

Project Name

DATA ANALYSIS OF CUSTOMER RETENTION IN E-COMMERCE

FlipRobo SME:

Khushboo Garg

Submitted by:

Jay Pandey

Internship Batch No-32

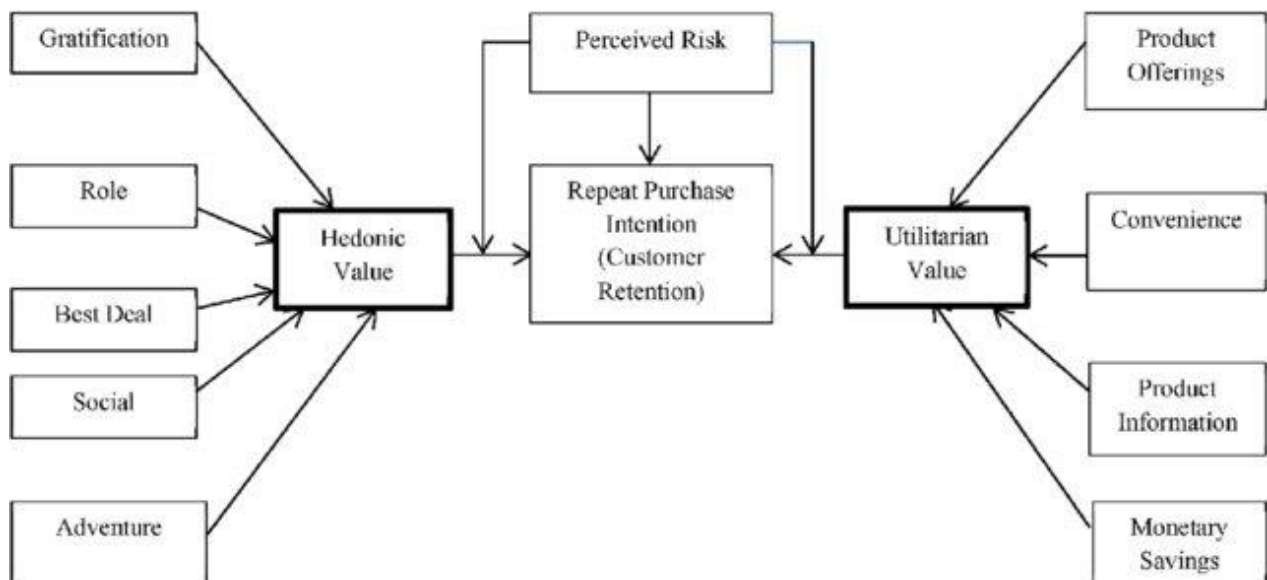
A case study from Indian e-commerce customers

Introduction:

Problem Statement:

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.

Conceptual Framework of the Problem:



Data Analysis of Customer Retention

In this case study a details of customers with their shopping priority report and some survey work is included. We all know that the customer satisfaction has a major role to repurchase the product again. Here

Problem Analysis:

Import Necessary libraries:

First import all the necessary libraries for Jupyter Note Book.

```
In [1]: import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline
import warnings
warnings.filterwarnings('ignore')

from sklearn.model_selection import train_test_split
```

Data shape/checking null values:

First import the csv file by:

```
data = pd.read_csv('customer_retention_dataset_detailed.csv')
```

This dataset has 269 rows and 71 columns.

```
# checking shapes

print ("No of rows:",data.shape[0])
print ("No of Columns:",data.shape[1])
```

```
No of rows: 269
No of Columns: 71
```

This dataset has no null and duplicate values. From all 71 features, 1 feature has int datatype and rest of all are object datatypes.

Data Analysis of Customer Retention

```
In [5]: #checking null values

null_val= data.isna().sum().any()
null_val
```

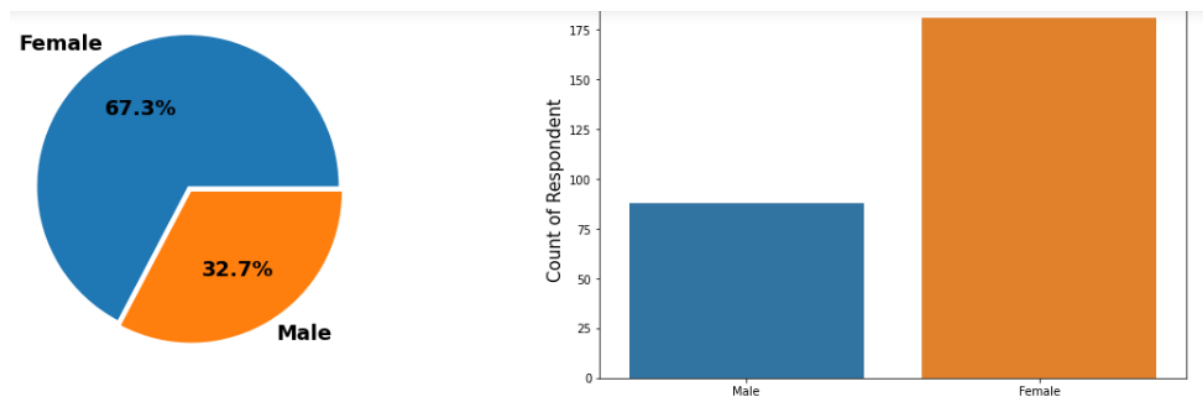
Out[5]: False

EDA (Exploratory Data Analysis):

Feature Analysis of different features:

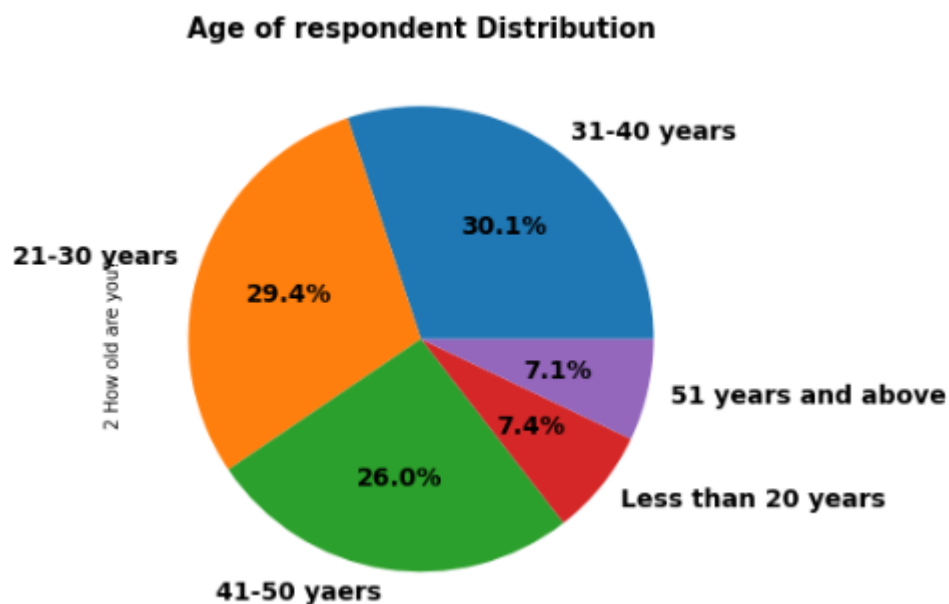
First explore first column which is gender.

Column name: ***“1Gender of respondent”***



1. The maximum of "1Gender of respondent" column are Female with 66.9%. It's quite obvious!!!

Explore Gender column with column name: ***“2 How old are you?”***



Data Analysis of Customer Retention

1. Max number of total customer are in age group 31-40 years followed by 21-30yrs.
2. Max number of female customer are in age group 21-30 years followed by 31-40yrs
3. For age group 51 and above the max number of customer are Male
4. As age increased, the tendency of shopping is decreased

Explore next three column with respect to '1Gender of respondent'

First is for : **3 Which city do you shop online from?---** city

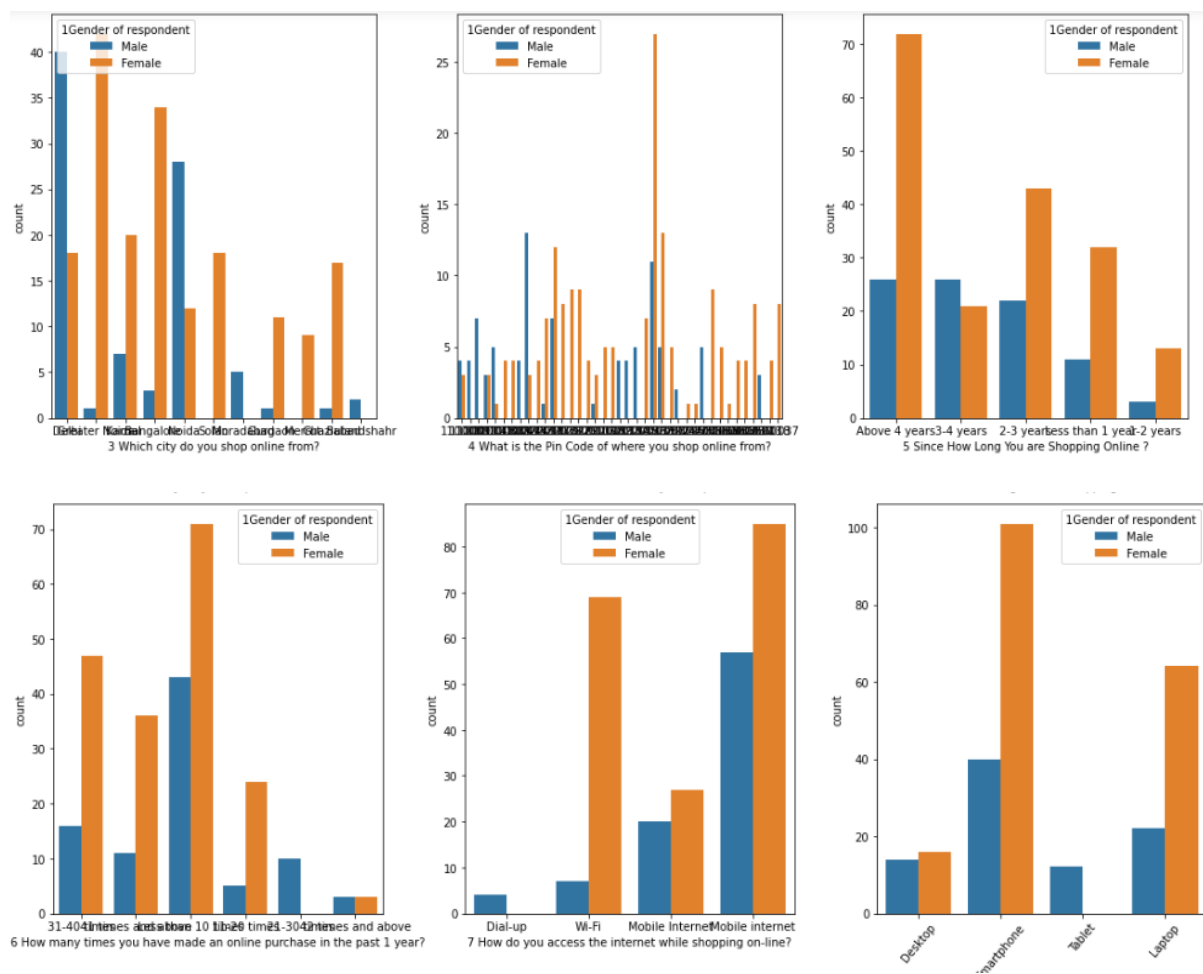
2nd is for : **4 What is the Pin Code of where you shop online from?---** pin

3rd is for: **5 Since How Long You are Shopping Online ?**

4th is for : **6 How many times you have made an online purchase in the past 1 year?**

5th is for: **7 How do you access the internet while shopping on-line?**

6th is for: **8 Which device do you use to access the online shopping?**



Data Analysis of Customer Retention

1. Maximum customer are from Delhi followed by Greater Noida.
2. 36.4% customer shopping online since 4 Yrs.
3. Around 16% customer are shopped less than 1 year but this number is greater than the number of customer who shopped for 1-2 years.
4. Max customer are less than 10 times made an online purchase in the past 1 year (around 41%) followed by 31-40 times purchases in a year.
5. around 70% customers are use mobile internet while shopping.
6. Surprisingly 52.4% customers are use smartphone while shopping.
7. Most of female shopping since 4 Yrs.

Now by further more analysis with different features the conclusion are:

Findings:

1. The max of customer shopping online for above 4 years comes from city Greater Noida, Delhi.
2. In Bulandshahr and Moradabad the customer number is least and they are male.
3. max people of 31-40 years are use laptop as the device.
4. the young aged customer Less than 20 years are use smartphone as their device of shopping.
5. Majority of the age between 21-30 years are also use smartphone.
6. No female had made shopping in range of 21-30 times.
7. Max female are shopped less than 10 times in a year.
8. Also Max male are shopped less than 10 times in a year.
9. 53 customers have made online shopping for 41 times and in last 1 year. The majority are females.
10. The customers who have made online shopping for 21-40 times and in last 1 year are all male
11. Only 4 customers are using Dial up and all of them made online shopping for 31-40 times times and they are in the age group 31-40 years
12. from 30 desktop, 26 using mobile internet and rest of them use dialup.
13. from the total Smartphone users(141 users), 104 using mobile internet and rest of them use Wifi.

Now for few more columns let's take the data analysis:

'9 What is the screen size of your mobile device?'

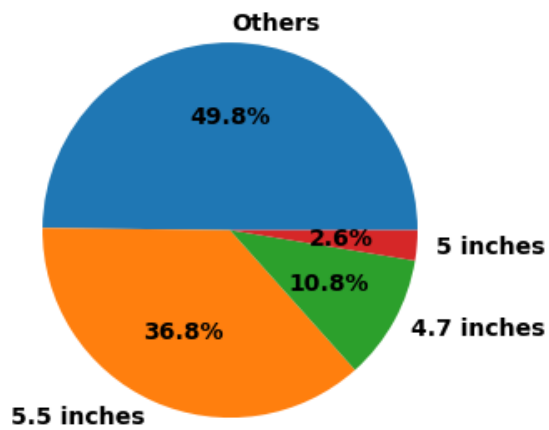
'10 What is the operating system (OS) of your device?'

'11 What browser do you run on your device to access the website?'

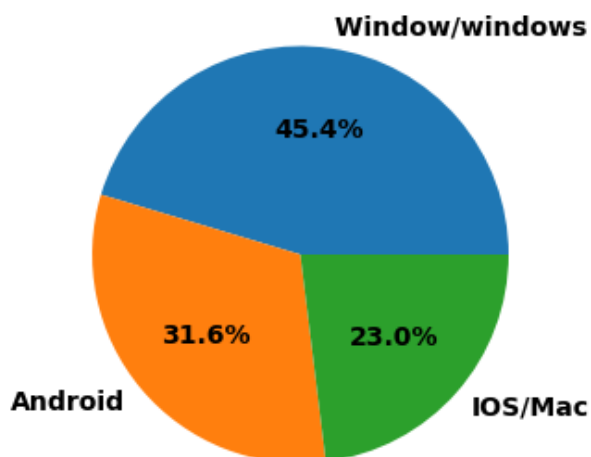
'12 Which channel did you follow to arrive at your favorite online store for the first time?'

'13 After first visit, how do you reach the online retail store?'

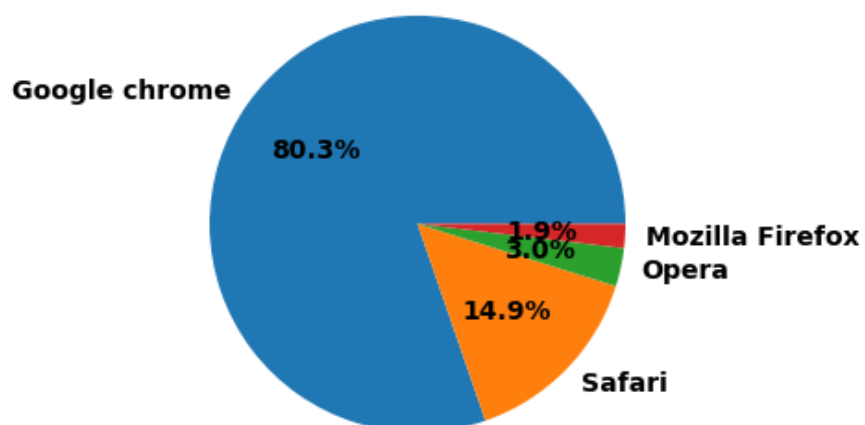
9 What is the screen size of your mobile device?



10 What is the operating system (OS) of your device?

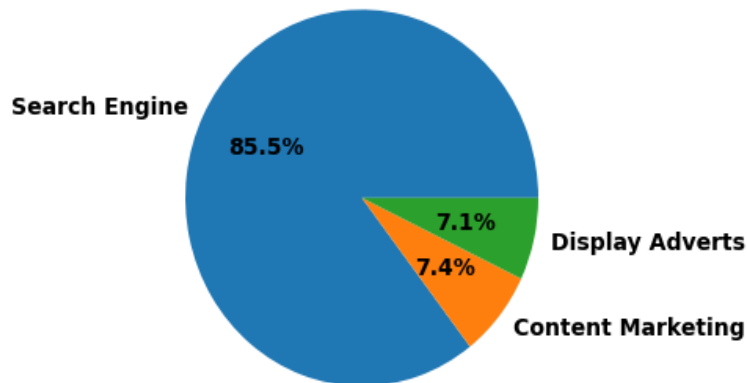


11 What browser do you run on your device to access the website?

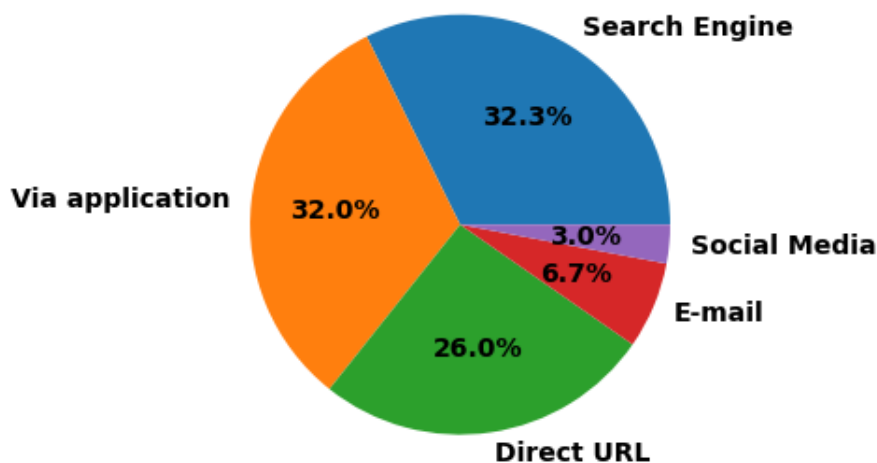


Data Analysis of Customer Retention

12 Which channel did you follow to arrive at your favorite online store for the first time?



13 After first visit, how do you reach the online retail store?



Findings:

1. Not all user uses smartphone. So that we could not able to measure screen size details of that user.
2. 45.4% customer have windows OS on their smartphone & laptop followed by it around 31.6% users are use Android.
3. Out of 52.4% Mobile users majority have 5.5 inch mobile display screen.
4. Max user are use Google Chrome as their browser followed by safari.
5. 85.5 % user start their shopping platform through Search Engine.
6. Content maketing and display Advert is less popular than Search Engine.
7. After first visit 32.3% customers are visit online store through search engine and 32% through application and only 3% using social media.

Now by further more analysis with different features the conclusion are:

Findings:

1. Not all user uses smartphone. So that we could not able to measure screen size details of that user.
2. 45.4% customer have windows OS on their smartphone & laptop followed by it around 31.6% users are use Android.

Data Analysis of Customer Retention

3. Out of 52.4% Mobile users majority have 5.5 inch mobile display screen.
4. Max user are use Google Chrome as their browser followed by safari.
5. 85.5 % user start their shopping platform through Search Engine.
6. Content maketing and display Advert is less popular than Search Engine.
7. After first visit 32.3% customers are visit online store through search engine and 32% through application and only 3% using social media.
8. Mozilla Firefox is used only by device with 5 inch screen size.
9. Opera is used only by device with 5.5 inch screen size.
10. mejority of google chrome user are in others category as they donot use smartphone as a device.
11. Display Adverts is mainly access by Android user.
12. Content Marketing is mainly access by IOS/Mac user.
13. There is no Desktop and Tablet with IOS/Mac OS. Max IOS/Mac are in Smartphone
14. 73 users using android smartphone and 12 users using android tablet.
15. Max laptop have Window OS.
16. arround 60% female are use every types of OS as their device.
17. From marrut, solan city, all customers are female.
18. From greater noida 90% are women
19. In gurugram arround 90% customer are in the age group over 51 years.

Now for few more columns let's take the data analysis:

'14 How much time do you explore the e- retail store before making a purchase decision?'

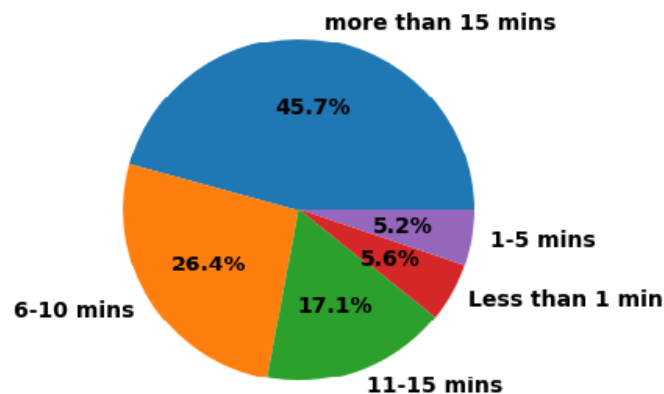
'15 What is your preferred payment Option?'

'16 How frequently do you abandon (selecting an items and leaving without making payment) your shopping cart?'

'17 Why did you abandon the ?Bag?, ?Shopping Cart?'

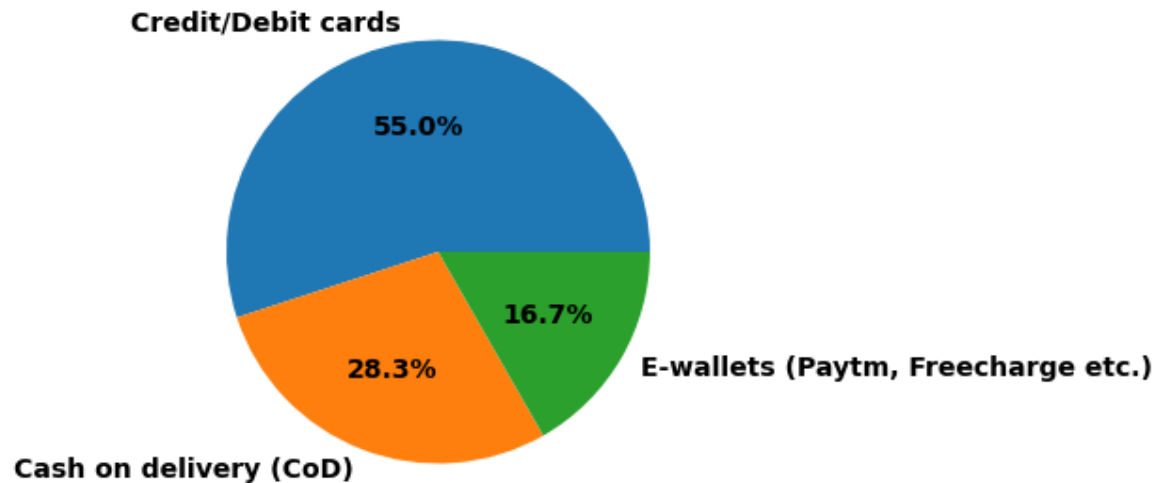
'18 The content on the website must be easy to read and understand'

14 How much time do you explore the e- retail store before making a purchase decision?

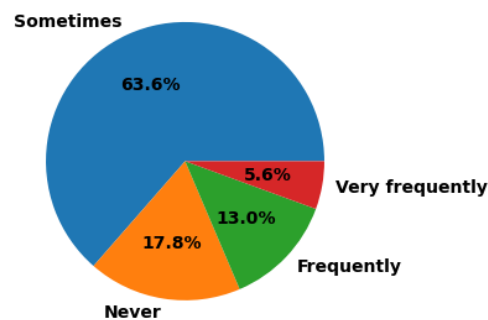


Data Analysis of Customer Retention

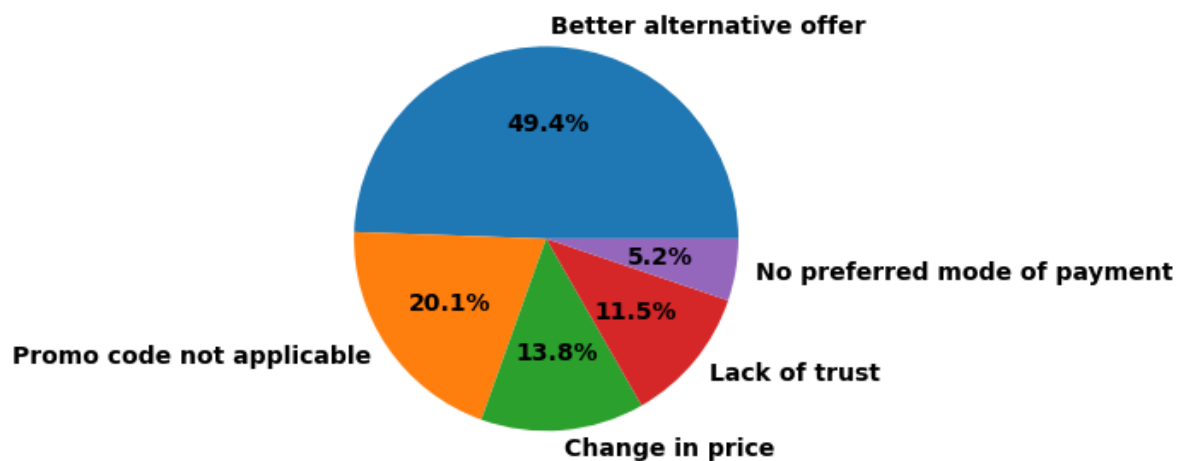
15 What is your preferred payment Option?



16 How frequently do you abandon (selecting an items and leaving without making payment) your shopping cart?

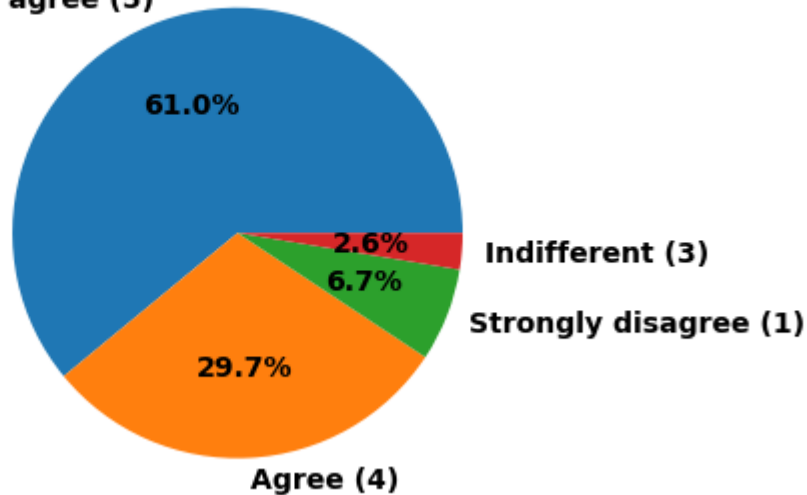


17 Why did you abandon the ?Bag?, ?Shopping Cart?



18 The content on the website must be easy to read and understand

Strongly agree (5)



Findings:

1. 45.7% of customers are explore more than 15 mins to the e- retail store before making a purchase decision.
2. 5.6% of customers are explore less than 1 min to the e- retail store before making a purchase decision.
3. Max of customers(55%) are use credit and debit cards followed by 28.3% customers used COD.
4. Only 5.6% customers are very frequently selecting an items and leaving without making payment where 63.3% are abandon for sometimes
5. around 50% customers are abandon the bag, Shopping Cart for better alternative offer. It is quite obvious too. Everyone want to catch the better offer everytime whie shopping.
6. 20.1% customers are abandon the bag, Shopping Cart for promo code not applicable.
7. 61.0% customers are strongly aggree that The content on the website must be easy to read and understand
8. Before making a purchase 1-5 mins explore the e- retail store and abandon the bag for No preferred mode of payment.
9. 171 customer sometimes abandon shopping cart.
10. The customer who explore more than 15 mins before making a purchase are abandon the Bag for a better alternative.
11. The customer who explore less than 5 mins before making purchase have very less tendency to abandon cart.
12. most of the female are strongly aggree that the content on the website must be easy to read and understand.
13. Max customer of age between 21-40 years are leave the kart for Better alternative offer

Now for few more columns let's take the data analysis:

'19 Information on similar product to the one highlighted is important for product c omparison',

Data Analysis of Customer Retention

'20 Complete information on listed seller and product being offered is important for purchase decision.'

'21 All relevant information on listed products must be stated clearly',

'22 Ease of navigation in website',

'23 Loading and processing speed',

'24 User friendly Interface of the website',

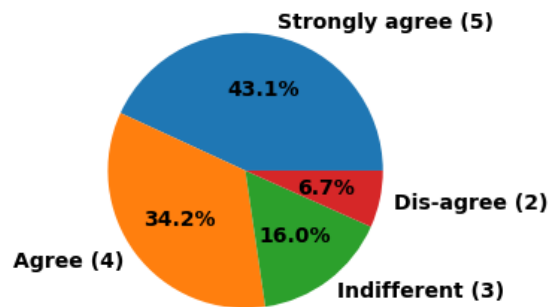
'25 Convenient Payment methods',

'26 Trust that the online retail store will fulfill its part of the transaction at the stipulated time',

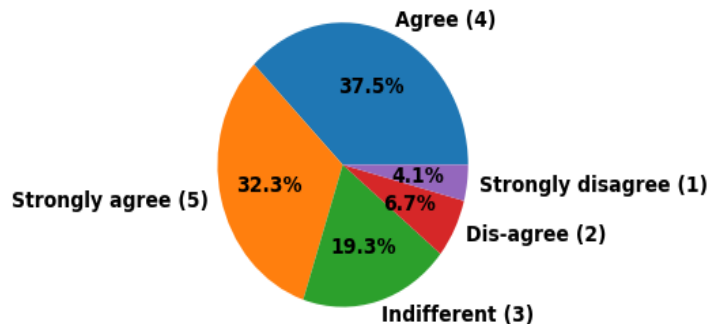
'27 Empathy (readiness to assist with queries) towards the customers',

'28 Being able to guarantee the privacy of the customer'

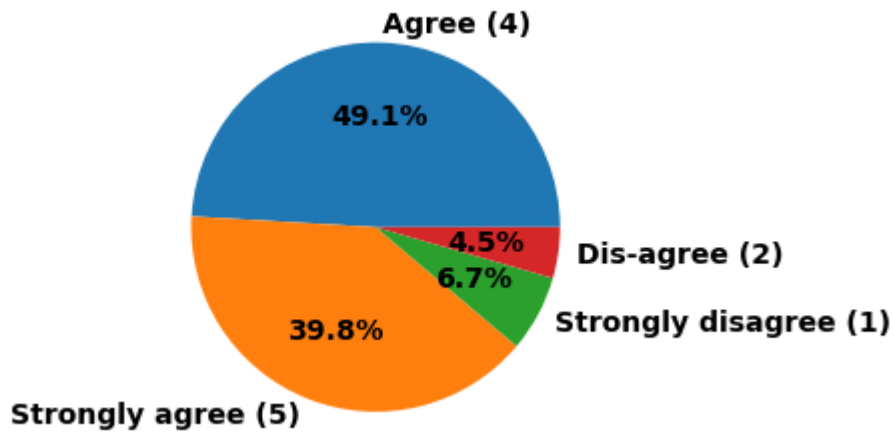
19 Information on similar product to the one highlighted is important for product comparison



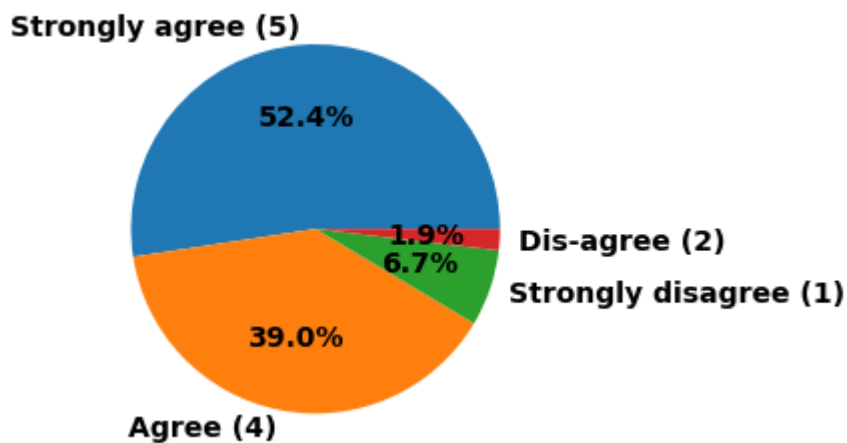
20 Complete information on listed seller and product being offered is important for purchase decision.



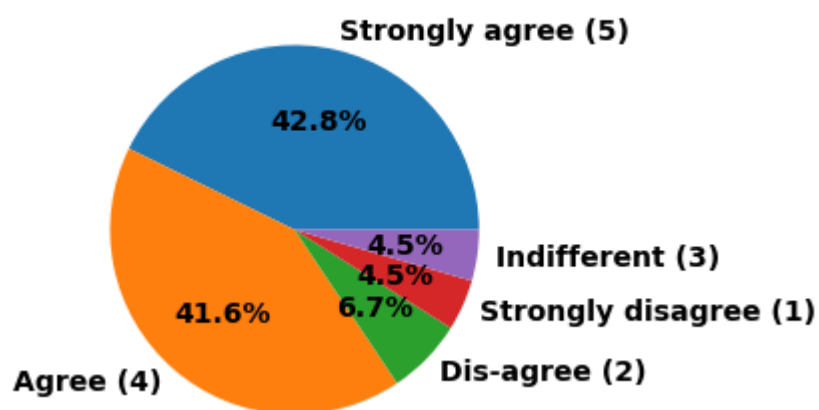
21 All relevant information on listed products must be stated clearly



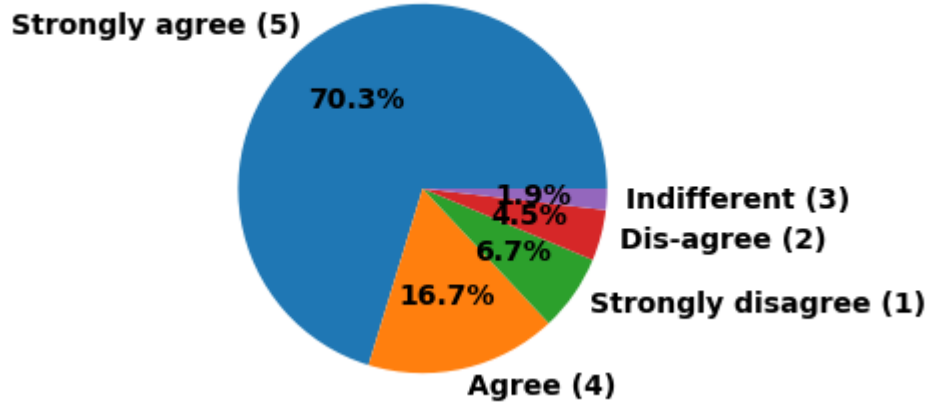
22 Ease of navigation in website



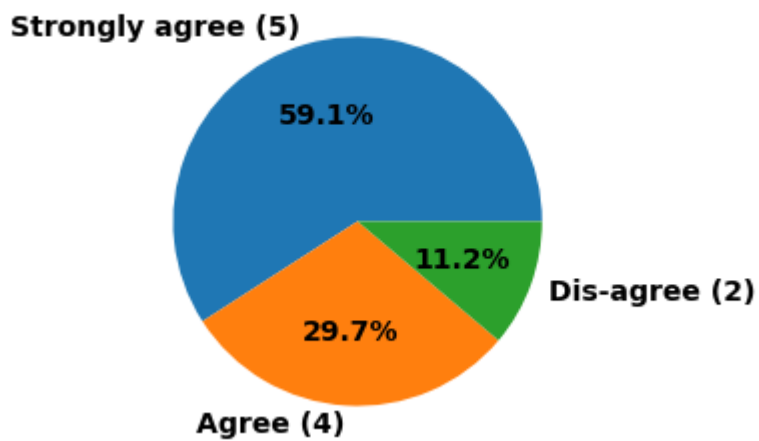
23 Loading and processing speed



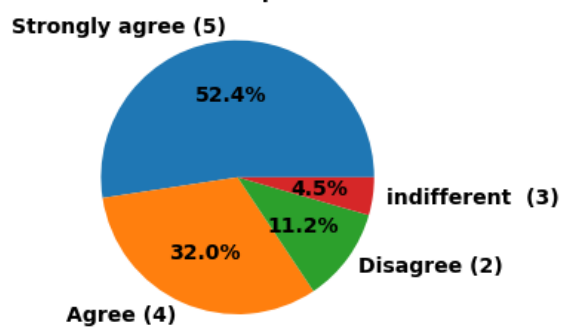
24 User friendly Interface of the website



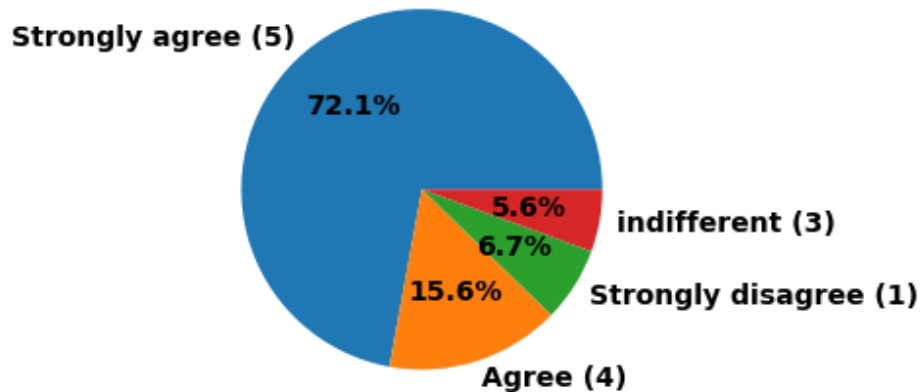
25 Convenient Payment methods



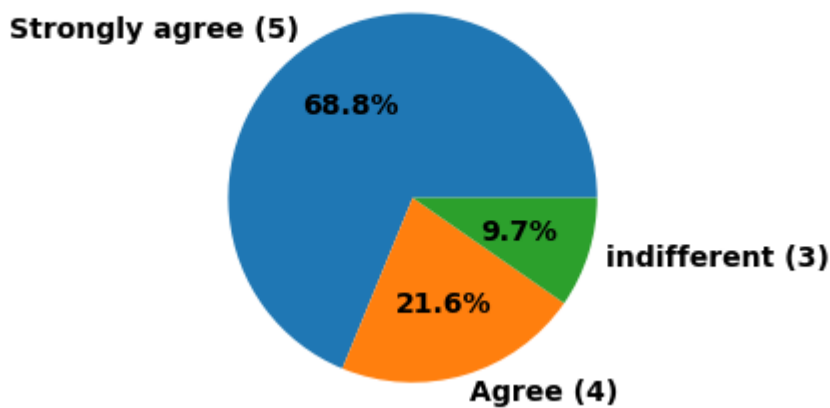
26 Trust that the online retail store will fulfill its part of the transaction at the stipulated time



27 Empathy (readiness to assist with queries) towards the customers



28 Being able to guarantee the privacy of the customer



Findings:

1. 43.1% customers are strongly agreed and 34.2% are agreed that the Information on similar product to the one highlighted is important for product comparison. That is majority of customers are agreed the question.
2. 37.5 % customers are agreed and 32.3% are strongly agreed that the Complete information on listed seller and product being offered is important for purchase decision. That is majority of customers are also agreed the question.
3. overall 89% customers are agreed and rest of customer are disagreed that All relevant information on listed products must be stated clearly.
4. overall 91.4 % customers are agreed and rest of customer are disagreed that that website should be easy for navigation.
5. 42.8 % customer are strongly agreed and 41.6 % customer are agree over high loading & processing speed.
6. 70.3 % customer are strongly agreed and 16.7 % customer are agree that website should be user friendly.
7. 11 customers out of 18 are strongly Strongly disagree are in the age 41-50 years that User friendly Interface of the website.
8. It can be concluded that the website is more popular to the young aged customer as all the response from them are very positive from all aspects.

Now for few more columns let's take the data analysis:

'29 Responsiveness, availability of several communication channels (email, online rep, twitter, phone etc.)',
'30 Online shopping gives monetary benefit and discounts',
'31 Enjoyment is derived from shopping online',
'32 Shopping online is convenient and flexible',
'33 Return and replacement policy of the e-tailer is important for purchase decision',
'34 Gaining access to loyalty programs is a benefit of shopping online',
'35 Displaying quality Information on the website improves satisfaction of customers',
'36 User derive satisfaction while shopping on a good quality website or application',
'37 Net Benefit derived from shopping online can lead to users satisfaction',
'38 User satisfaction cannot exist without trust'
'39 Offering a wide variety of listed product in several category',
'40 Provision of complete and relevant product information',
'41 Monetary savings',
'42 The Convenience of patronizing the online retailer',
'43 Shopping on the website gives you the sense of adventure',
'44 Shopping on your preferred e-tailer enhances your social status',
'45 You feel gratification shopping on your favorite e-tailer',
'46 Shopping on the website helps you fulfill certain roles',
'47 Getting value for money spent'

Analyse the above features by pie plot and count plot we can visualize the different values of corresponding features. The conclusion is :

Findings:

1. 39.0% customer are strongly agreed and 31.6 % customer are agree over online shopping gives monetary benefit and discounts.
2. 32% customer are strongly agreed that Enjoyment is derived from shopping online and rest of them mostly like to do physical shopping.
3. 54.3 % customer are strongly agreed that Shopping online is convenient and flexible
4. majority customer are strongly agreed that Return and replacement policy of the e-tailer is important for purchase decision.
5. 4.1 % only are strongly disagree that Gaining access to loyalty programs is a benefit of shopping online
6. around 50% customer are strongly agreed that Displaying quality Information on the website improves satisfaction of customers
7. only 3% customer are disagreed that User derive satisfaction while shopping on a good quality website or application
8. 61% customer are strongly agreed and 20.1 % customer are agree over Net Benefit derived from shopping online can lead to users satisfaction
9. Over 90% customer are agreed that User satisfaction cannot exist without trust.
10. 5 customers who are indifferent that User satisfaction cannot exist without trust are Male.

Data Analysis of Customer Retention

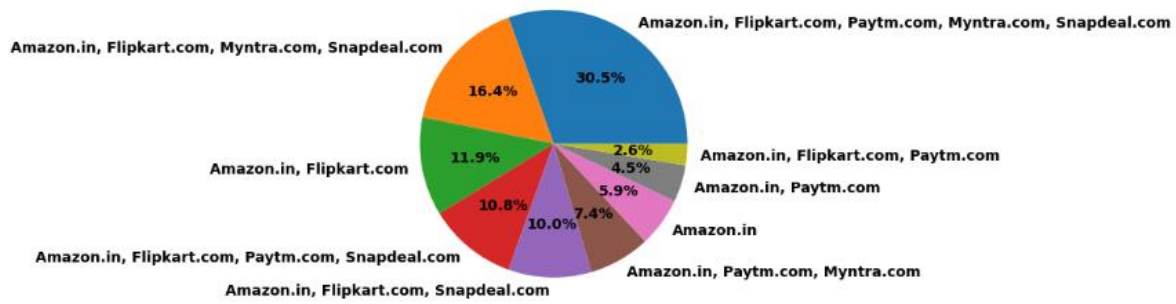
11. there is no gender specification that Enjoyment is derived from shopping online. Most of the people agreed with this.
12. The customers who are disagreed that Shopping online is convenient and flexible in the age range 31-40 years.
13. 41.3 % customers are strongly agreed and 34.9 % customer are agree over Offering a wide variety of listed product in several category.
14. only 1.9% customer are disagreed that Provision of complete and relevant product information
15. For 37.5 % customers Online shopping on website strongly gives the sense of adventure.
16. 55.4% customers are strongly agree and 30.5% customers are agree that they prefer online shopping beacause they get value of money spent.
17. among total 38 indifferent ,12 people are in the age group 21-30 years are agree over Getting value for money spent
18. People who are Shopping Online Since last 4 years are strongly agreed that it Getting value for money spent. It is quite obvious !!

In this above analysis we will analyse features related to website or application. Now we have analysed following features in this section:

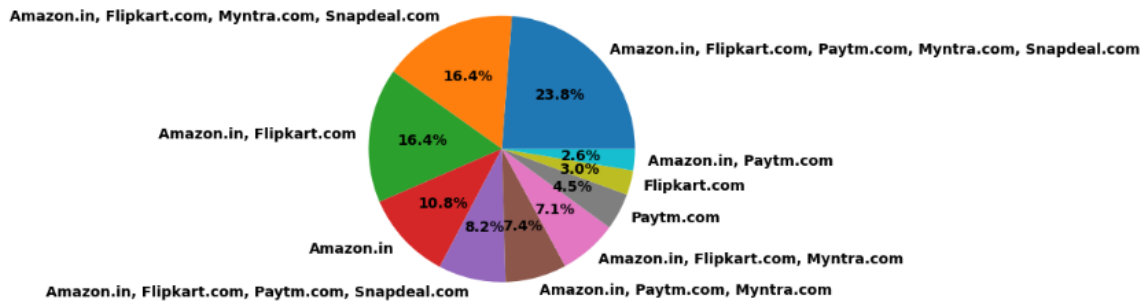
'From the following, tick any (or all) of the online retailers you have shopped from',
'Easy to use website or application',
'Visual appealing web-page layout',
'Wild variety of product on offer',
'Complete, relevant description information of products',
'Fast loading website speed of website and application',
'Reliability of the website or application',
'Quickness to complete purchase',
'Availability of several payment options',
'Speedy order delivery '
'Privacy of customers? information',
'Security of customer financial information',
'Perceived Trustworthiness',
'Presence of online assistance through multi-channel',
'Longer time to get logged in (promotion, sales period)',
'Longer time in displaying graphics and photos (promotion, sales period)',
'Late declaration of price (promotion, sales period)',
'Longer page loading time (promotion, sales period)',
'Limited mode of payment on most products (promotion, sales period)',
'Longer delivery period'
'Change in website/Application design',
'Frequent disruption when moving from one page to another',
'Website is as efficient as before'
'Which of the Indian online retailer would you recommend to a friend?'

Data Analysis of Customer Retention

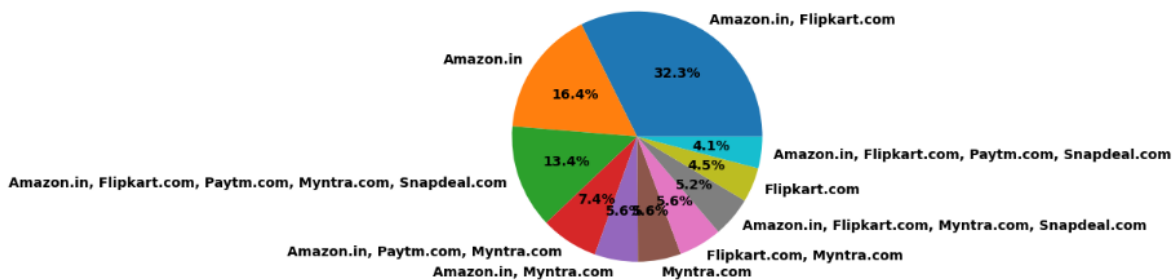
From the following, tick any (or all) of the online retailers you have shopped from



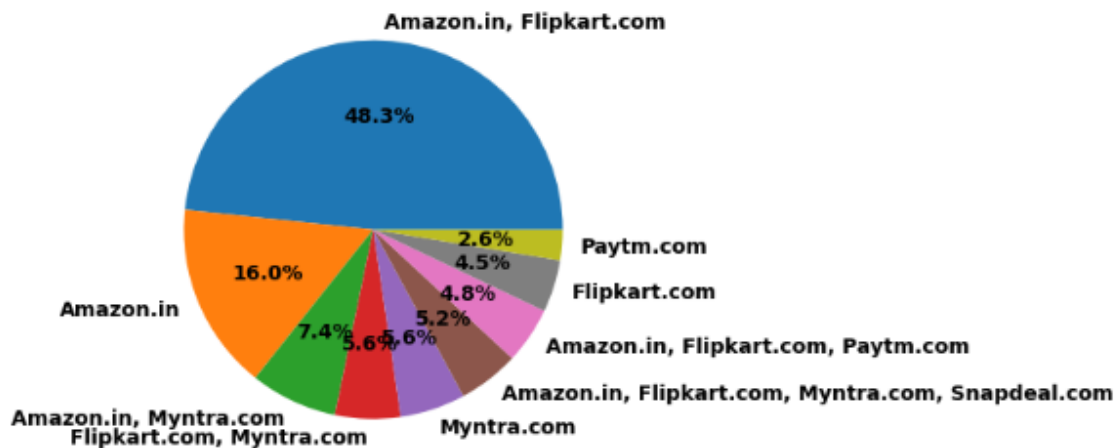
Easy to use website or application



Visual appealing web-page layout

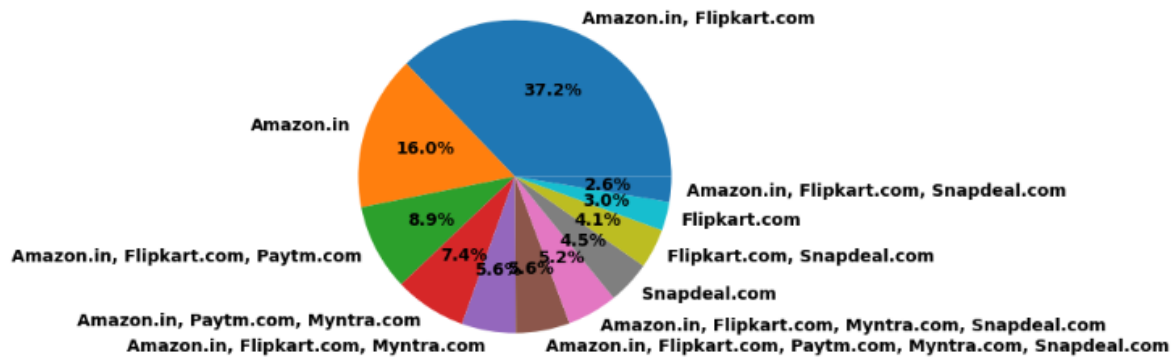


Wild variety of product on offer

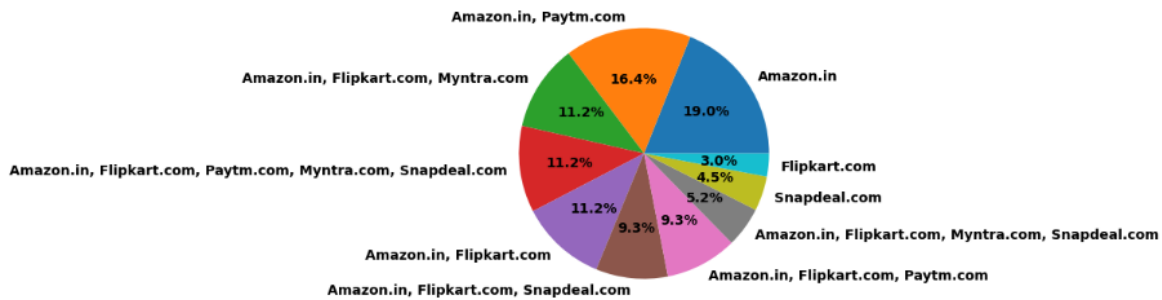


Data Analysis of Customer Retention

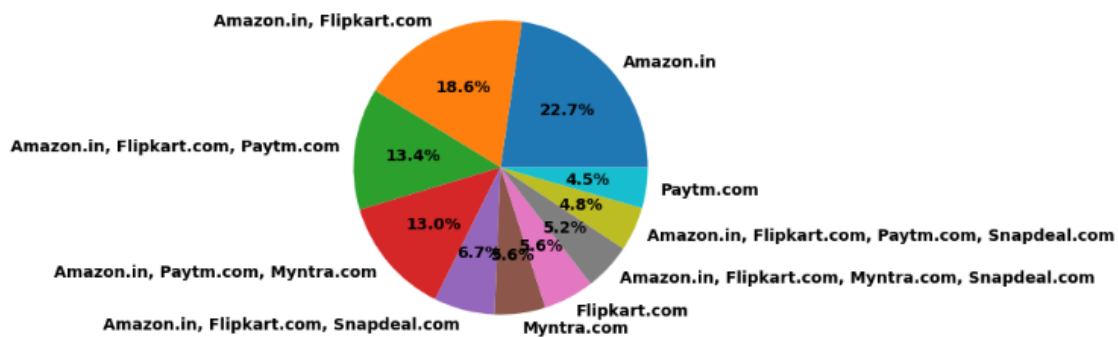
Complete, relevant description information of products



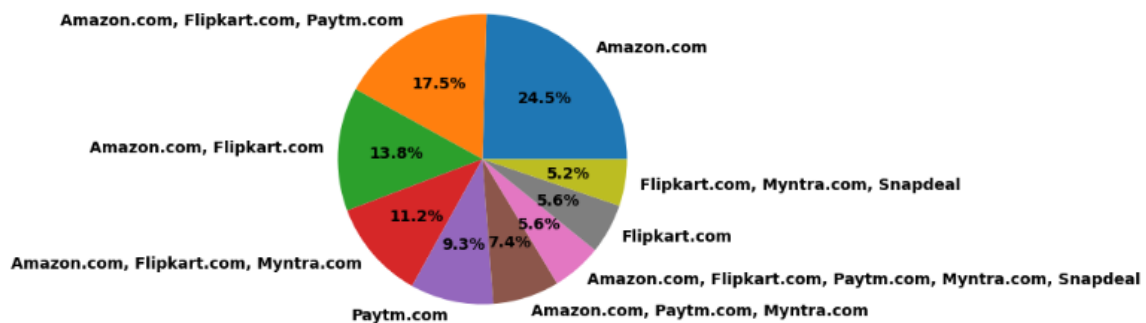
Fast loading website speed of website and application



Reliability of the website or application

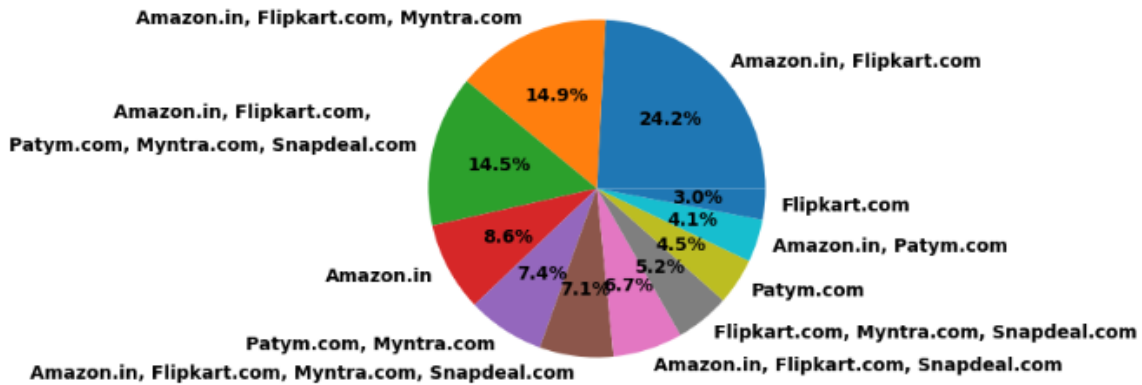


Quickness to complete purchase

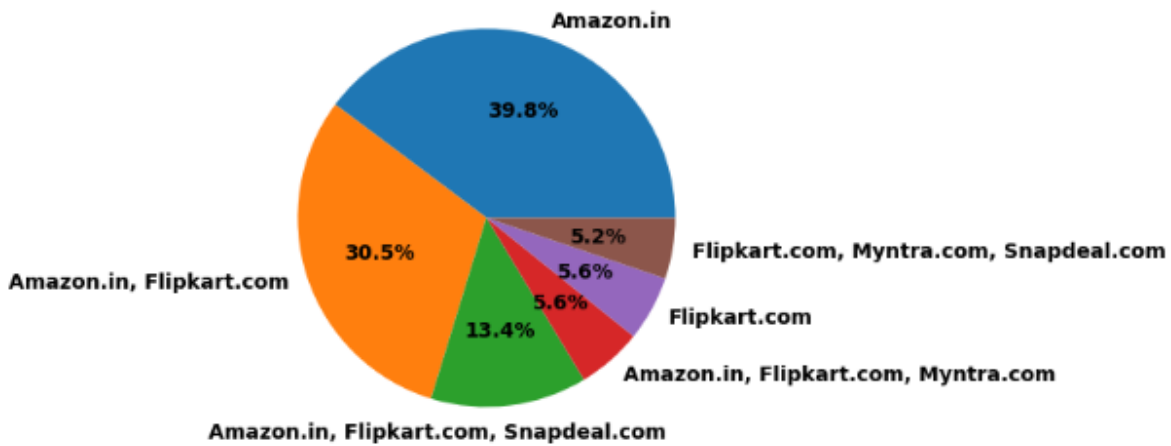


Data Analysis of Customer Retention

Availability of several payment options



Speedy order delivery



1. Majority of the customers(23.8%) agree that Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com are Easy to use website or application.
2. But individually the easy to use application or website and Visual appealing web-page layout is Amazon.in.
3. Majority of the customers agreed that Amazon.in, Flipkart.com are visual appealing web-page layout or application at the same time they have a wide variety of product on offer.
4. In terms of Reliability of website or application again Amazon.com is in the top list.
5. Majority of customers(24.2%) agree that Amazon.in, Flipkart.com provides several payment options compare to others.
6. Majority of customers (24.5%) agree that Amazon.in tops the chart in terms of quickness purchase process compare to others.
7. Out of 135, 67 people are strongly agreed that Amazon.in individually is the website with complete and relevant product information
8. In a group, Amazon.in, Flipkart.com, Myntra.com is the website with complete and relevant product information.

Data Analysis of Customer Retention

9. Majority of customers (26.4%) agree that Amazon.in is better than other shopping platform for Privacy of customer's information.
10. Majority of customers (19%) agree that Amazon.in, followed by Flipkart.in over Security of their financial information.
11. Very few customers (5.6%) trust payment platform paytm and myntra.com.
12. 28.3% customers trust Amazon.in in terms of Perceived Trustworthiness.
13. Amazon take longer time to logged in (promotion, sales period)
14. Only 3% people agreed that flipkart.com is trustable for Longer time to get logged in (promotion, sales period)
15. Late declaration of price (promotion, sales period) is applicable for website Myntra.com followed by Paytm.com.
16. Majority customers agree that Paytm.com takes longest time for delivery compare to others.
17. Myntra.com followed by Paytm.com. take longer page loading time.
18. Shortest delivery time is for Myntra.com.
19. Amazon.in followed by flipkart is as efficient as earlier after updation.
20. Around 30% customer individually recommended amazon.com to to a friend.

Analysis from the given data, here are the following recommendation for E-commerce companies for improvements:

1. Amazon.com:

Strong Areas of this website:

- Fast delivery of products.
- Convenient to use
- Keep all the privacy of customers
- Security of customer financial information
- Complete information of the products are available
- Presence of online assistance through multi-channel

Weak Areas of this website:

- Give the corresponding price early during promotion
- Need to improve page loading time during promotion, sales period.
- Need to give a disturbance free shopping experience during promotion.

2. Flipkart.com:

Strong Areas of this website:

Data Analysis of Customer Retention

- Fast delivery of products.
- Convenient to use
- Complete information of the products are available
- Presence of online assistance through multi-channel

Weak Areas of this website:

- Give the corresponding price early during promotion
- Need to give more payment options.
- Need to give a disturbance free shopping experience during promotion.

3. **Paytm.com:**

Strong Areas of this website:

- Convenient to use
- Very less percentage of customer (around 20%) thinks that, paytm keep all the privacy of customers

Weak Areas of this website:

- Need to reduce delivery time.
- Give the corresponding price early during promotion
- Need to give a disturbance free shopping experience during promotion.

4. **Myntra.com:**

Strong Areas of this website:

- Fast delivery of products.
- Convenient to use
- Availability of several payment options.
- Variety of product during offer

Weak Areas of this website:

- Give the corresponding price early during promotion
- Need to give a disturbance free shopping experience during promotion.

5. **Snapdeal.com :**

Strong Areas of this website:

- Convenient to use

Weak Areas of this website:

- Need to give more payment options to customers.
- Give the corresponding price early during promotion
- Need to give a disturbance free shopping experience during promotion.
- Be more secure about customer's personal information.

Conclusions:

Overall, from the analysis we can conclude that, **Amazon** is the most popular website.

Limitations:

The dataset have only 269 rows or entries. This is not much sufficient to analyse a dataset completely. It will be more convenient if the information are much more.

Thank You