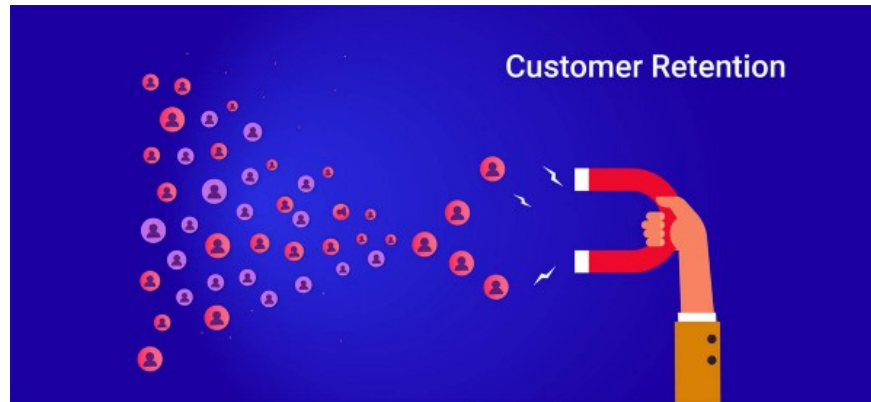


Customer Activation & Retention Analysis Using Python



Introducing a case study of customer activation and retention from Indian e-commerce customers . In this presentation, I will go through the whole process of analysis.

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.

Importing necessary libraries :

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
import seaborn as sns

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

Importing dataset

```
df_customer =
pd.read_excel(r"C:\Users\lokes\OneDrive\Desktop\ml
project\customer
segmentation\customer_retention_dataset.xlsx")

pd.set_option('display.max_column',100)
#Setting the max column limit 100 so that we can observe the
whole
columns
```

Exploratory Data Analysis (EDA).

```
df_customer.head() #checking the head
```

Through the `head().method` we can observed 5 rows. Here we can see almost features which are in categorical.

Our data set contains 269 rows and 71 columns.

Here below output we can see as columns name some of the columns name are too long. Therefor we can reshape into short name.

3/26

```

the website?\t\t\t
',
    '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?\t\t\t\t
',
    '14 How much time do you explore the e- retail store
before making a purchase decision?
',
    '15 What is your preferred payment Option?\t\t\t\t\t
',
    '16 How frequently do you abandon (selecting an items
and leaving without making payment) your shopping cart?
\t\t\t\t\t\t\t\t\t
',
    '17 Why did you abandon the "Bag", "Shopping Cart"?
\t\t\t\t\t\t\t
',
    '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?'],
dtype='object')

```

Before going with data analysis process. We have to check the null values if any. as checked there is not any missing values.

```
df_customer.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

```

Exploratory Data Analysis :

```

for value in df_customer:
    print(f'{value} : {df_customer[value].unique()}')

"this above command will give all unique as a output"

1Gender of respondent : ['Male' 'Female']
2 How old are you? : ['31-40 years' '21-30 years' '41-50
yaers' 'Less than 20 years'
'51 years and above']
3 Which city do you shop online from? : ['Delhi' 'Greater
Noida' 'Karnal ' 'Bangalore ' 'Noida' 'Solan'
'Moradabad' 'Gurgaon ' 'Merrut' 'Ghaziabad' 'Bulandshahr']
4 What is the Pin Code of where you shop online from? :
[110009 110030 201308 132001 530068 110011 110018 173229
110039 244001
122018 201310 560037 203207 250001 201005 110044 201306
560010 201305
110042 132036 560018 110008 560002 201303 201312 203202
560001 201304
560003 110014 560013 173212 122009 201009 201008 201001
203001]
5 Since How Long You are Shopping Online ? : ['Above 4

```

```

years' '3-4 years' '2-3 years' 'Less than 1 year' '1-2
years']
6 How many times you have made an online purchase in the
past 1 year? : ['31-40 times' '41 times and above' 'Less
than 10 times' '11-20 times'
'21-30 times' '42 times and above']
7 How do you access the internet while shopping on-line? :
['Dial-up' 'Wi-Fi' 'Mobile Internet' 'Mobile internet']
8 Which device do you use to access the online shopping? :
['Desktop' 'Smartphone' 'Tablet' 'Laptop']
9 What is the screen size of your mobile device?
: ['Others' '4.7 inches' '5.5 inches' '5 inches']
10 What is the operating system (OS) of your device?
: ['Window/windows Mobile' 'IOS/Mac' 'Android']
11 What browser do you run on your device to access the
website?
: ['Google chrome' 'Safari' 'Opera' 'Mozilla Firefox']
12 Which channel did you follow to arrive at your favorite
online store for the first time?
: ['Search Engine' 'Content Marketing' 'Display Adverts']
13 After first visit, how do you reach the online retail
store?
: ['Search Engine' 'Via application' 'Direct URL' 'E-mail'
'Social Media']
14 How much time do you explore the e- retail store before
making a purchase decision?
: ['6-10 mins' 'more than 15 mins' '11-15 mins' '1-5 mins'
'Less than 1 min']
15 What is your preferred payment Option?
: ['E-wallets (Paytm, Freecharge etc.)' 'Credit/Debit cards'
'Cash on delivery (CoD)']
16 How frequently do you abandon (selecting an items and
leaving without making payment) your shopping cart?
: ['Sometimes' 'Very frequently' 'Never' 'Frequently']
17 Why did you abandon the "Bag", "Shopping Cart"?
: ['Lack of trust' 'Promo code not applicable' 'Better
alternative offer'
'Change in price' 'No preferred mode of payment']
18 The content on the website must be easy to read and
understand : ['Agree (4)' 'Strongly agree (5)' 'Strongly
disagree (1)'
'Indifferent (3)']
19 Information on similar product to the one highlighted is
important for product comparison : ['Indifferent (3)'
'Strongly agree (5)' 'Agree (4)' 'Dis-agree (2)']
20 Complete information on listed seller and product being
offered is important for purchase decision. : ['Indifferent
(3)' 'Strongly agree (5)' 'Agree (4)' 'Dis-agree (2)'
'Strongly disagree (1)']
21 All relevant information on listed products must be
stated clearly : ['Agree (4)' 'Strongly agree (5)' 'Strongly
disagree (1)' 'Dis-agree (2)']
22 Ease of navigation in website : ['Agree (4)' 'Strongly
agree (5)' 'Strongly disagree (1)' 'Dis-agree (2)']
23 Loading and processing speed : ['Strongly disagree (1)'
'Strongly agree (5)' 'Agree (4)' 'Dis-agree (2)'
'Indifferent (3)']
24 User friendly Interface of the website : ['Dis-agree (2)'
'Strongly agree (5)' 'Agree (4)' 'Strongly disagree (1)'
'Indifferent (3)']

```

```

25 Convenient Payment methods : ['Dis-agree (2)' 'Strongly
agree (5)' 'Agree (4)']
26 Trust that the online retail store will fulfill its part
of the transaction at the stipulated time : ['Disagree (2)'
'Strongly agree (5)' 'Agree (4)' 'indifferent (3)']
27 Empathy (readiness to assist with queries) towards the
customers : ['Strongly agree (5)' 'Agree (4)' 'Strongly
disagree (1)'
'indifferent (3)']
28 Being able to guarantee the privacy of the customer :
['Agree (4)' 'Strongly agree (5)' 'indifferent (3)']
29 Responsiveness, availability of several communication
channels (email, online rep, twitter, phone etc.) : ['Agree
(4)' 'Strongly agree (5)' 'indifferent (3)'
'Strongly disagree (1)']
30 Online shopping gives monetary benefit and discounts :
['indifferent (3)' 'Strongly agree (5)' 'Agree (4)'
'Strongly disagree (1)' 'Dis-agree (2)']
31 Enjoyment is derived from shopping online : ['Strongly
disagree (1)' 'Strongly agree (5)' 'indifferent (3)'
'Agree (4)' 'Dis-agree (2)']
32 Shopping online is convenient and flexible : ['Dis-agree
(2)' 'Strongly agree (5)' 'indifferent (3)' 'Agree (4)']
33 Return and replacement policy of the e-tailer is
important for purchase decision : ['Dis-agree (2)' 'Strongly
agree (5)' 'Agree (4)']
34 Gaining access to loyalty programs is a benefit of
shopping online : ['Agree (4)' 'Strongly agree (5)'
'indifferent (3)' 'Dis-agree (2)'
'Strongly disagree (1)']
35 Displaying quality Information on the website improves
satisfaction of customers : ['indifferent (3)' 'Strongly
agree (5)' 'Agree (4)']
36 User derive satisfaction while shopping on a good quality
website or application : ['Strongly agree (5)' 'Agree (4)'
'Dis-agree (2)']
37 Net Benefit derived from shopping online can lead to
users satisfaction : ['Agree (4)' 'Strongly agree (5)'
'indifferent (3)' 'Dis-agree (2)']
38 User satisfaction cannot exist without trust : ['Strongly
agree (5)' 'Agree (4)' 'Strongly disagree (1)' 'Dis-agree
(2)'
'indifferent (3)']
39 Offering a wide variety of listed product in several
category : ['indifferent (3)' 'Strongly agree (5)' 'Agree
(4)' 'Dis-agree (2)']
40 Provision of complete and relevant product information :
['indifferent (3)' 'Strongly agree (5)' 'Agree (4)'
'Disagree (2)']
41 Monetary savings : ['Disagree (2)' 'Strongly agree (5)'
'Agree (4)' 'indifferent (3)']
42 The Convenience of patronizing the online retailer :
['indifferent (3)' 'Agree (4)' 'Strongly agree (5)']
43 Shopping on the website gives you the sense of adventure
: ['Agree (4)' 'indifferent (3)' 'Strongly agree (5)' 'Dis-
agree (2)'
'Strongly disagree (1)']
44 Shopping on your preferred e-tailer enhances your social
status : ['Agree (4)' 'indifferent (3)' 'Strongly agree (5)'
'Strongly disagree (1)' 'Dis-agree (2)']

```



```

45 You feel gratification shopping on your favorite e-tailer
: ['Strongly agree (5)' 'indifferent (3)' 'Agree (4)'
  'Strongly disagree (1)' 'Disagree (2)']
46 Shopping on the website helps you fulfill certain roles :
['Agree (4)' 'Strongly agree (5)' 'indifferent (3)'
  'Strongly disagree (1)' 'Dis-agree (2)']
47 Getting value for money spent : ['Strongly agree (5)'
  'Agree (4)' 'indifferent (3)']
From the following, tick any (or all) of the online
retailers you have shopped from;
: ['Amazon.in, Paytm.com'
  'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
  'Amazon.in, Paytm.com, Myntra.com'
  'Amazon.in, Flipkart.com, Paytm.com, Myntra.com,
  Snapdeal.com'
  'Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com'
  'Amazon.in, Flipkart.com' 'Amazon.in, Flipkart.com,
  Snapdeal.com'
  'Amazon.in' 'Amazon.in, Flipkart.com, Paytm.com']
Easy to use website or application : ['Paytm.com'
  'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
  'Amazon.in, Paytm.com, Myntra.com'
  'Amazon.in, Flipkart.com, Paytm.com, Myntra.com,
  Snapdeal.com'
  'Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com'
  'Amazon.in, Flipkart.com' 'Amazon.in, Flipkart.com,
  Myntra.com'
  'Amazon.in' 'Amazon.in, Paytm.com' 'Flipkart.com']
Visual appealing web-page layout : ['Flipkart.com'
  'Amazon.in, Myntra.com' 'Amazon.in, Paytm.com, Myntra.com'
  'Amazon.in, Flipkart.com, Paytm.com, Myntra.com,
  Snapdeal.com'
  'Myntra.com' 'Amazon.in, Flipkart.com'
  'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
  'Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com'
  'Flipkart.com, Myntra.com' 'Amazon.in']
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'
  'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
  'Paytm.com']
Complete, relevant description information of products :
['Snapdeal.com' 'Amazon.in, Flipkart.com, Myntra.com'
  'Amazon.in, Paytm.com, Myntra.com' 'Amazon.in,
  Flipkart.com'
  'Amazon.in, Flipkart.com, Paytm.com, Myntra.com,
  Snapdeal.com'
  'Amazon.in, Flipkart.com, Paytm.com' 'Flipkart.com,
  Snapdeal.com'
  'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
  'Amazon.in'
  'Amazon.in, Flipkart.com, Snapdeal.com' 'Flipkart.com']
Fast loading website speed of website and application :
['Snapdeal.com' 'Amazon.in, Flipkart.com, Myntra.com'
  'Amazon.in, Paytm.com' 'Amazon.in, Flipkart.com,
  Snapdeal.com'
  'Amazon.in'
  'Amazon.in, Flipkart.com, Paytm.com, Myntra.com,
  Snapdeal.com'

```

```

'Amazon.in, Flipkart.com, Paytm.com'
'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
'Amazon.in, Flipkart.com' 'Flipkart.com']
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' 'Amazon.in'
'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
'Amazon.in, Flipkart.com' 'Flipkart.com']
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'
'Flipkart.com']
Availability of several payment options : ['Paytm.com'
'Amazon.in, Flipkart.com, Myntra.com' 'Paytm.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,
Paytm.com'
'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'
'Amazon.in'
'Flipkart.com']
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']
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'
'Amazon.in, Flipkart.com' 'Amazon.in, Flipkart.com,
Paytm.com'
'Amazon.in, Flipkart.com, Snapdeal.com' 'Flipkart.com']
Security of customer financial information : ['Amazon.in'
'Myntra.com' 'Amazon.in, Paytm.com, 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'
'Amazon.in, Flipkart.com' 'Amazon.in, Flipkart.com,
Paytm.com'
'Amazon.in, Snapdeal.com']
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']
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'
'Amazon.in, Flipkart.com' 'Amazon.in, Snapdeal'
'Flipkart.com']
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']
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']
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']
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']
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']
Longer delivery period : ['Paytm.com' 'Snapdeal.com'
'Flipkart.com' 'Amazon.in'
'Paytm.com, Snapdeal.com' 'Myntra.com']
Change in website/Application design : ['Flipkart.com'
'Amazon.in' 'Paytm.com' 'Amazon.in, Flipkart.com'
'Myntra.com' 'Snapdeal.com' 'Flipkart.com, Myntra.com']
Frequent disruption when moving from one page to another :
['Amazon.in' 'Myntra.com' 'Paytm.com' 'Amazon.in,
Flipkart.com'
'Snapdeal.com' 'Flipkart.com' 'Myntra.com, Snapdeal.com'
'Flipkart.com, Snapdeal.com']
Website is as efficient as before : ['Amazon.in' 'Amazon.in,
Flipkart.com'
'Amazon.in, Flipkart.com, Paytm.com' 'Paytm.com'
'Snapdeal.com'
'Myntra.com, Snapdeal.com' 'Flipkart.com' 'Amazon.in,

```

```
Paytm.com']
Which of the Indian online retailer would you recommend to a
friend? : ['Flipkart.com' 'Amazon.in, Myntra.com'
'Amazon.in, Paytm.com, Myntra.com'
'Amazon.in, Flipkart.com' 'Amazon.in, Paytm.com'
'Flipkart.com, Paytm.com, Myntra.com, snapdeal.com'
'Amazon.in'
'Amazon.in, Flipkart.com, Myntra.com']
```

```
sns.set(style='darkgrid')

# setting style for visualization
```

Transforming long columns into short for better analysis purpose

```
df_cust = df_customer.rename(columns={
    '1 Gender of respondent': 'Gender',
    '2 How old are you?': 'Age',
    '3 Which city do you shop online from?': 'shoping_city',
    '4 What is the Pin Code of where you shop online from?': 'pincode',
    '5 Since How Long You are Shopping Online?': 'online shoping duration',
    '6 How many times you have made an online purchase in the past 1
    year?': 'shoping_frequency_in_1_year',
    '7 How do you access the internet while shopping on-line?': 'the mode of
    shopping',
    '8 Which device do you use to access the online shopping?': 'used divice for
    shopping',
    '9 What is the screen size of your mobile device?': 'screen_size of device',
    '10 What is the operating system (OS) of your
    device?': 'Operating_system',
    '11 What browser do you run on your device to access
    the website?': 'browser type',
    '12 Which channel did you follow to arrive at your favorite
    online store for the first time?': 'first medium of shopping info',
    '13 After first visit, how do you reach the
    online retail store?': 'used medium for first shopping',
    '14 How much time do you explore the e- retail store before making a
```

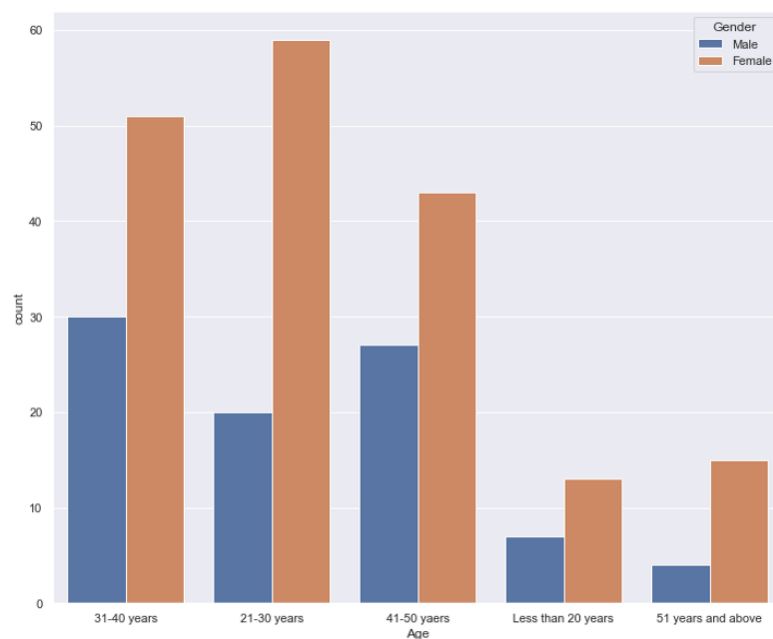
purchase decision? ‘
 ‘decision time for first shopping’,’16 How frequently do you abandon
 (selecting an item and leaving without making payment) your shopping
 cart?’
 ‘frequency of abandon product in cart’,’17 Why did you abandon the
 “Bag”, “Shopping Cart”?’
 ‘Reason for abandon in cart’,’18 The content on the website must be easy
 to read and understand’: ‘Website readability’,
 ‘19 Information on similar product to the one highlighted is important for
 product comparison’: ‘similar product comparison info’,’20 Complete
 information on listed seller and product being offered is important for
 purchase decision.’:
 ‘full description about product’,’21 All relevant information on listed
 products must be stated clearly’: ‘product relevant information’, ’23
 Loading and processing speed’: ‘website navigation speed’,
 ‘26 Trust that the online retail store will fulfill its part of the transaction at
 the stipulated time’: ‘creating trust during online transactions’, ‘Which of
 the Indian online retailer would you recommend to a friend?’: ‘Refer
 website to friend’,
 ‘15 What is your preferred payment Option?’: ‘preferred
 payment Option’}}

Univariate Analysis :

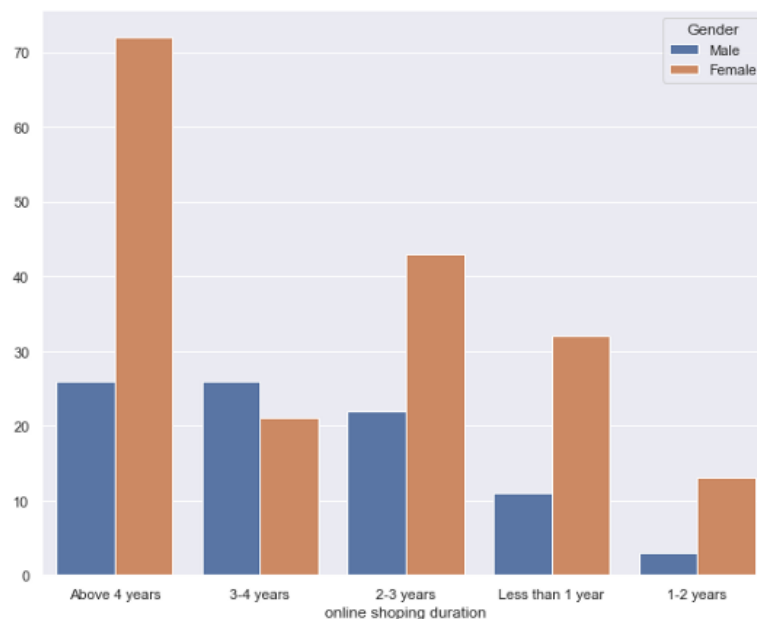
As our most of variables are in categorical hence checking statistical
 analysis using count plot from seaborn, that depicts a probability
 distribution.

```
plt.figure(figsize=(12,10))
sns.countplot(x='Age', data=df_cust, hue='Gender')

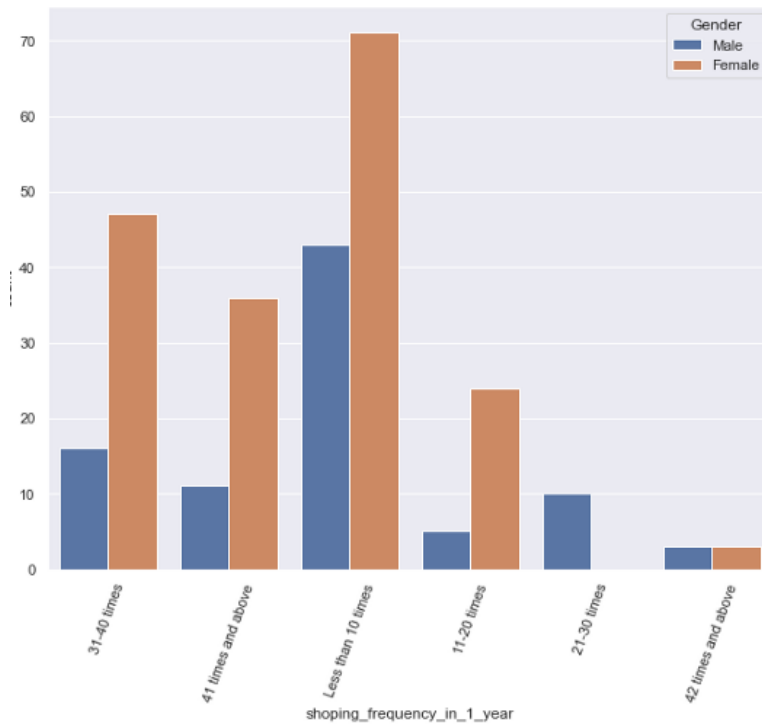
#checking the age as per the gender
```



```
plt.figure(figsize=(10,8))
sns.countplot(x='online shopping
duration',data=df_cust,hue='Gender')
```

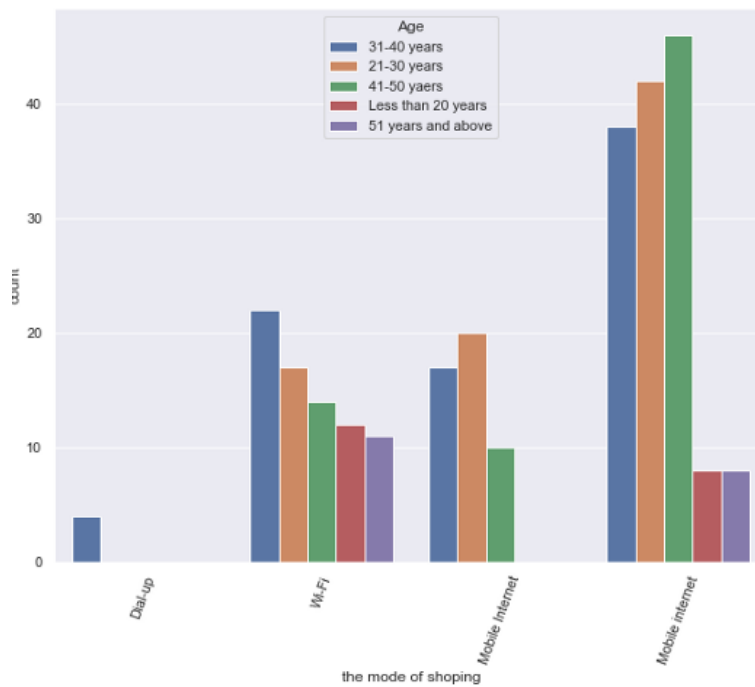


This bar graph shows, Since how long you are Shopping Online. as we can see the count of those who are doing shopping online since more then 4 years where female ratio is higher then the men.



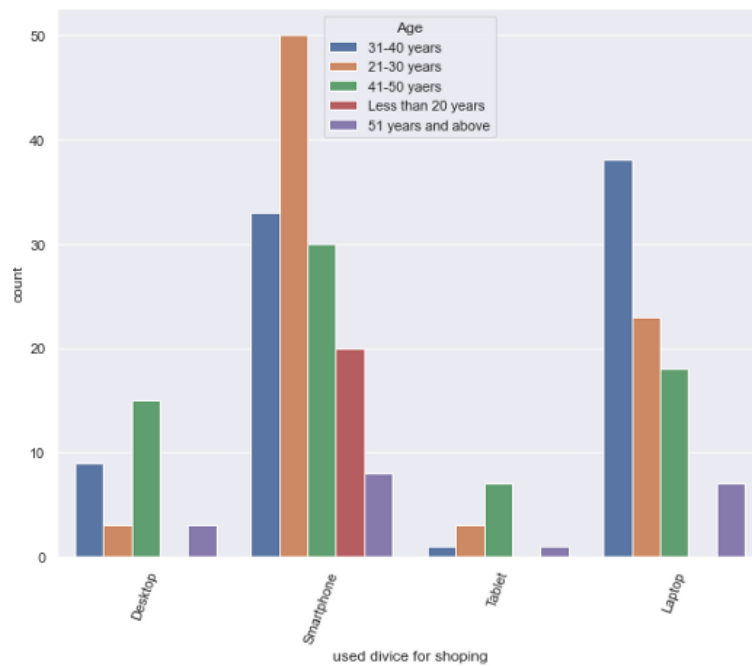
Similarly, in this analysis we can see the shopping frequency from online websites.

```
plt.figure(figsize=(10,8)) sns.countplot(x='the mode of shopping',data=df_cust,hue='Age') plt.xticks(rotation=70)
```



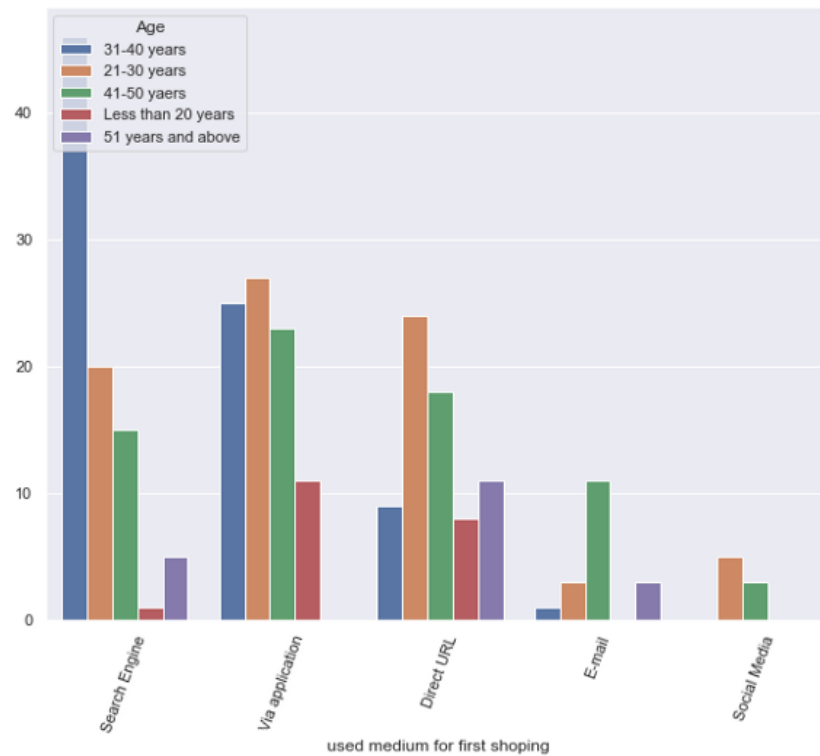
Checking the the mode of shopping used by different age of group.

```
plt.figure(figsize=(10,8))
sns.countplot(x='used device for
shopping',data=df_cust,hue='Age')
plt.xticks(rotation=70)
```

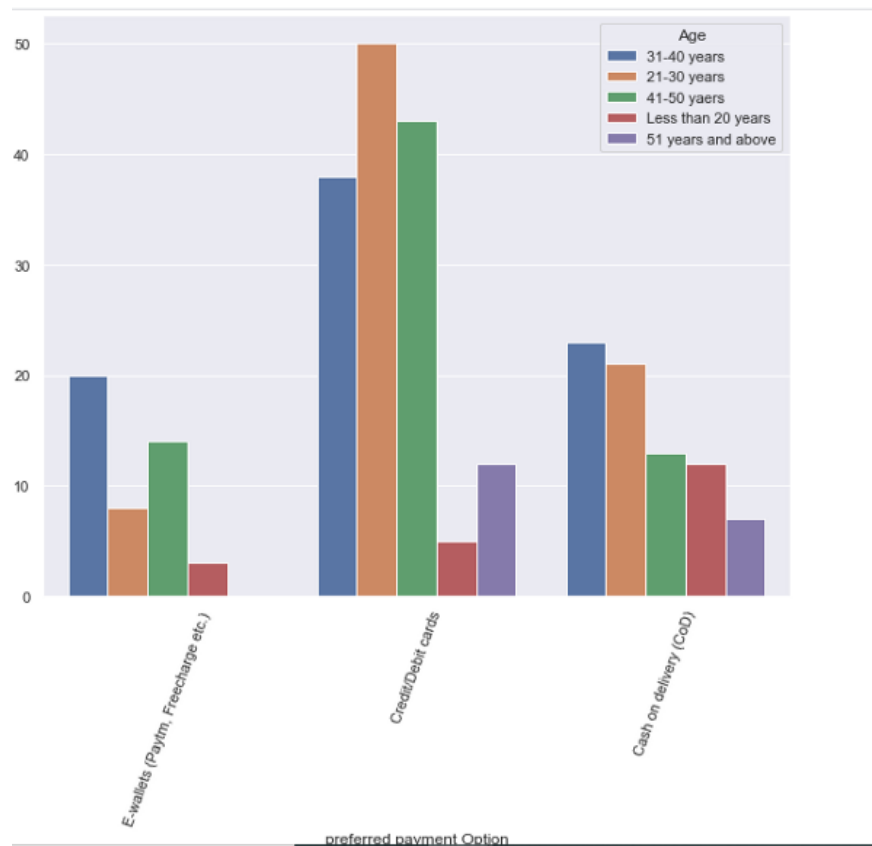
analysis the used device for shopping by respective age group.

```
plt.figure(figsize=(10,8)) sns.countplot(x='used medium for  
first shopping ',data=df_cust,hue='Age')  
plt.xticks(rotation=70)
```



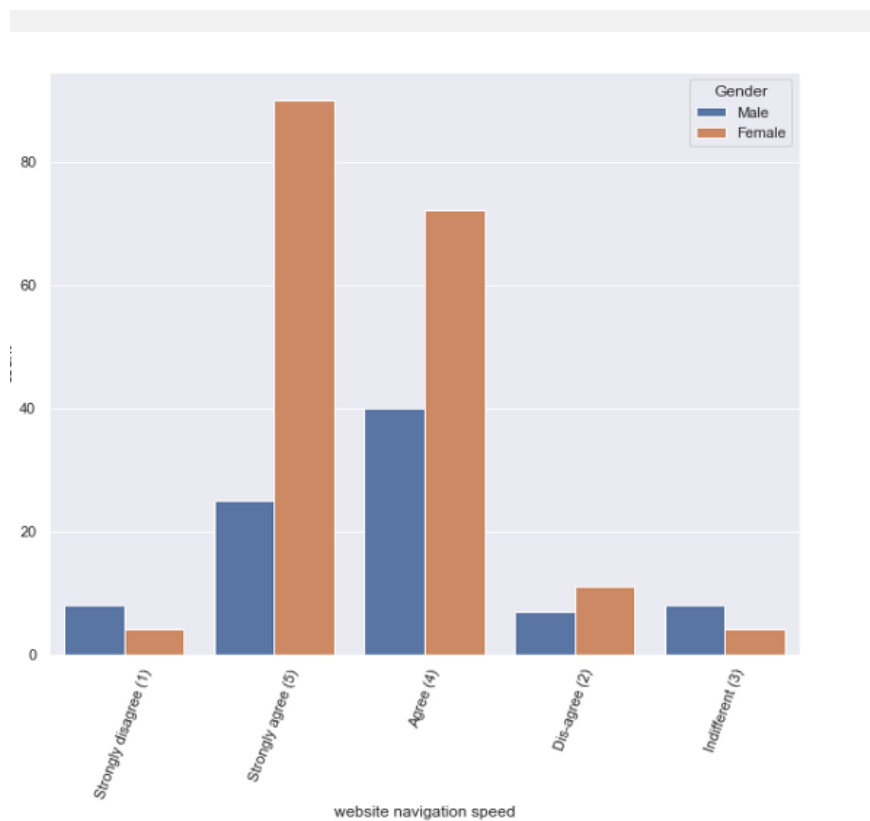
This bar shows which channel used to arrive at favorite online store for the first time.

```
plt.figure(figsize=(10,8)) sns.countplot(x='preferred
payment Option',data=df_cust,hue='Age')
plt.xticks(rotation=70)
```



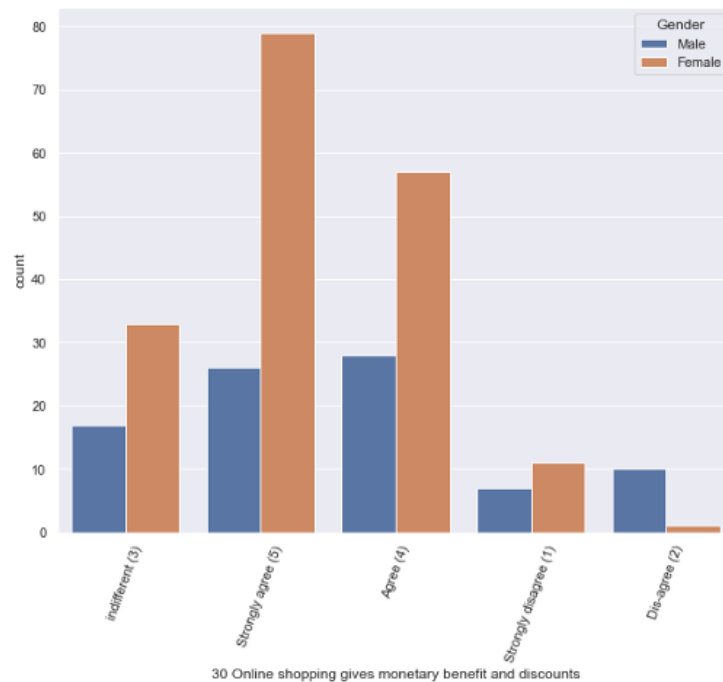
Checking the most preferred payment Option by different age group.

```
plt.figure(figsize=(10,8))
sns.countplot(x='website navigation
speed',data=df_cust,hue='Gender')
plt.xticks(rotation=70)
```



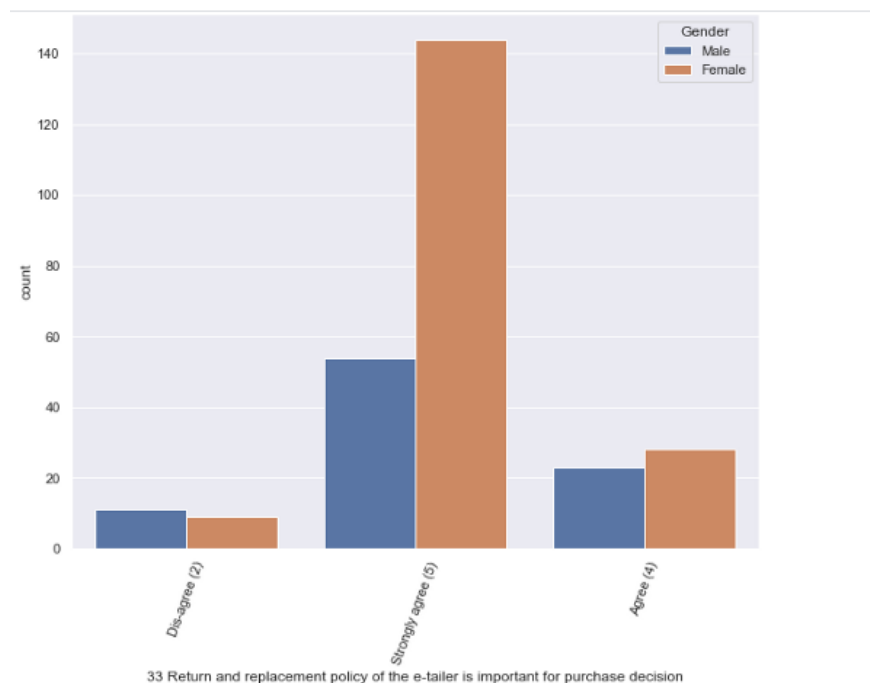
Analyzing those details where online shopper concern about the navigation speed.

```
plt.figure(figsize=(10,8))
sns.countplot(x='30 Online shopping gives monetary benefit
and discounts',data=df_cust,hue='Gender')
plt.xticks(rotation=70)
```



This graph shows about those male and female who are concern about the discounts and various benefits.

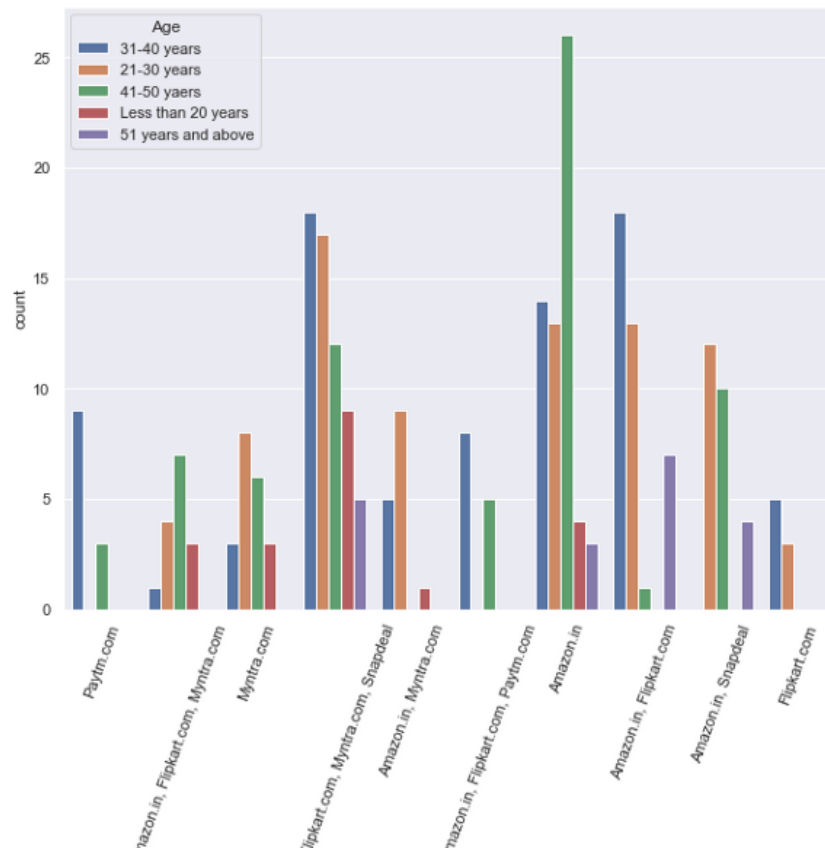
```
plt.figure(figsize=(10,8))
sns.countplot(x='33 Return and replacement policy of the e-
tailer is important for purchase
decision',data=df_cust,hue='Gender')
plt.xticks(rotation=70)
```



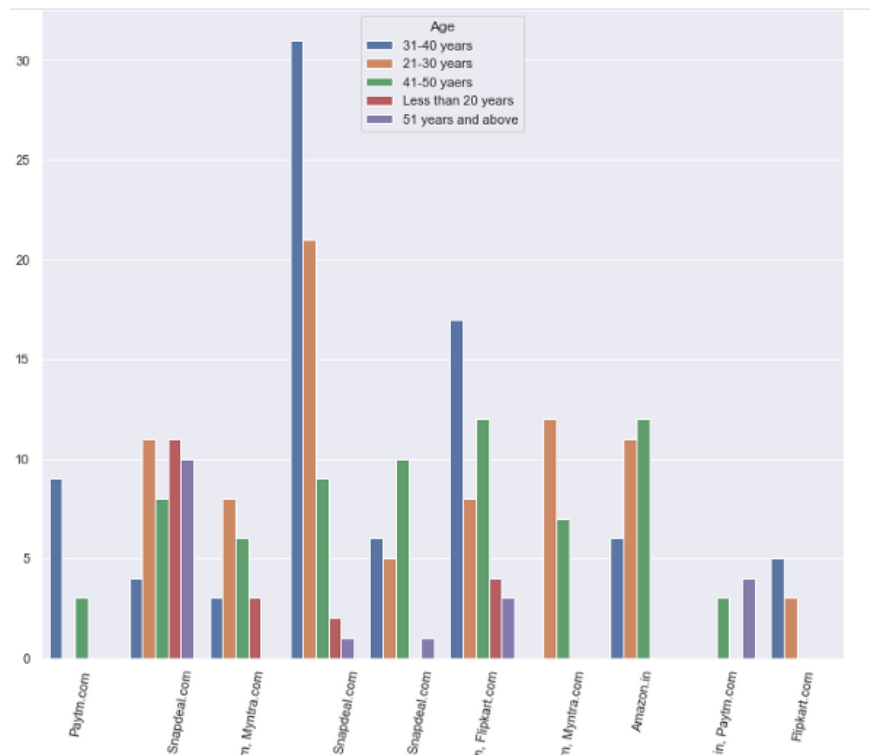
Checking the proportion of those people who are concern about Return and replacement policy of the e-tailer is important for purchase decision.

```
plt.figure(figsize=(10,8))
sns.countplot(x='Presence of online assistance through
multi-channel',data=df_cust,hue='Age')
plt.xticks(rotation=70)

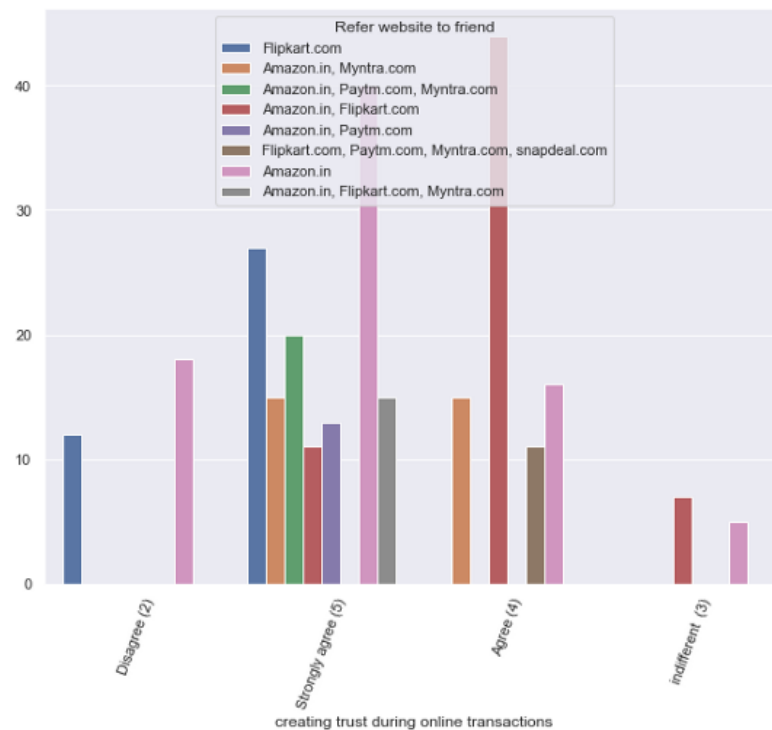
plt.figure(figsize=(12,10))
sns.countplot(x='Easy to use website or
application',data=df_cust,hue='Age')
plt.xticks(rotation=80)
```



Visualizing the views regarding the Presence of online assistance through multi-channel. And Easy to use website or application.



```
plt.figure(figsize=(10,8))
sns.countplot(x='creating trust during online
transactions',data=df_cust,hue='Refer website to friend')
plt.xticks(rotation=70)
```

This bar shows those websites details where people trust during online transactions.

Concluding Remarks:

Data analysis is a proven way for any organizations and enterprises to gain the information they need to make better decisions, serve their customers, and increase productivity and revenue. The benefits of data analysis are almost too numerous to count, and some of the most rewarding benefits include getting the right information for business,

getting more value out of it. And it creates more effective marketing campaigns, gaining a better understanding of customers, and so on. Furthermore, there are many points like available service in respective city, decision time for first shopping and most important preferred payment Options such factors contributing most. However, there are few reasons also where customers selected the products and left as it is in the cart. As per the analysis we found various reasons like lack of trust, promo code not applicable or they got better alternate offer could be offline shopping mode and frequent change in price so on.

Return and replacement policy of the re-tailer is important for purchase decision. In analysis we found highest ratio of male and female those are strongly agree with replacement policy. And different type of loyalty program's give benefit's and attract customers for shopping online.

Although, we can say that such data in-sights gives enterprises the ability to listen to customer interactions, learn from behavior and contextual information, create more effective actionable insights, and execute more intelligently on insights in order to optimize and engage targets and improve business practices.