PROJECT REPORT

ON

CUSTOMER RETENTION

OBJECTIVE :-

As we all are aware from current scenario, how online shopping takeover the market of offline shopping. But there is also heavy competition b/w companies to take the market. The biggest challenge have to face that “Customer Retention”. Because in current situation customers have too many options to switch between. Now the challenge is how to add new customers, and how to retain old customers as well.

Our objective behind analysis of the data is to remove out the factors that affect the customer retention.

MOTIVATION :-

Deciding on which factor have to work for effective customer retention is never a easy task. It needs so much practice to found out the proper solution, whether it is customer service, delivery,payment,application etc. There is always be a dilemma which factor to choose or not.

DATA SET :-

We use “customer_retention_dataset” .

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

```
df=pd.read_excel('cust.xlsx')
df.head()
```

Variables in data set:-

1Gender of respondent

2 How old are you?

3 Which city do you shop online from?

4 What is the Pin Code of where you shop online from?

5 Since How Long You are Shopping Online ?

6 How many times you have made an online purchase in the past 1 year?

7 How do you access the internet while shopping on-line?

8 Which device do you use to access the online shopping?

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?

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

16 How 4 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

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

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

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?

The Data Set has 269 rows and 71 variables/columns .

NULL VALUES :-

```
1 df.isnull().sum()
```

```
1Gender of respondent                                                0
2 How old are you?                                                   0
3 Which city do you shop online from?                                0
4 What is the Pin Code of where you shop online from?                0
5 Since How Long You are Shopping Online ?                           0
                                                                    ..
Longer delivery period                                               0
Change in website/Application design                                 0
Frequent disruption when moving from one page to another             0
Website is as efficient as before                                    0
Which of the Indian online retailer would you recommend to a friend? 0
Length: 71, dtype: int64
```

The Data Set has no null values present in the columns. So there is no need to perform any operation to fill the null values.

DATA TYPES PRESENT IN DATA SET :-

```
1 df.dtypes
```

There are two types of data types present in data set.

Int

Object

There are 46 int type and 5 object type variables are present in data set.

STATISTICAL DESCRIPTION :-

```
In [18]: 1 df.describe()
```

	1Gender of respondent	2 How old are you?	4 What is the Pin Code of where you shop online from?	5 Since How Long You are Shopping Online ?	many times you have made an online purchase in the past 1 year?	you access the internet while shopping on-line?	8 Which device do you use to access the online shopping?	the screen size of your mobile device? \t\t\t\t\t\t\t
count	269.000000	269.000000	269.000000	269.000000	269.000000	269.000000	269.000000	269.000000
mean	0.669145	2.959108	220465.747212	3.524164	2.672862	3.260223	1.676580	4.282528
std	0.471398	1.066012	140524.341051	1.436586	1.651788	1.135887	0.843904	0.923426
min	0.000000	1.000000	110008.000000	1.000000	1.000000	2.000000	1.000000	2.000000
25%	0.000000	2.000000	122018.000000	3.000000	1.000000	2.000000	1.000000	4.000000
50%	1.000000	3.000000	201303.000000	4.000000	2.000000	3.000000	1.000000	4.000000
75%	1.000000	4.000000	201310.000000	5.000000	4.000000	5.000000	2.000000	5.000000
max	1.000000	5.000000	560037.000000	5.000000	5.000000	5.000000	4.000000	5.000000

CHECKING UNIQUE VALUES IN ALL FEATURES :-

```
for column in df.columns:
    if df[column].dtype==object:
        print(str(column) + ':' + str(df[column].unique()))
        print(df[column].value_counts())
        print('_____________________________________________')
```

The unique values are the values which are returns in order of appearance.

ENCODING THE FEATURES USING LABEL ENCODER :-

There were two types of features present in data.

Categorical and Neumerical.

The primary reason we need to convert categorical columns into neumerical columns so that machine learning algorithm can understand it

Label Encoding is a popular encoding technique for handling categorical variables. In this technique, each label is assigned a unique integer based on alphabetical ordering.

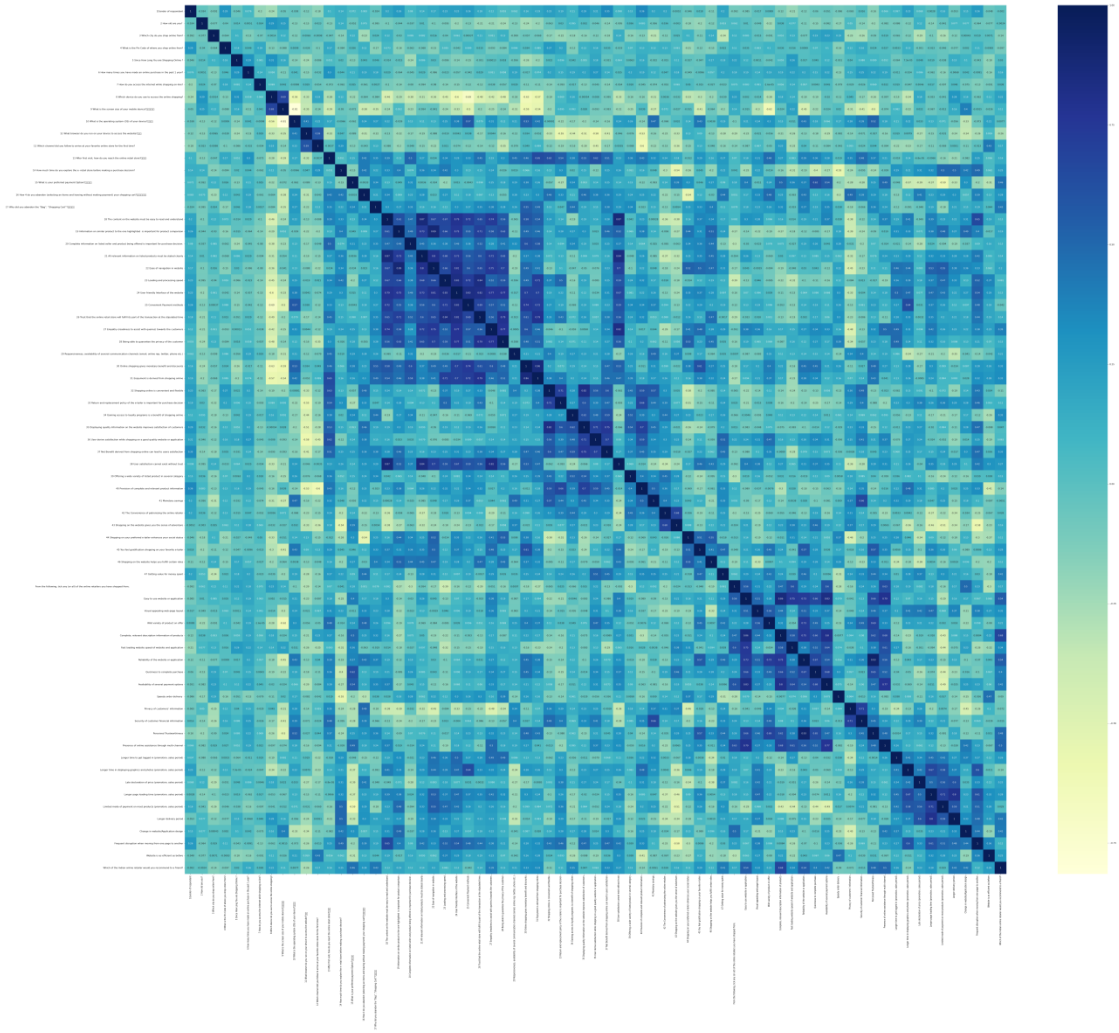
```
from sklearn.preprocessing import LabelEncoder
for column in df.columns:
    if df[column].dtype==np.number:
        continue
    df[column]=LabelEncoder().fit_transform(df[column])
```

CORRELATION B/W VARIABLES :-

```
df.corr()
```

Correlation shows the mutual relation between variables. By correlation we can see that how variables are correlated with each other , how much each variable affect other variables.

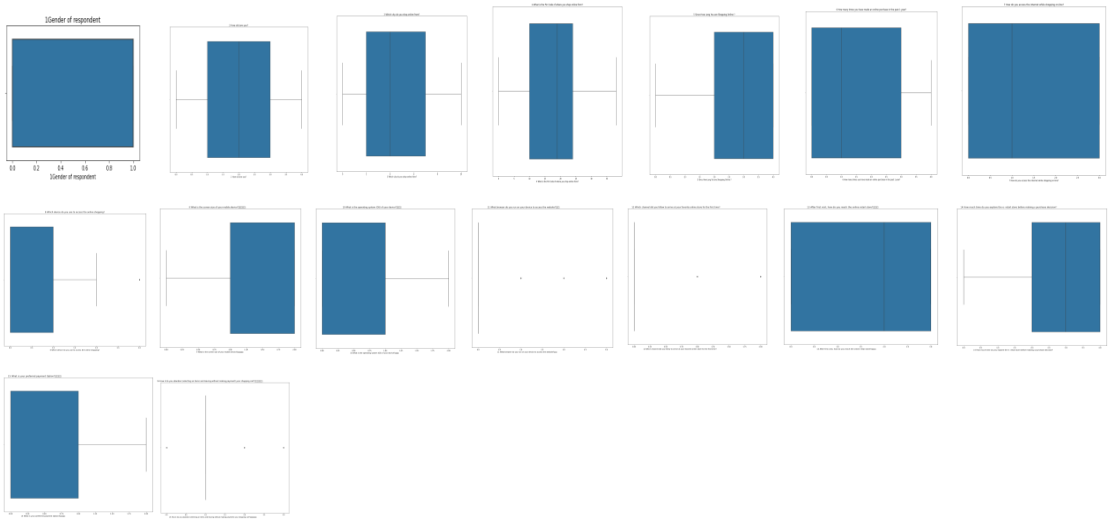
```
corrmap = df.corr()
plt.figure(figsize=(80,80))
#plot heat map
g=sns.heatmap(corrmat,annot=True,cmap='YlGnBu')
plt.show()
```



According to the heat map we can see that some of the areas of map are dark, which shows the high correlation between variables.

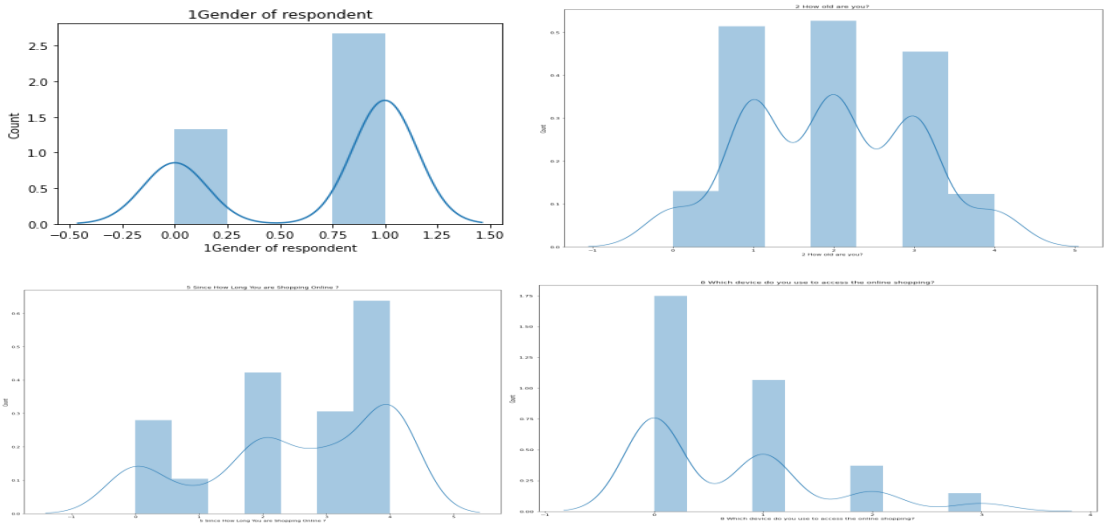
CHECKING OUTLIERS IN DATASET :-

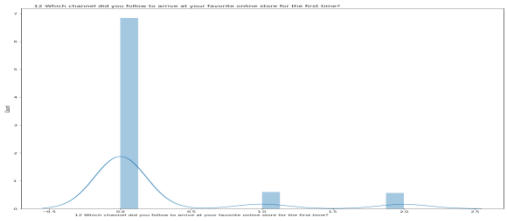
An outlier is a single data point that goes far outside the average value of a group of statistics. Outliers may be exceptions that stand outside individual samples of populations as well. In a more general context, an outlier is an individual that is markedly different from the norm in some respect.

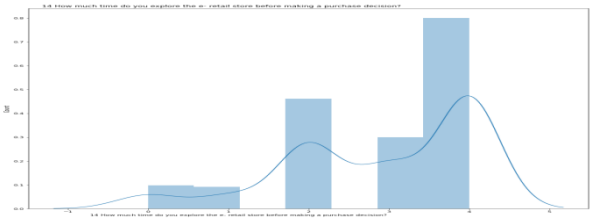


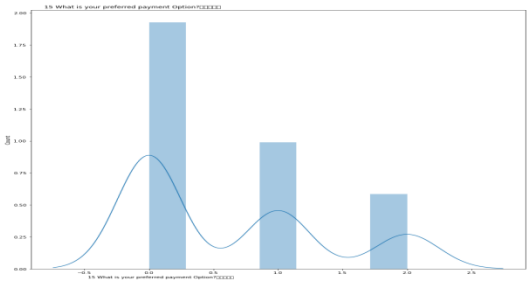
As we can see there are some outliers presents in data , but that are present in features that dos not affect the target variable directly. So we can drop that columns.

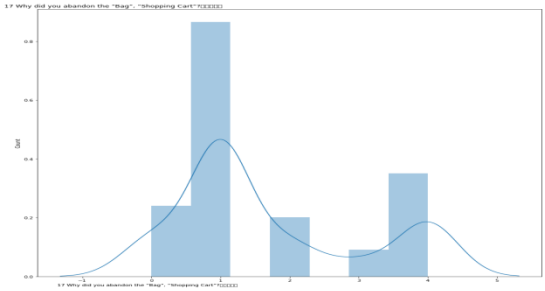
SOME DISTRIBUTION OF DATA :-

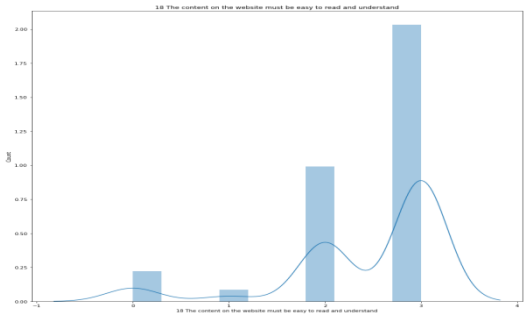


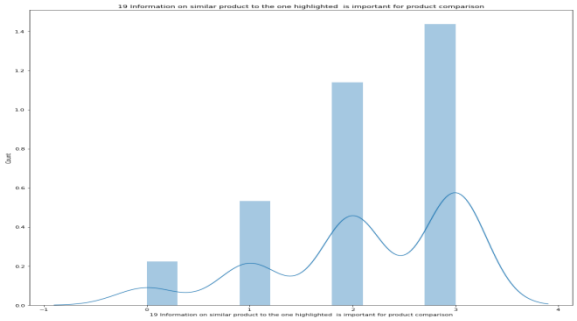




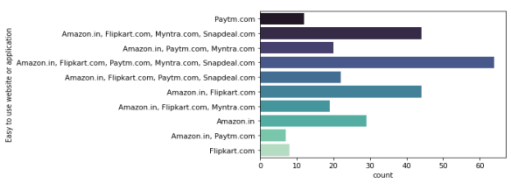


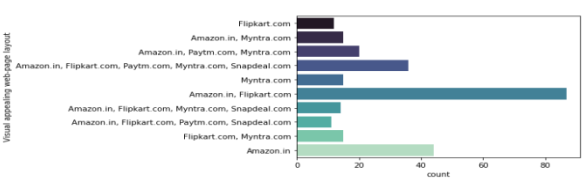


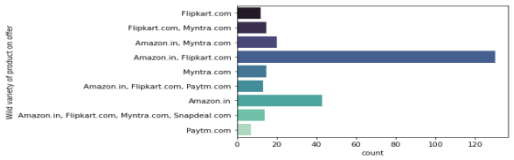




VISUAL ANALYSYS OF SOME OTHER FACTORS :-






Wild variety of product on offer
Flipkart.com
Flipkart.com, Myntra.com
Amazon.in, Myntra.com
Amazon.in, Flipkart.com
Myntra.com
Amazon.in, Flipkart.com, Paytm.com
Amazon.in
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Paytm.com
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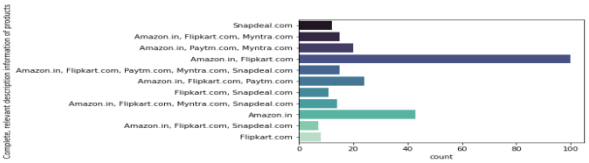
Complete, relevant description information of products
Snapdeal.com
Amazon.in, Flipkart.com, Myntra.com
Amazon.in, Paytm.com, Myntra.com
Amazon.in, Flipkart.com
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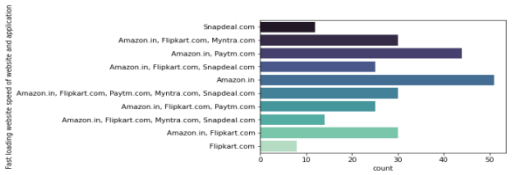
Fast loading website speed of website and application
Snapdeal.com
Amazon.in, Flipkart.com, Myntra.com
Amazon.in, Paytm.com
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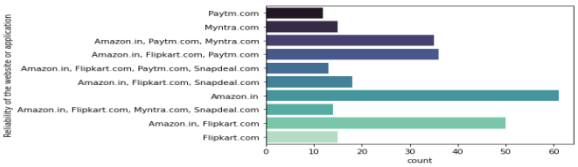
Reliability of the website or application
Paytm.com
Myntra.com
Amazon.in, Paytm.com, Myntra.com
Amazon.in, Flipkart.com, Paytm.com
Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com
Amazon.in, Flipkart.com, Snapdeal.com
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Amazon.in, Flipkart.com
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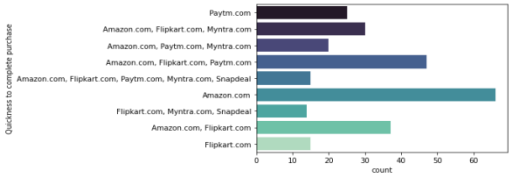
Quickness to complete purchase
Paytm.com
Amazon.com, Flipkart.com, Myntra.com
Amazon.com, Paytm.com, Myntra.com
Amazon.com, Flipkart.com, Paytm.com
Amazon.com, Flipkart.com, Paytm.com, Myntra.com, Snapdeal
Amazon.com
Flipkart.com, Myntra.com, Snapdeal
Amazon.com, Flipkart.com
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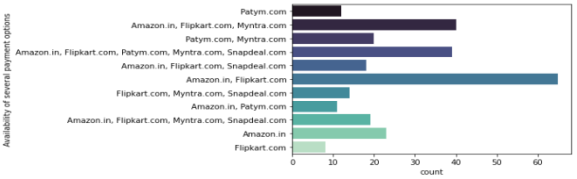
Availability of several payment options
Patym.com
Amazon.in, Flipkart.com, Myntra.com
Patym.com, Myntra.com
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com
Amazon.in, Flipkart.com, Snapdeal.com
Amazon.in, Flipkart.com
Flipkart.com, Myntra.com, Snapdeal.com
Amazon.in, Patym.com
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
Amazon.in
Flipkart.com
0 10 20 30 40 50 60
count


Speedy order delivery
Amazon.in
Amazon.in, Flipkart.com
Amazon.in, Flipkart.com, Snapdeal.com
Flipkart.com, Myntra.com, Snapdeal.com
Amazon.in, Flipkart.com, Myntra.com
Flipkart.com
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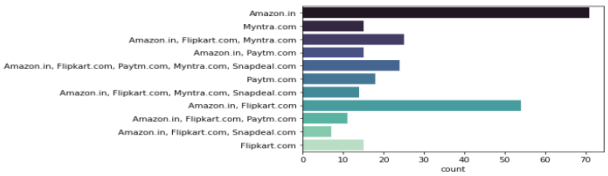
Privacy of customers' information
Amazon.in
Myntra.com
Amazon.in, Flipkart.com, Myntra.com
Amazon.in, Paytm.com
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com
Paytm.com
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
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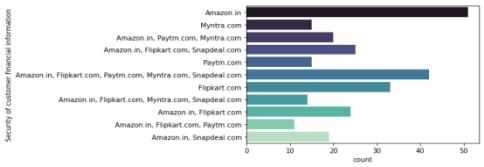
Security of customer financial information
Amazon.in
Myntra.com
Amazon.in, Paytm, Myntra.com
Amazon.in, Flipkart.com, Snapdeal.com
Paytm.com
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com
Flipkart.com
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
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Amazon.in, Snapdeal.com
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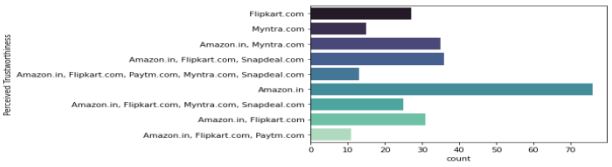
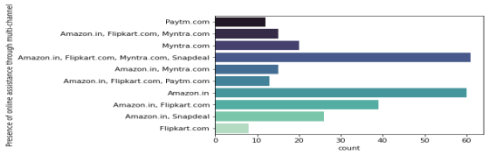

Perceived Trustworthiness
Flipkart.com
Myntra.com
Amazon.in, Myntra.com
Amazon.in, Flipkart.com, Snapdeal.com
Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com
Amazon.in
Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
Amazon.in, Flipkart.com
Amazon.in, Flipkart.com, Paytm.com
0 10 20 30 40 50 60 70
count


Presence of online assistance through multi-channel
Paytm.com
Amazon.in, Flipkart.com, Myntra.com
Myntra.com
Amazon.in, Flipkart.com, Myntra.com, Snapdeal
Amazon.in, Myntra.com
Amazon.in, Flipkart.com, Paytm.com
Amazon.in
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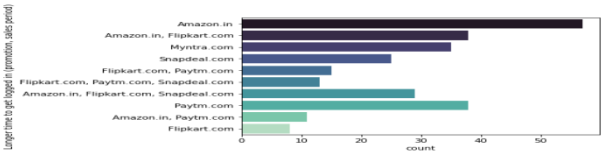
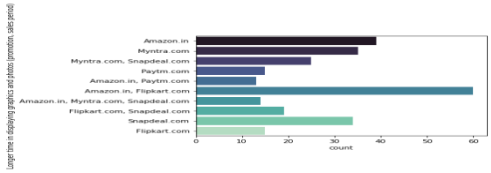
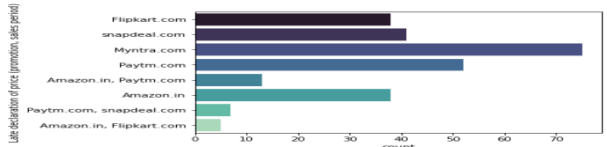
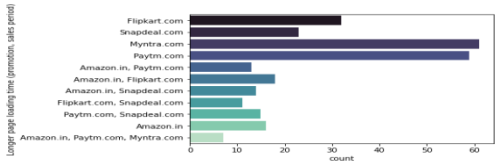
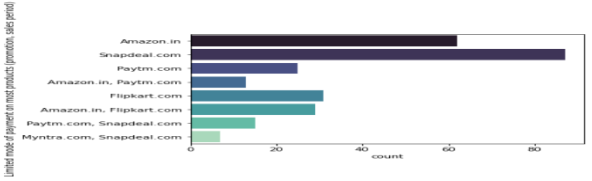
Amazon.in, Snapdeal
Flipkart.com
0 10 20 30 40 50 60
count

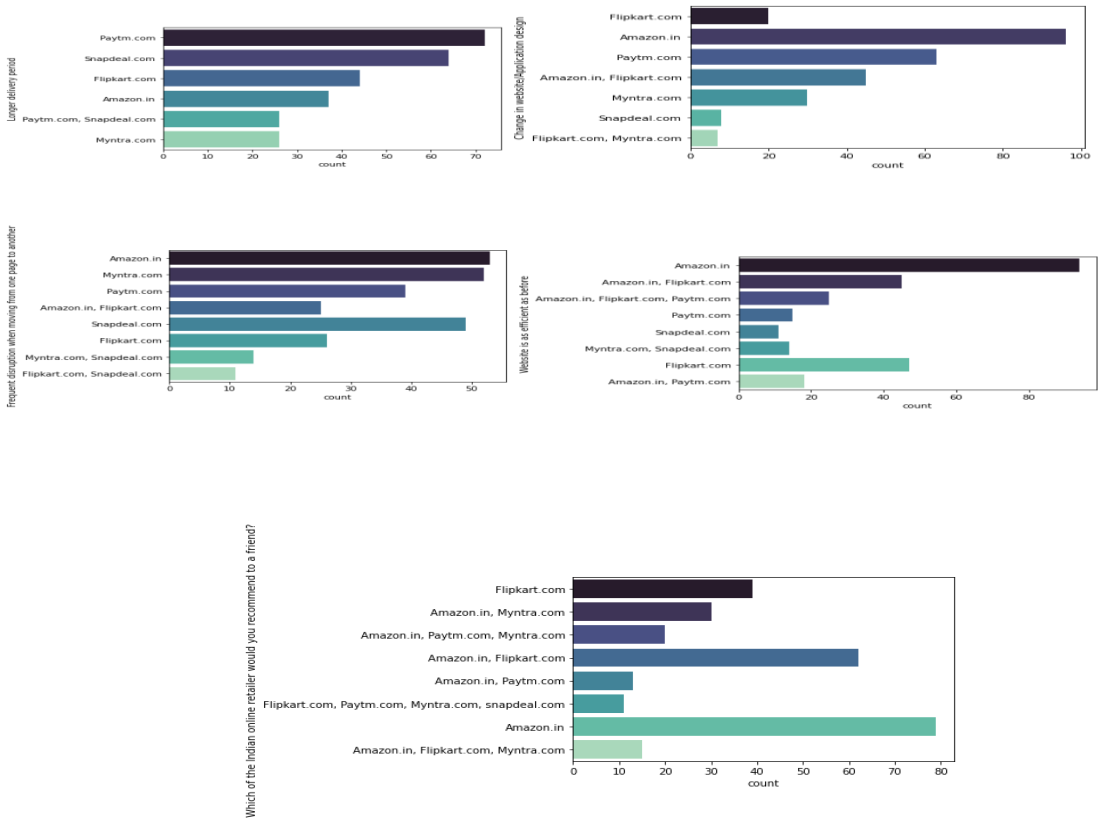

Longer time to get logged in (promotion, sales period)
Amazon.in
Amazon.in, Flipkart.com
Myntra.com
Snapdeal.com
Flipkart.com, Paytm.com
Flipkart.com, Paytm.com, Snapdeal.com
Amazon.in, Flipkart.com, Snapdeal.com
Paytm.com
Amazon.in, Paytm.com
Flipkart.com
0 10 20 30 40 50
count


Longer time in displaying graphics and photos (promotion, sales period)
Amazon.in
Myntra.com
Myntra.com, Snapdeal.com
Paytm.com
Amazon.in, Paytm.com
Amazon.in, Flipkart.com
Amazon.in, Myntra.com, Snapdeal.com
Flipkart.com, Snapdeal.com
Snapdeal.com
Flipkart.com
0 10 20 30 40 50 60
count


Late declaration of price (promotion, sales period)
Flipkart.com
snapdeal.com
Myntra.com
Paytm.com
Amazon.in, Paytm.com
Amazon.in
Paytm.com, snapdeal.com
Amazon.in, Flipkart.com
0 10 20 30 40 50 60 70
count


Longer page loading time (promotion, sales period)
Flipkart.com
Snapdeal.com
Myntra.com
Paytm.com
Amazon.in, Paytm.com
Amazon.in, Flipkart.com
Amazon.in, Snapdeal.com
Flipkart.com, Snapdeal.com
Paytm.com, Snapdeal.com
Amazon.in
Amazon.in, Paytm.com, Myntra.com
0 10 20 30 40 50 60
count


Limited mode of payment on most products (promotion, sales period)
Amazon.in
Snapdeal.com
Paytm.com
Amazon.in, Paytm.com
Flipkart.com
Amazon.in, Flipkart.com
Paytm.com, Snapdeal.com
Myntra.com, Snapdeal.com
0 20 40 60 80
count



As we can see in above countplot graphs the "Amazon" is working very well in most of the areas.

But areas like website i.e. Login Time and smooth Transition from one page to another page in website or application page have to be consider as a weak point.

Other companies are also doing well but they have to improve their services in many areas .

Now we can say for better customer retention the companies should have target female customers , customers age group of 21-30 , customers who have 3-4 years of shopping history.

On the other hand they should have also improve their service related area like app improvement,website improvement,customer care services, better payment options,delivery options and delivery time,privacy of customer's personal data and financial data,variety of offers,variety of listed products,better information of products.

Better the customer's experience, better the customer retention.