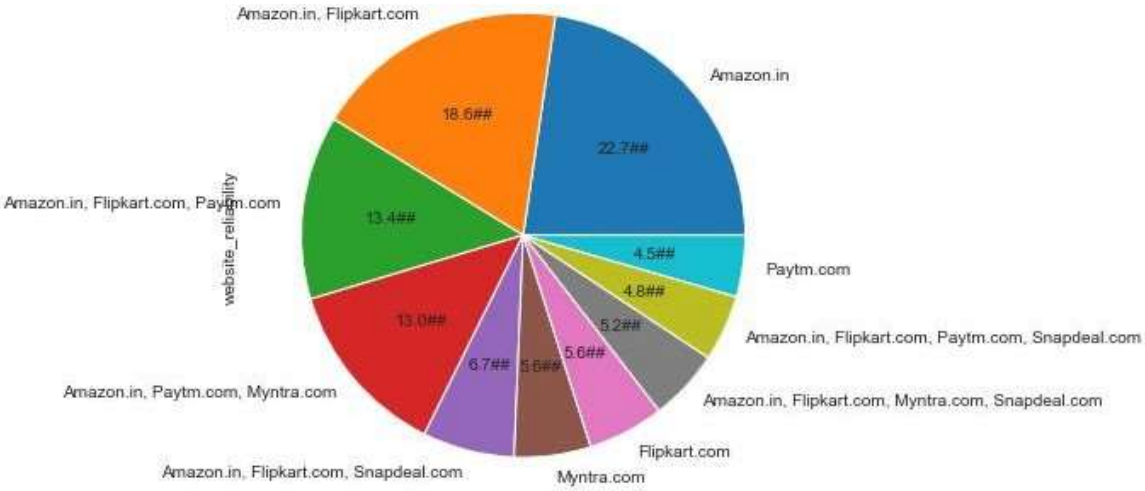
- Most of the cusotomers says that amazon.in and flipkart.com have complete, relevant description information of products.

40. Fast loading website speed of website and application:



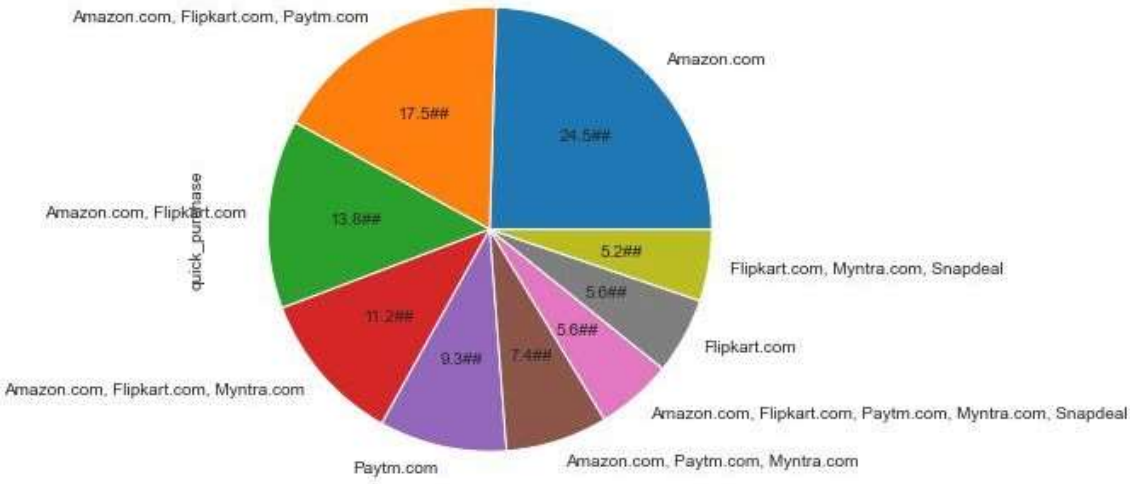
- Most of the customers says that amazon.in and flipkart.com have fast loading website speed of website and application.

41. Reliability of the website or application:



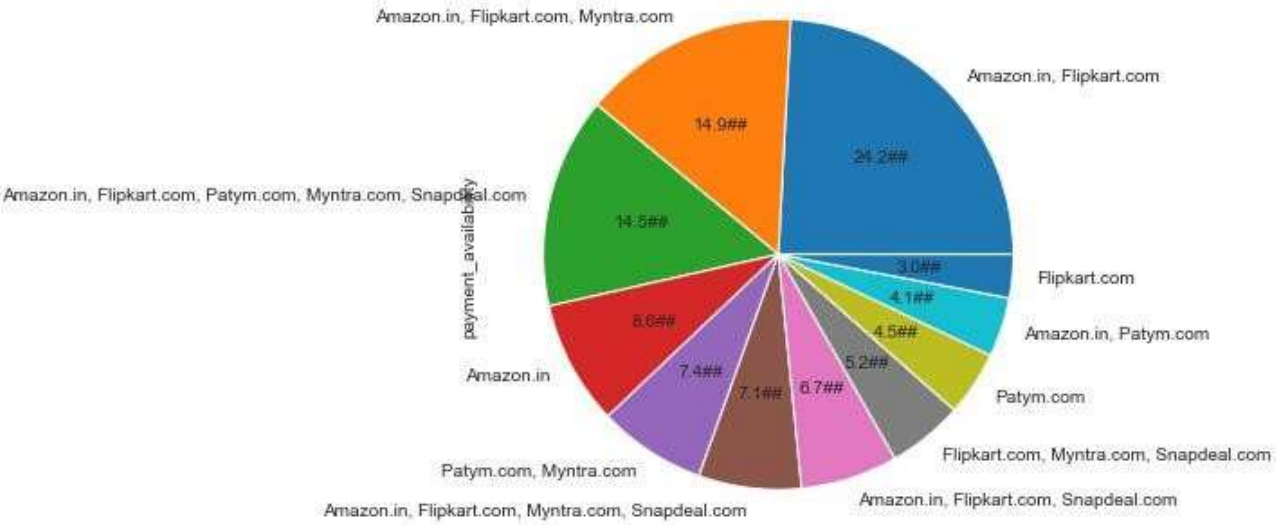
- Most of the customers say that amazon.in and flipkart.com have reliability of the website or application.

42. Quickness to complete purchase:



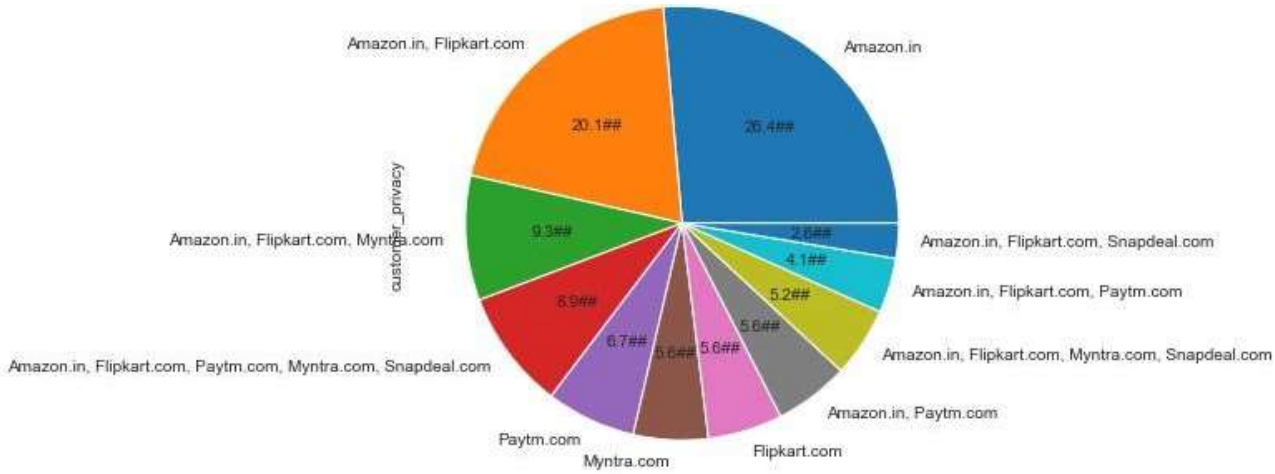
- The graph shows that amazon.in have quickness to complete purchase.

43. Availability of several payment options:



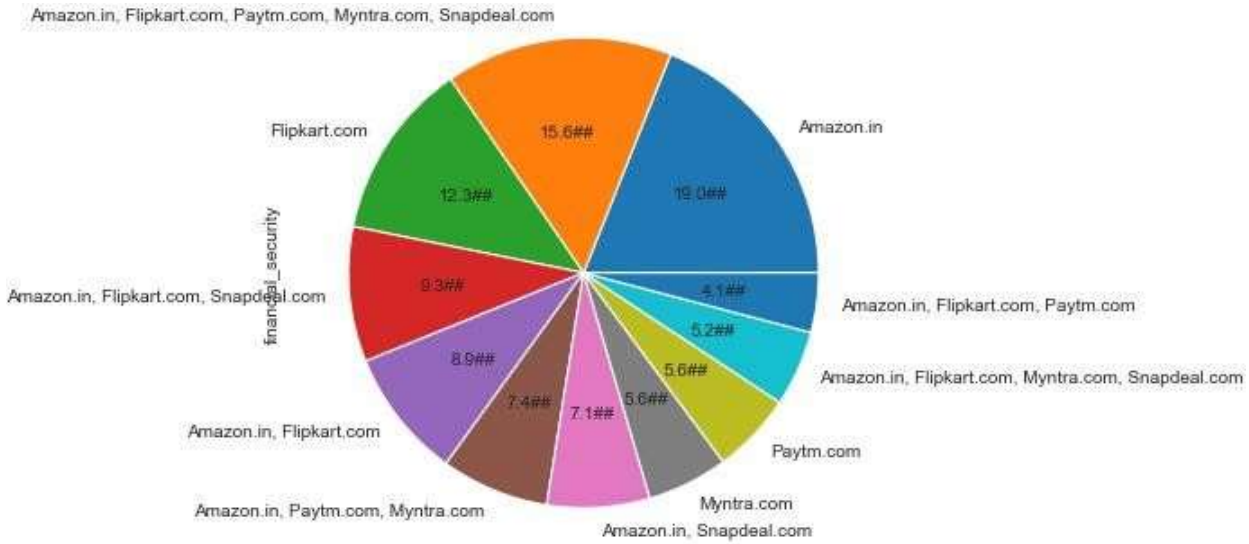
- Several payment options are available with amazon.in

44. Privacy of customers' information:



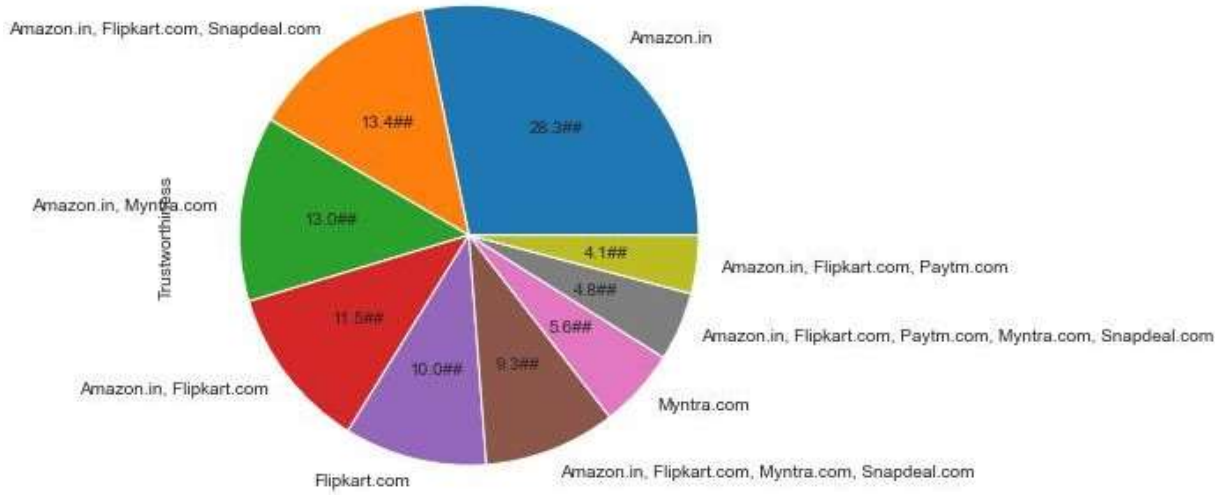
- More than 80% customers thinks their information is safe on amazon.in.

45. Security of customer financial information:



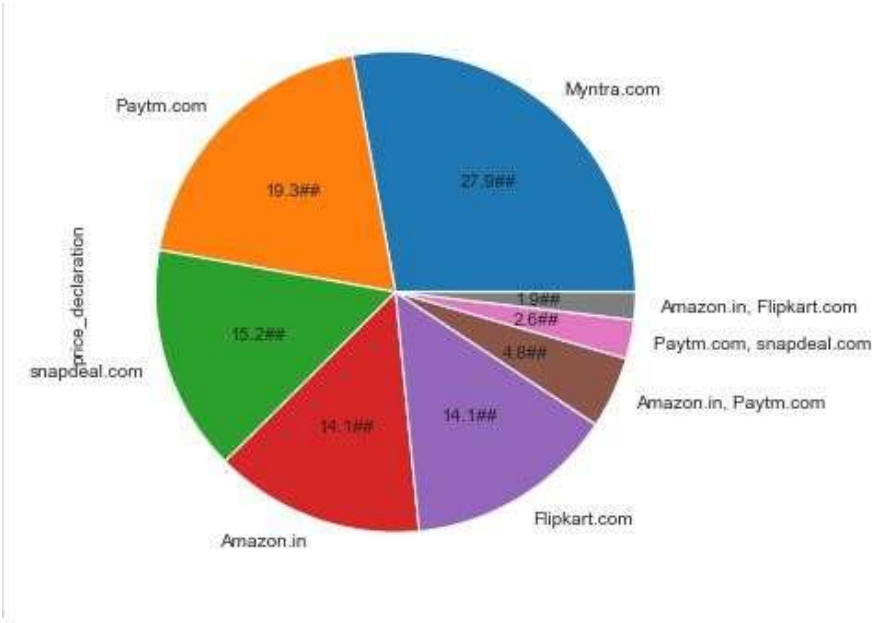
- Most of the customers thinks that amazon.in have better security of customer financial information.

46. Perceived Trustworthiness:



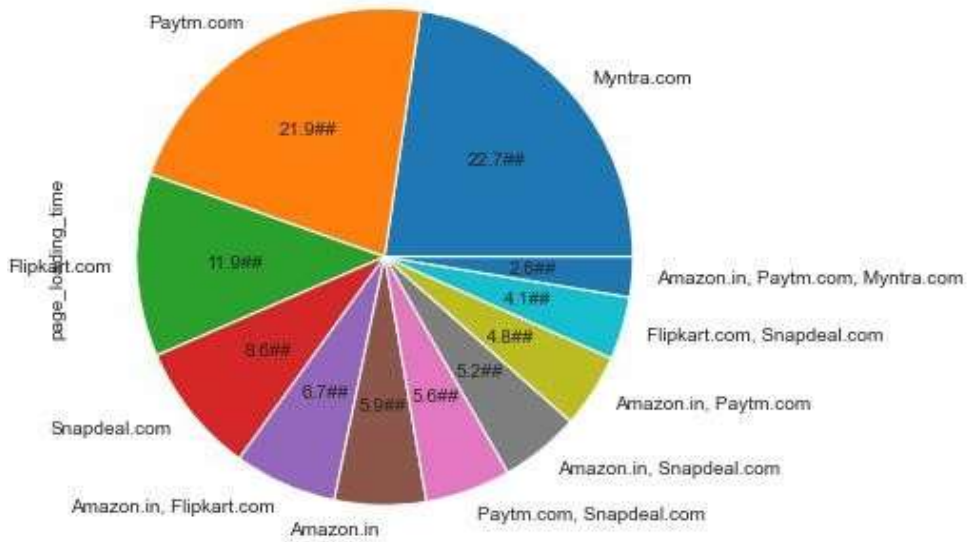
- Most of the customers say amazon.in have perceived trustworthiness.

47. Late declaration of price (promotion, sales period):



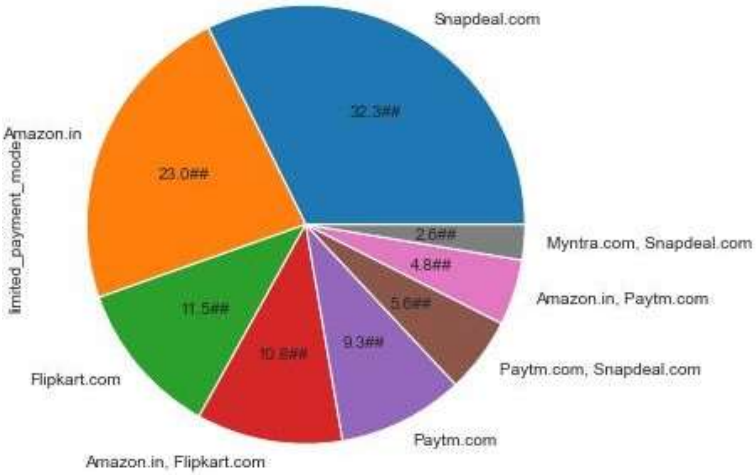
- Late declaration of price is made by myntra.com and paytm.com during the promotion or sales period.

48. Longer page loading time (promotion, sales period):



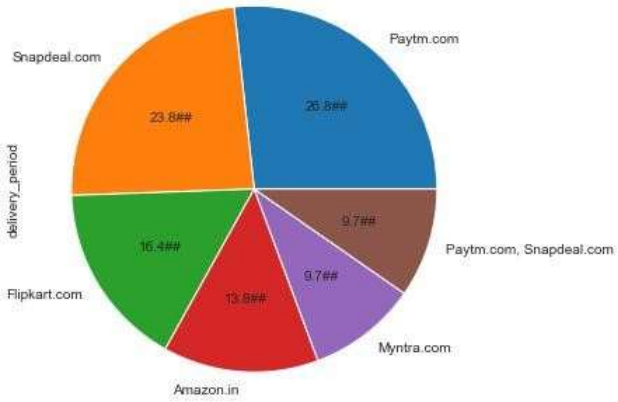
- Paytm.com and Myntra.com have longer page loading time during the promotion and sales period.

49. Limited mode of payment on most products (promotion, sales period):

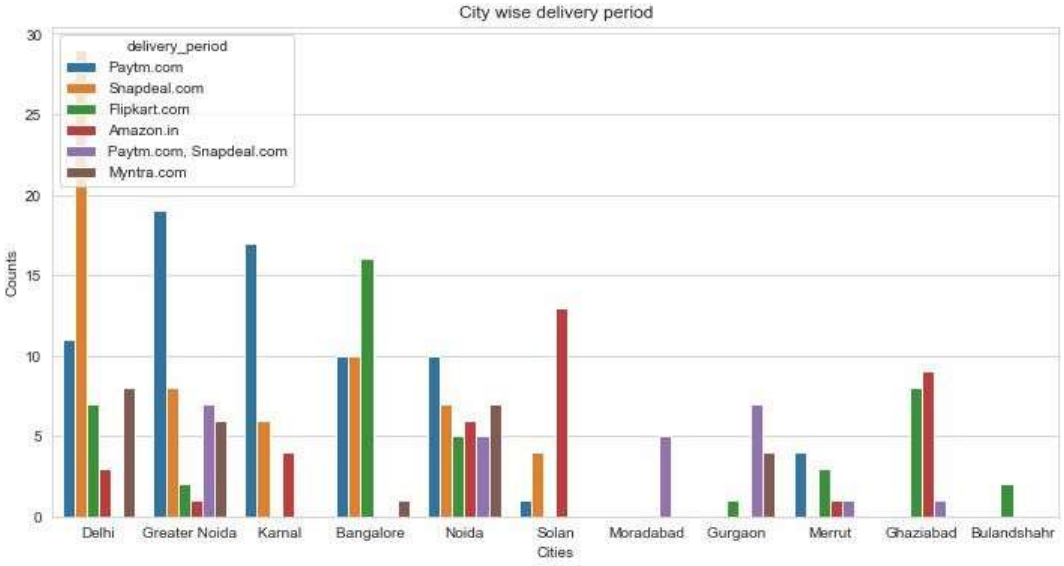


- During the promotion and sales period snapdeal.com and amazon.in have limited mode of payment on most products.

50. Longer delivery period:

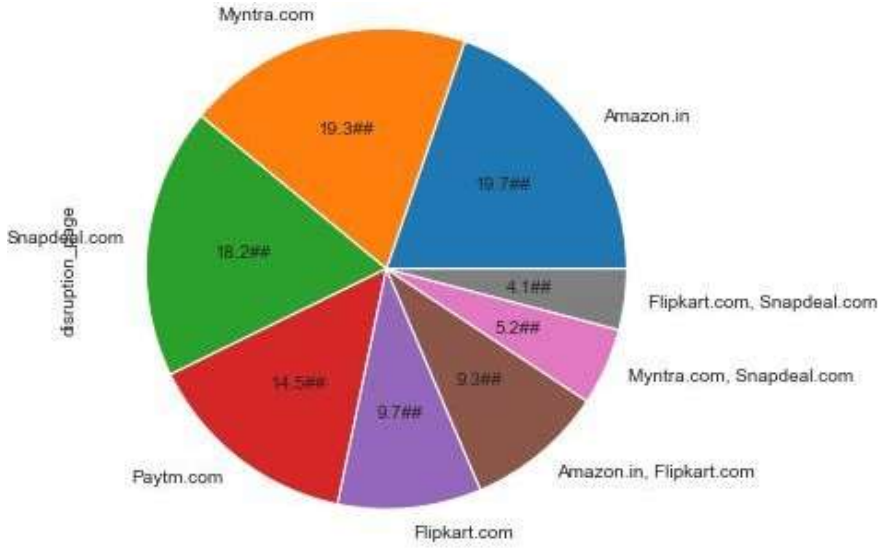


- Myntra.com take minimum delivery period.
- Paytm.com and snapdeal.com take maximum delivery period. This may be the reason of low popularity of these web-stores among the customers.



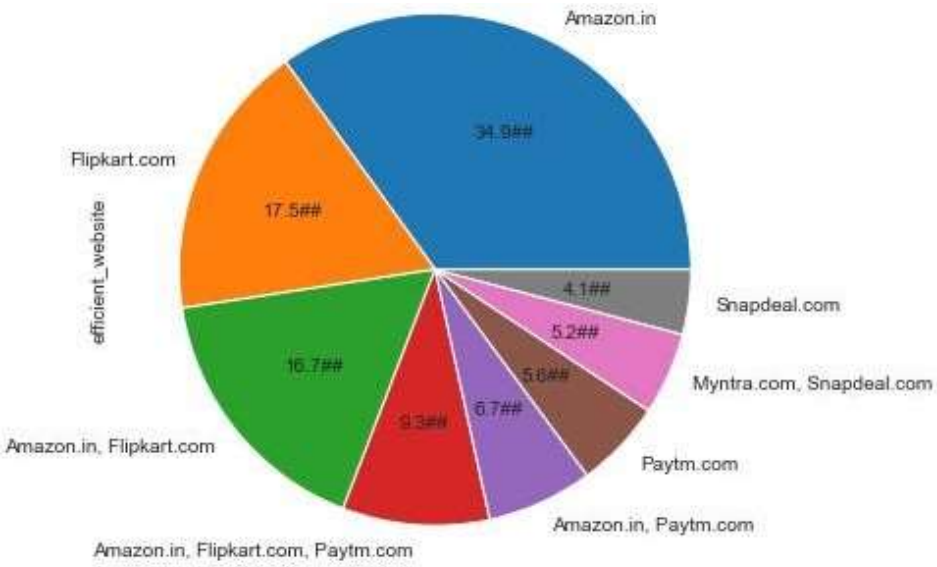
- For city Delhi, maximum delivery period is taken by Snapdeal.com followed by Paytm.com.
- For city Greater Noida, Karnal, and Noida maximum delivery period is taken by Paytm.com followed by Snapdeal.com.
- For city Bangalore, Maximum delivery period is taken by fipkart.com followed by paytm and snapdeal.
- For city Solan, maximum delivery period is taken by Amazon.in

51. Frequent disruption when moving from one page to another:



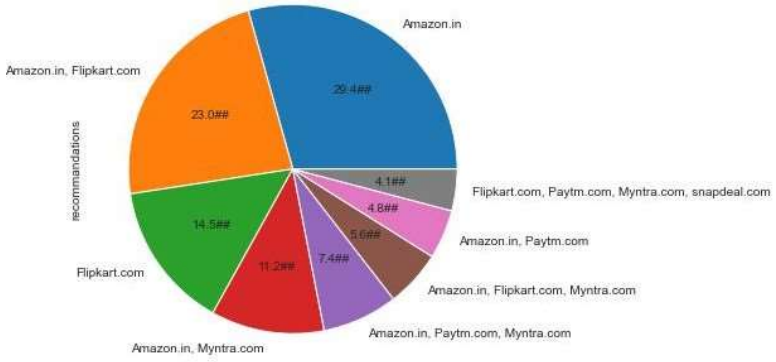
- customers face disruption when moving from one page to another in amazon.in and myntra.com

52. Website is as efficient as before:



- Most of the customers say that amazon.in and flipkart.com websites are as efficient as before.

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



- Most of the customers like to recommend amazon.in and flipkart.com to their friend. This shows that most of the customers like to shop from these two web-store.
- Also the graph shows that Snapdeal.com have only 4.1% recommandations. This shows customers lack of interest in snapdeal.

- Interpretation of the Results
  - Maximum customers shops from the following five companies:
    - Amazon.in

- Flipkart.com
- Paytm.com
- Snapdeal.com
- Myntra.com

- Most customers said that they found amazon.in very easy to use.
- Most customers also said that the visual appearance of amazon.in is best among all the online retail websites/applications.
- Amazon.in and flipkart.com are selected by most of the customers as these websites have wide variety of products listed.
- If we talk about the complete, relevant information related to the products, most of the customers go with amazon.in and flipkart.com.
- If we talk about the website/application speed and page loading time, amazon.in takes the lead followed by flipkart.com and paytm.com
- Talking about the quickness to complete the purchase, most of the customers found that Amazon.in is better but flipkart.com and paytm.com also gives tough competition.
- If we talk about the availability of payment options, the customers found that amazon.in and flipkart.com is providing more options. Myntra is also providing many payment methods.
- Speed of delivery: Amazon is taking lead in this category also followed by flipkart.com
- Privacy of customer and their financial information: Amazon is taking lead in this category also. Flipkart.com is also providing better security option for the customers.
- If we talk about the trust of the customers in the online retailers, we can say amazon and flipkart are winners.
- As per the customers, amazon.in is as efficient as it was earlier.

- Most of the customers wants to recommend amazon.in and flipkart.com to their friends. This shows that majority of the customers have trust in these two companies.

CONCLUSION

- Key Findings and Conclusions of the Study

  Online retailers company should focus in offering best services to the customers as customer satisfaction is very important for customer retention.

  - ✓ **Convenience:** The website user interface should be user friendly. As per our analysis there should be complete product description on the website/application of the e-stores.
  - ✓ **Privacy & Payment Securities:** Companies should focus on providing proper privacy and payment securities to the customers as it lead to trust of the customers which is very much important.
  - ✓ **Loyalty Programs:** One of the best way to attract the customers to shop online is providing them some loyalty programs and rewarding them once they make any purchase or recommend the website/application to any friends.
  - ✓ **Website/application technicalities:** Companies should focus on the speed of the website and page navigation. As smooth navigation help users to decide faster to make any purchase.

- Learning Outcomes of the Study in respect of Data Science

  From the visualization of the dataset, we can say that amazon and flipkart have gained the trust of the customers. These two websites are providing better services and other e-retailers. Also, the

customers who have good technical knowledge and from the age group of 20 to 40 years are more chances of shopping online. Also, we can say that the customers from the tier 1 and tier 2 cities like more to shop online. Also, female customers takes more time to shop but they shop online frequently.

- Limitations of this work and Scope for Future Work

  I think we may require more data to make better understanding about the customer retention.