```python
import pandas as pd
import numpy as np

import seaborn as sns
import matplotlib.pyplot as plt
%matplotlib inline

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

In [2]:
```python
data= pd.read_excel(r'C:\Users\Longview Office\Desktop\customer_retention_dataset.xlsx')
```

In [3]:
```python
pd.set_option('display.max_columns', None)
```

In [4]:
```python
data.head()
```

Out[4]:

	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? \t\t\t\t\t	10 What is the operating system (OS) of your device? \t\t\t\t	11 What browser do you run on your device to access 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	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 freque do abar (selec an it lea wit ma paym shop c \t\t\t
0	Male	31-40 years	Delhi	110009	Above 4 years	31-40 times	Dial-up	Desktop	Others	Window/windows Mobile	Google chrome	Search Engine	Search Engine	6-10 mins	E-wallets (Paytm, Freecharge etc.)	Somet
1	Female	21-30 years	Delhi	110030	Above 4 years	41 times and above	Wi-Fi	Smartphone	4.7 inches	IOS/Mac	Google chrome	Search Engine	Via application	more than 15 mins	Credit/Debit cards	frequ
2	Female	21-30 years	Greater Noida	201308	3-4 years	41 times and above	Mobile Internet	Smartphone	5.5 inches	Android	Google chrome	Search Engine	Via application	11-15 mins	E-wallets (Paytm, Freecharge etc.)	Somet
3	Male	21-30 years	Karnal	132001	3-4 years	Less than 10 times	Mobile Internet	Smartphone	5.5 inches	IOS/Mac	Safari	Search Engine	Search Engine	6-10 mins	Credit/Debit cards	N
4	Female	21-30 years	Bangalore	530068	2-3 years	11-20 times	Wi-Fi	Smartphone	4.7 inches	IOS/Mac	Safari	Content Marketing	Via application	more than 15 mins	Credit/Debit cards	Frequ

In [5]:
```python
data.shape
```

Out[5]: (269, 71)

In [6]:
```python
data.info
```

Out[6]:
```
<bound method DataFrame.info of     1Gender of respondent 2 How old are you?   \
0                    Male        31-40 years
1                  Female        21-30 years
2                  Female        21-30 years
3                    Male        21-30 years
4                  Female        21-30 years
..                    ...                ...
264                Female        21-30 years
265                Female        31-40 years
266                Female        41-50 yaers
267                Female  Less than 20 years
268                Female        41-50 yaers

    3 Which city do you shop online from?  \
0                                   Delhi
1                                   Delhi
2                           Greater Noida
3                                  Karnal
4                               Bangalore
..                                    ...
264                                 Solan
265                             Ghaziabad
266                             Bangalore
267                                 Solan
268                             Ghaziabad

    4 What is the Pin Code of where you shop online from?  \
0                                               110009
1                                               110030
2                                               201308
3                                               132001
4                                               530068
..                                                 ...
264                                             173212
265                                             201008
266                                             560010
267                                             173229
268                                             201009

    5 Since How Long You are Shopping Online ?  \
0                               Above 4 years
1                               Above 4 years
2                                   3-4 years
3                                   3-4 years
```

```
4                                               2-3 years
..                                              ...
264                                             1-2 years
265                                             1-2 years
266                                             2-3 years
267                                             2-3 years
268                                             2-3 years

    6 How many times you have made an online purchase in the past 1 year?  \
0                                               31-40 times
1                                         41 times and above
2                                         41 times and above
3                                           Less than 10 times
4                                               11-20 times
..                                              ...
264                                         Less than 10 times
265                                             31-40 times
266                                         Less than 10 times
267                                         Less than 10 times
268                                             31-40 times

    7 How do you access the internet while shopping on-line?  \
0                                               Dial-up
1                                                 Wi-Fi
2                                         Mobile Internet
3                                         Mobile Internet
4                                                 Wi-Fi
..                                              ...
264                                         Mobile Internet
265                                         Mobile Internet
266                                         Mobile internet
267                                                 Wi-Fi
268                                         Mobile Internet

    8 Which device do you use to access the online shopping?  \
0                                               Desktop
1                                               Smartphone
2                                               Smartphone
3                                               Smartphone
4                                               Smartphone
..                                              ...
264                                             Smartphone
265                                             Smartphone
266                                                 Laptop
267                                             Smartphone
268                                             Smartphone

    9 What is the screen size of your mobile device?\t\t\t\t\t\t                                                \
0                                               Others
1                                             4.7 inches
2                                             5.5 inches
3                                             5.5 inches
4                                             4.7 inches
..                                              ...
264                                           5.5 inches
265                                             Others
266                                             Others
267                                           5.5 inches
268                                           5.5 inches

    10 What is the operating system (OS) of your device?\t\t\t\t                                                \
0                               Window/windows Mobile
1                                             IOS/Mac
2                                             Android
3                                             IOS/Mac
4                                             IOS/Mac
..                                              ...
264                                           Android
265                                           Android
266                             Window/windows Mobile
267                                           Android
268                                           Android

    11 What browser do you run on your device to access the website?\t\t\t                                                \
0                                         Google chrome
1                                         Google chrome
2                                         Google chrome
3                                               Safari
4                                               Safari
..                                              ...
264                                               Opera
265                                         Google chrome
266                                         Google chrome
267                                         Google chrome
268                                         Google chrome

    12 Which channel did you follow to arrive at your favorite online store for the first time?
\
0                                         Search Engine
1                                         Search Engine
2                                         Search Engine
3                                         Search Engine
4                                       Content Marketing
..                                              ...
264                                       Display Adverts
265                                         Search Engine
266                                         Search Engine
267                                         Search Engine
268                                         Search Engine

    13 After first visit, how do you reach the online retail store?\t\t\t\t                                                \
0                                         Search Engine
1                                         Via application
2                                         Via application
3                                         Search Engine
4                                         Via application
..                                              ...
264                                         Social Media
265                                         Via application
266                                         Search Engine
267                                             Direct URL
268                                         Via application
```

```
    14 How much time do you explore the e- retail store before making a purchase decision?
\
0                                               6-10 mins
1                                        more than 15 mins
2                                              11-15 mins
3                                               6-10 mins
4                                        more than 15 mins
..                                                     ...
264                                      more than 15 mins
265                                          Less than 1 min
266                                      more than 15 mins
267                                               1-5 mins
268                                              11-15 mins

    15 What is your preferred payment Option?\t\t\t\t\t
\
0                        E-wallets (Paytm, Freecharge etc.)
1                                        Credit/Debit cards
2                        E-wallets (Paytm, Freecharge etc.)
3                                        Credit/Debit cards
4                                        Credit/Debit cards
..                                                     ...
264                                     Cash on delivery (CoD)
265                                     Cash on delivery (CoD)
266                                        Credit/Debit cards
267                                     Cash on delivery (CoD)
268                                     Cash on delivery (CoD)

    16 How frequently do you abandon (selecting an items and leaving without making payment) your shopping cart?\t\t\t\t\t\t\t
\
0                                                Sometimes
1                                           Very frequently
2                                                Sometimes
3                                                    Never
4                                                Frequently
..                                                     ...
264                                                   Never
265                                                Sometimes
266                                                Sometimes
267                                                Sometimes
268                                                    Never

    17 Why did you abandon the "Bag", "Shopping Cart"?\t\t\t\t\t
\
0                                             Lack of trust
1                                     Promo code not applicable
2                                     Promo code not applicable
3                                      Better alternative offer
4                                      Better alternative offer
..                                                     ...
264                                    Better alternative offer
265                                           Change in price
266                                    Better alternative offer
267                                 No preferred mode of payment
268                                     Promo code not applicable

    18 The content on the website must be easy to read and understand  \
0                                 Agree (4)
1                          Strongly agree (5)
2                          Strongly agree (5)
3                                 Agree (4)
4                          Strongly agree (5)
..                                       ...
264                               Agree (4)
265                        Strongly agree (5)
266                        Strongly agree (5)
267                        Strongly agree (5)
268                        Strongly agree (5)

    19 Information on similar product to the one highlighted  is important for product comparison  \
0                              Indifferent (3)
1                           Strongly agree (5)
2                                 Agree (4)
3                                 Agree (4)
4                              Indifferent (3)
..                                       ...
264                               Agree (4)
265                        Strongly agree (5)
266                        Strongly agree (5)
267                               Agree (4)
268                        Strongly agree (5)

    20 Complete information on listed seller and product being offered is important for purchase decision.  \
0                              Indifferent (3)
1                           Strongly agree (5)
2                                 Agree (4)
3                              Indifferent (3)
4                              Indifferent (3)
..                                       ...
264                               Agree (4)
265                        Strongly agree (5)
266                               Agree (4)
267                        Strongly agree (5)
268                        Strongly agree (5)

    21 All relevant information on listed products must be stated clearly  \
0                                 Agree (4)
1                          Strongly agree (5)
2                                 Agree (4)
3                                 Agree (4)
4                                 Agree (4)
..                                       ...
264                               Agree (4)
265                        Strongly agree (5)
266                               Agree (4)
267                               Agree (4)
268                        Strongly agree (5)

    22 Ease of navigation in website 23 Loading and processing speed  \
0                      Agree (4)            Strongly disagree (1)
```

```
1               Strongly agree (5)          Strongly agree (5)
2                       Agree (4)                   Agree (4)
3               Strongly agree (5)                  Agree (4)
4                       Agree (4)          Strongly agree (5)
..                            ...                         ...
264                     Agree (4)                   Agree (4)
265             Strongly agree (5)          Strongly agree (5)
266             Strongly agree (5)                  Agree (4)
267                     Agree (4)                   Agree (4)
268             Strongly agree (5)          Strongly agree (5)

    24 User friendly Interface of the website 25 Convenient Payment methods  \
0                         Dis-agree (2)                    Dis-agree (2)
1                    Strongly agree (5)               Strongly agree (5)
2                    Strongly agree (5)               Strongly agree (5)
3                    Strongly agree (5)               Strongly agree (5)
4                    Strongly agree (5)               Strongly agree (5)
..                                 ...                              ...
264                          Agree (4)                        Agree (4)
265                  Strongly agree (5)               Strongly agree (5)
266                          Agree (4)               Strongly agree (5)
267                  Strongly agree (5)               Strongly agree (5)
268                  Strongly agree (5)               Strongly agree (5)

    26 Trust that the online retail store will fulfill its part of the transaction at the stipulated time  \
0                                        Disagree (2)
1                                  Strongly agree (5)
2                                  Strongly agree (5)
3                                           Agree (4)
4                                           Agree (4)
..                                                ...
264                                         Agree (4)
265                                Strongly agree (5)
266                                         Agree (4)
267                                Strongly agree (5)
268                                Strongly agree (5)

    27 Empathy (readiness to assist with queries) towards the customers  \
0                                  Strongly agree (5)
1                                  Strongly agree (5)
2                                  Strongly agree (5)
3                                  Strongly agree (5)
4                                  Strongly agree (5)
..                                                ...
264                                         Agree (4)
265                                Strongly agree (5)
266                                   indifferent (3)
267                                Strongly agree (5)
268                                Strongly agree (5)

    28 Being able to guarantee the privacy of the customer  \
0                                           Agree (4)
1                                  Strongly agree (5)
2                                  Strongly agree (5)
3                                  Strongly agree (5)
4                                           Agree (4)
..                                                ...
264                                         Agree (4)
265                                Strongly agree (5)
266                                   indifferent (3)
267                                Strongly agree (5)
268                                Strongly agree (5)

    29 Responsiveness, availability of several communication channels (email, online rep, twitter, phone etc.)  \
0                                           Agree (4)
1                                  Strongly agree (5)
2                                  Strongly agree (5)
3                                           Agree (4)
4                                  Strongly agree (5)
..                                                ...
264                                         Agree (4)
265                                Strongly agree (5)
266                                         Agree (4)
267                                Strongly agree (5)
268                                Strongly agree (5)

    30 Online shopping gives monetary benefit and discounts  \
0                                     indifferent (3)
1                                  Strongly agree (5)
2                                  Strongly agree (5)
3                                           Agree (4)
4                                  Strongly agree (5)
..                                                ...
264                                   indifferent (3)
265                                Strongly agree (5)
266                                         Agree (4)
267                                Strongly agree (5)
268                                Strongly agree (5)

    31 Enjoyment is derived from shopping online  \
0                               Strongly disagree (1)
1                                  Strongly agree (5)
2                                  Strongly agree (5)
3                                     indifferent (3)
4                                  Strongly agree (5)
..                                                ...
264                                   indifferent (3)
265                                Strongly agree (5)
266                                   indifferent (3)
267                                         Agree (4)
268                                Strongly agree (5)

    32 Shopping online is convenient and flexible  \
0                                       Dis-agree (2)
1                                  Strongly agree (5)
2                                  Strongly agree (5)
3                                     indifferent (3)
4                                  Strongly agree (5)
..                                                ...
264                                   indifferent (3)
265                                Strongly agree (5)
266                                         Agree (4)
```

```
267                Strongly agree (5)
268                Strongly agree (5)

     33 Return and replacement policy of the e-tailer is important for purchase decision  \
0                                   Dis-agree (2)
1                               Strongly agree (5)
2                               Strongly agree (5)
3                                       Agree (4)
4                               Strongly agree (5)
..                                            ...
264                                 Dis-agree (2)
265                             Strongly agree (5)
266                             Strongly agree (5)
267                                     Agree (4)
268                             Strongly agree (5)

     34 Gaining access to loyalty programs is a benefit of shopping online  \
0                                       Agree (4)
1                               Strongly agree (5)
2                               Strongly agree (5)
3                                 indifferent (3)
4                                   Dis-agree (2)
..                                            ...
264                               indifferent (3)
265                             Strongly agree (5)
266                               indifferent (3)
267                                     Agree (4)
268                             Strongly agree (5)

     35 Displaying quality Information on the website improves satisfaction of customers  \
0                                 indifferent (3)
1                               Strongly agree (5)
2                               Strongly agree (5)
3                                 indifferent (3)
4                                       Agree (4)
..                                            ...
264                               indifferent (3)
265                             Strongly agree (5)
266                                     Agree (4)
267                             Strongly agree (5)
268                                     Agree (4)

     36 User derive satisfaction while shopping on a good quality website or application  \
0                               Strongly agree (5)
1                               Strongly agree (5)
2                               Strongly agree (5)
3                                       Agree (4)
4                               Strongly agree (5)
..                                            ...
264                                 Dis-agree (2)
265                             Strongly agree (5)
266                                     Agree (4)
267                             Strongly agree (5)
268                             Strongly agree (5)

     37 Net Benefit derived from shopping online can lead to users satisfaction  \
0                                       Agree (4)
1                               Strongly agree (5)
2                               Strongly agree (5)
3                                 indifferent (3)
4                               Strongly agree (5)
..                                            ...
264                               indifferent (3)
265                             Strongly agree (5)
266                                     Agree (4)
267                             Strongly agree (5)
268                             Strongly agree (5)

     38 User satisfaction cannot exist without trust  \
0                               Strongly agree (5)
1                               Strongly agree (5)
2                                       Agree (4)
3                                       Agree (4)
4                               Strongly agree (5)
..                                            ...
264                                     Agree (4)
265                             Strongly agree (5)
266                                     Agree (4)
267                             Strongly agree (5)
268                             Strongly agree (5)

     39 Offering a wide variety of listed product in several category  \
0                                 indifferent (3)
1                               Strongly agree (5)
2                               Strongly agree (5)
3                                       Agree (4)
4                                       Agree (4)
..                                            ...
264                                     Agree (4)
265                             Strongly agree (5)
266                               indifferent (3)
267                             Strongly agree (5)
268                             Strongly agree (5)

     40 Provision of complete and relevant product information  \
0                                 indifferent (3)
1                               Strongly agree (5)
2                               Strongly agree (5)
3                                       Agree (4)
4                                       Agree (4)
..                                            ...
264                               indifferent (3)
265                             Strongly agree (5)
266                             Strongly agree (5)
267                                     Agree (4)
268                             Strongly agree (5)

     41 Monetary savings 42 The Convenience of patronizing the online retailer  \
0           Disagree (2)                               indifferent (3)
1     Strongly agree (5)                               indifferent (3)
2     Strongly agree (5)                                     Agree (4)
```

```
    3   Strongly agree (5)                              Agree (4)
    4   Strongly agree (5)                              Agree (4)
    ..                ...                                    ...
    264        Disagree (2)                        indifferent (3)
    265  Strongly agree (5)                     Strongly agree (5)
    266         Agree (4)                              Agree (4)
    267         Agree (4)                              Agree (4)
    268  Strongly agree (5)                     Strongly agree (5)

        43 Shopping on the website gives you the sense of adventure  \
    0                                       Agree (4)
    1                                 indifferent (3)
    2                                       Agree (4)
    3                                       Agree (4)
    4                                 indifferent (3)
    ..                                            ...
    264                                  Dis-agree (2)
    265                             Strongly agree (5)
    266                                  Dis-agree (2)
    267                                      Agree (4)
    268                             Strongly agree (5)

        44 Shopping on your preferred e-tailer enhances your social status  \
    0                                       Agree (4)
    1                                 indifferent (3)
    2                                       Agree (4)
    3                              Strongly agree (5)
    4                           Strongly disagree (1)
    ..                                            ...
    264                                      Agree (4)
    265                             Strongly agree (5)
    266                                indifferent (3)
    267                                indifferent (3)
    268                             Strongly agree (5)

        45 You feel gratification shopping on your favorite e-tailer  \
    0                              Strongly agree (5)
    1                              Strongly agree (5)
    2                                 indifferent (3)
    3                                      Agree (4)
    4                              Strongly agree (5)
    ..                                            ...
    264                                indifferent (3)
    265                             Strongly agree (5)
    266                                     Agree (4)
    267                                indifferent (3)
    268                             Strongly agree (5)

        46 Shopping on the website helps you fulfill certain roles  \
    0                                       Agree (4)
    1                              Strongly agree (5)
    2                                 indifferent (3)
    3                                 indifferent (3)
    4                           Strongly disagree (1)
    ..                                            ...
    264                                      Agree (4)
    265                             Strongly agree (5)
    266                                      Agree (4)
    267                                      Agree (4)
    268                             Strongly agree (5)

        47 Getting value for money spent  \
    0                 Strongly agree (5)
    1                 Strongly agree (5)
    2                         Agree (4)
    3                         Agree (4)
    4                 Strongly agree (5)
    ..                               ...
    264                   indifferent (3)
    265                Strongly agree (5)
    266                        Agree (4)
    267                   indifferent (3)
    268                Strongly agree (5)

        From the following, tick any (or all) of the online retailers you have shopped from;
    \
    0                                  Amazon.in, Paytm.com
    1     Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
    2                        Amazon.in, Paytm.com, Myntra.com
    3     Amazon.in, Flipkart.com, Paytm.com, Myntra.com...
    4     Amazon.in, Flipkart.com, Paytm.com, Myntra.com...
    ..                                                  ...
    264                                          Amazon.in
    265                                Amazon.in, Flipkart.com
    266           Amazon.in, Flipkart.com, Snapdeal.com
    267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
    268                                          Amazon.in

                Easy to use website or application  \
    0                                       Paytm.com
    1     Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
    2                        Amazon.in, Paytm.com, Myntra.com
    3     Amazon.in, Flipkart.com, Paytm.com, Myntra.com...
    4     Amazon.in, Flipkart.com, Paytm.com, Myntra.com...
    ..                                            ...
    264                                          Amazon.in
    265                                        Flipkart.com
    266                                          Amazon.in
    267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
    268                                          Amazon.in

                Visual appealing web-page layout  \
    0                                      Flipkart.com
    1                             Amazon.in, Myntra.com
    2                      Amazon.in, Paytm.com, Myntra.com
    3     Amazon.in, Flipkart.com, Paytm.com, Myntra.com...
    4                                       Myntra.com
    ..                                            ...
    264                                          Amazon.in
    265                                          Amazon.in
    266                                          Amazon.in
    267  
```

```
267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                          Amazon.in

    Wild variety of product on offer  \
0                               Flipkart.com
1                     Flipkart.com, Myntra.com
2                       Amazon.in, Myntra.com
3                     Amazon.in, Flipkart.com
4                                  Myntra.com
..                                       ...
264                                 Amazon.in
265                                 Amazon.in
266                                 Amazon.in
267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                 Amazon.in

    Complete, relevant description information of products  \
0                                          Snapdeal.com
1                     Amazon.in, Flipkart.com, Myntra.com
2                      Amazon.in, Paytm.com, Myntra.com
3                             Amazon.in, Flipkart.com
4        Amazon.in, Flipkart.com, Paytm.com, Myntra.com...
..                                                ...
264                                           Amazon.in
265                                        Flipkart.com
266                                           Amazon.in
267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                           Amazon.in

    Fast loading website speed of website and application  \
0                                          Snapdeal.com
1                     Amazon.in, Flipkart.com, Myntra.com
2                            Amazon.in, Paytm.com
3               Amazon.in, Flipkart.com, Snapdeal.com
4                                           Amazon.in
..                                                ...
264                                           Amazon.in
265                                        Flipkart.com
266                                           Amazon.in
267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                           Amazon.in

    Reliability of the website or application  \
0                                          Paytm.com
1                                         Myntra.com
2                      Amazon.in, Paytm.com, Myntra.com
3                     Amazon.in, Flipkart.com, Paytm.com
4                      Amazon.in, Paytm.com, Myntra.com
..                                                ...
264                                           Amazon.in
265                                        Flipkart.com
266                                           Amazon.in
267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                           Amazon.in

    Quickness to complete purchase  \
0                                          Paytm.com
1                     Amazon.com, Flipkart.com, Myntra.com
2                      Amazon.com, Paytm.com, Myntra.com
3                     Amazon.com, Flipkart.com, Paytm.com
4        Amazon.com, Flipkart.com, Paytm.com, Myntra.co...
..                                                ...
264                                          Amazon.com
265                                        Flipkart.com
266                                          Amazon.com
267              Flipkart.com, Myntra.com, Snapdeal
268                                          Amazon.com

    Availability of several payment options  \
0                                          Patym.com
1                     Amazon.in, Flipkart.com, Myntra.com
2                            Patym.com, Myntra.com
3                     Amazon.in, Flipkart.com, Myntra.com
4        Amazon.in, Flipkart.com, Patym.com, Myntra.com...
..                                                ...
264                                           Amazon.in
265                                        Flipkart.com
266                             Amazon.in, Flipkart.com
267              Flipkart.com, Myntra.com, Snapdeal.com
268                                           Amazon.in

    Speedy order delivery   \
0                                          Amazon.in
1                         Amazon.in, Flipkart.com
2                                          Amazon.in
3               Amazon.in, Flipkart.com, Snapdeal.com
4                                          Amazon.in
..                                                ...
264                                           Amazon.in
265                                        Flipkart.com
266                                           Amazon.in
267          Flipkart.com, Myntra.com, Snapdeal.com
268                                           Amazon.in

    Privacy of customers' information  \
0                                          Amazon.in
1                                         Myntra.com
2                                          Amazon.in
3                     Amazon.in, Flipkart.com, Myntra.com
4                             Amazon.in, Paytm.com
..                                                ...
264                                           Amazon.in
265                                        Flipkart.com
266                                           Amazon.in
267  Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                           Amazon.in

    Security of customer financial information  \
0                                          Amazon.in
1                                         Myntra.com
2                      Amazon.in, Paytm.com, Myntra.com
3               Amazon.in, Flipkart.com, Snapdeal.com
```

```
4                                                      Paytm.com
..                                                           ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                    Amazon.in
267   Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                                    Amazon.in

                           Perceived Trustworthiness  \
0                                                 Flipkart.com
1                                                   Myntra.com
2                                            Amazon.in, Myntra.com
3                                  Amazon.in, Flipkart.com, Snapdeal.com
4                                            Amazon.in, Myntra.com
..                                                          ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                    Amazon.in
267   Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com
268                                                    Amazon.in

     Presence of online assistance through multi-channel  \
0                                                    Paytm.com
1                              Amazon.in, Flipkart.com, Myntra.com
2                                                   Myntra.com
3                          Amazon.in, Flipkart.com, Myntra.com, Snapdeal
4                                            Amazon.in, Myntra.com
..                                                          ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                    Amazon.in
267              Amazon.in, Flipkart.com, Myntra.com, Snapdeal
268                                                    Amazon.in

     Longer time to get logged in (promotion, sales period)  \
0                                                    Amazon.in
1                                            Amazon.in, Flipkart.com
2                                                   Myntra.com
3                                                 Snapdeal.com
4                                            Flipkart.com, Paytm.com
..                                                          ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                    Amazon.in
267                                                    Amazon.in
268                                                    Amazon.in

     Longer time in displaying graphics and photos (promotion, sales period)  \
0                                                    Amazon.in
1                                                   Myntra.com
2                                                   Myntra.com
3                                          Myntra.com, Snapdeal.com
4                                                    Paytm.com
..                                                          ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                 Snapdeal.com
267                          Amazon.in, Myntra.com, Snapdeal.com
268                                                    Amazon.in

     Late declaration of price (promotion, sales period)  \
0                                                 Flipkart.com
1                                                 snapdeal.com
2                                                   Myntra.com
3                                                   Myntra.com
4                                                    Paytm.com
..                                                          ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                    Amazon.in
267                                                    Amazon.in
268                                                    Amazon.in

     Longer page loading time (promotion, sales period)  \
0                                                 Flipkart.com
1                                                 Snapdeal.com
2                                                   Myntra.com
3                                                    Paytm.com
4                                                    Paytm.com
..                                                          ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                 Snapdeal.com
267                                          Amazon.in, Snapdeal.com
268                                                    Amazon.in

     Limited mode of payment on most products (promotion, sales period)  \
0                                                    Amazon.in
1                                                 Snapdeal.com
2                                                    Amazon.in
3                                                    Paytm.com
4                                                 Snapdeal.com
..                                                          ...
264                                                    Amazon.in
265                                                 Flipkart.com
266                                                 Snapdeal.com
267                                                    Amazon.in
268                                                    Amazon.in

     Longer delivery period Change in website/Application design  \
0               Paytm.com                            Flipkart.com
1            Snapdeal.com                               Amazon.in
2               Paytm.com                               Paytm.com
3               Paytm.com                     Amazon.in, Flipkart.com
4               Paytm.com                               Amazon.in
..                    ...                                     ...
264             Amazon.in                               Amazon.in
265          Flipkart.com                            Flipkart.com
266          Snapdeal.com                            Snapdeal.com
267             Amazon.in                               Amazon.in
268             Amazon.in                               Amazon.in
```

```
      Frequent disruption when moving from one page to another  \
0                                    Amazon.in
1                                   Myntra.com
2                                    Paytm.com
3                       Amazon.in, Flipkart.com
4                                 Snapdeal.com
..                                        ...
264                                  Amazon.in
265                               Flipkart.com
266                               Snapdeal.com
267                      Myntra.com, Snapdeal.com
268                                  Amazon.in

       Website is as efficient as before  \
0                                    Amazon.in
1                       Amazon.in, Flipkart.com
2                                    Amazon.in
3            Amazon.in, Flipkart.com, Paytm.com
4                                    Paytm.com
..                                        ...
264                                  Amazon.in
265                               Flipkart.com
266                                  Amazon.in
267                      Myntra.com, Snapdeal.com
268                                  Amazon.in

       Which of the Indian online retailer would you recommend to a friend?
0                                    Flipkart.com
1                             Amazon.in, Myntra.com
2                     Amazon.in, Paytm.com, Myntra.com
3                           Amazon.in, Flipkart.com
4                             Amazon.in, Myntra.com
..                                        ...
264                                  Amazon.in
265                               Flipkart.com
266                                  Amazon.in
267                                  Amazon.in
268                                  Amazon.in

[269 rows x 71 columns]>
```

In [8]: `data.describe().T`

Out[8]:

	count	mean	std	min	25%	50%	75%	max
4 What is the Pin Code of where you shop online from?	269.0	220465.747212	140524.341051	110008.0	122018.0	201303.0	201310.0	560037.0

In [9]:
```python
column=[]
```

In [10]:
```python
for i in data.columns:
    i.strip()
    i.replace('\t','')
    column.append(i)
```

In [11]:
```python
column
```

Out[11]:
```
['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?\t\t\t\t\t                                                              ',
 '10 What is the operating system (OS) of your device?\t\t\t\t                                                       ',
 '11 What browser do you run on your device to access 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
 ',
 '17 Why did you abandon the "Bag", "Shopping Cart"?\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',
```

```
'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?']
```

Gender of our customers

In [13]: `data.iloc[:,0].value_counts()`

Out[13]:
```
Female    181
Male       88
Name: 1Gender of respondent, dtype: int64
```

In [14]: `plt.pie(data.iloc[:,0].value_counts().values,labels=data.iloc[:,0].value_counts().index, autopct='%1.2f%%',explode=[0,.05] )`

Out[14]:
```
([<matplotlib.patches.Wedge at 0x176fcbf2bb0>,
  <matplotlib.patches.Wedge at 0x176fcc05370>],
 [Text(-0.5684372503164301, 0.9417425829029377, 'Female'),
  Text(0.5942753993291284, -0.9845490083039062, 'Male')],
 [Text(-0.31005668199078, 0.5136777724925113, '67.29%'),
  Text(0.3358947909251595, -0.5564842220848165, '32.71%')])
```
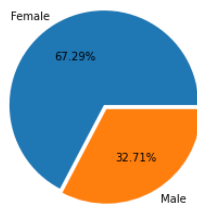

we got to know that 67% are female and 32% are male

AGE

In [15]: `data.iloc[:,1].value_counts()`

Out[15]:
```
31-40 years          81
21-30 years          79
41-50 yaers          70
Less than 20 years   20
51 years and above   19
Name: 2 How old are you? , dtype: int64
```

In [16]: `plt.pie(data.iloc[:,1].value_counts().values, labels=data.iloc[:,1].value_counts().index, autopct='%1.2f%%',)`

Out[16]:
```
([<matplotlib.patches.Wedge at 0x176fd53a910>,
  <matplotlib.patches.Wedge at 0x176fd54a0d0>,
  <matplotlib.patches.Wedge at 0x176fd54a7f0>,
  <matplotlib.patches.Wedge at 0x176fd54af10>,
  <matplotlib.patches.Wedge at 0x176fd557670>],
 [Text(0.6434418568672388, 0.8921785565856423, '31-40 years'),
  Text(-1.0417091621847836, 0.3533299045089115, '21-30 years'),
  Text(-0.1727121561881069, -1.0863565303825697, '41-50 yaers'),
  Text(0.8571466477589428, -0.6894197736035768, 'Less than 20 years'),
  Text(1.0730299554841816, -0.2420882372888358, '51 years and above')],
 [Text(0.3509682855639484, 0.4866428490467139, '30.11%'),
  Text(-0.5682049975553365, 0.19272540245940625, '29.37%'),
  Text(-0.0942066306480583, -0.5925581074814016, '26.02%'),
  Text(0.46753453514124144, -0.37604714923831456, '7.43%'),
  Text(0.5852890666277353, -0.13204812943027405, '7.06%')])
```
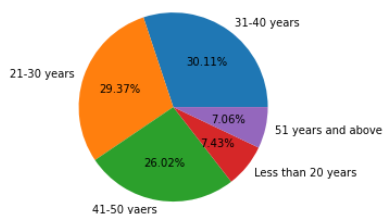
CITY

```
In [17]:  data.iloc[:,2].value_counts()
```

```
Out[17]:  Delhi             58
          Greater Noida     43
          Noida             40
          Bangalore         37
          Karnal            27
          Solan             18
          Ghaziabad         18
          Gurgaon           12
          Merrut             9
          Moradabad          5
          Bulandshahr        2
          Name: 3 Which city do you shop online from?, dtype: int64
```

```
In [19]:  plt.figure(figsize=(15,8))
          sns.set_theme(style="whitegrid")
          sns.countplot(data.iloc[:,2], order=data.iloc[:,2].value_counts().index, lw=4, ec='black', hatch='x')
```

```
Out[19]:  <AxesSubplot:xlabel='3 Which city do you shop online from?', ylabel='count'>
```
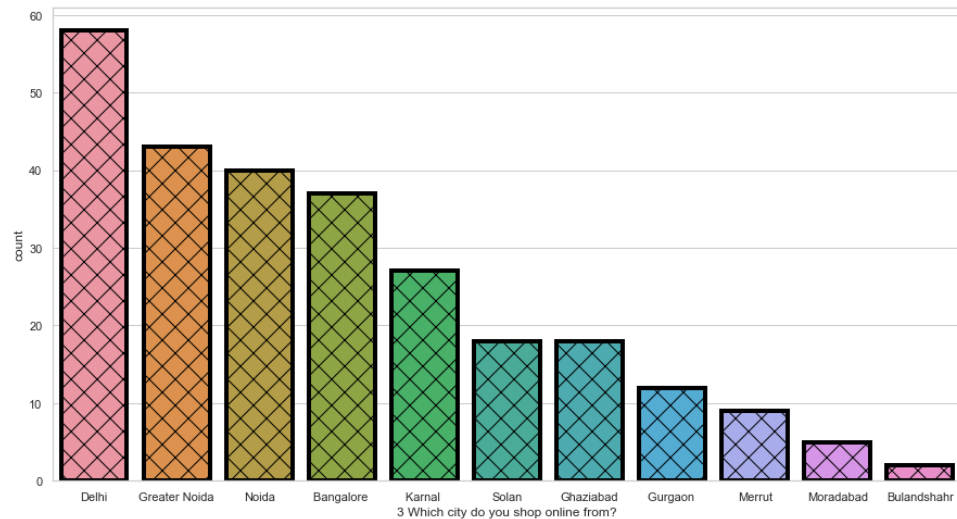

PINCODE

```
In [20]:  data.iloc[:,3].unique()
```

```
Out[20]:  array([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],
                dtype=int64)
```

```
In [21]:  plt.figure(figsize=(15,8))
          sns.set_theme(style="whitegrid")
          sns.countplot(data.iloc[:,3], order=data.iloc[:,3].value_counts().index[:10], lw=4, ec='black', hatch='x')
          plt.xticks(rotation=90)
```

```
Out[21]:  (array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9]),
           [Text(0, 0, '201308'),
            Text(1, 0, '132001'),
            Text(2, 0, '201310'),
            Text(3, 0, '110044'),
            Text(4, 0, '250001'),
            Text(5, 0, '173229'),
            Text(6, 0, '173212'),
            Text(7, 0, '560010'),
            Text(8, 0, '132036'),
            Text(9, 0, '122018')])
```

4 What is the Pin Code of where you shop online from?
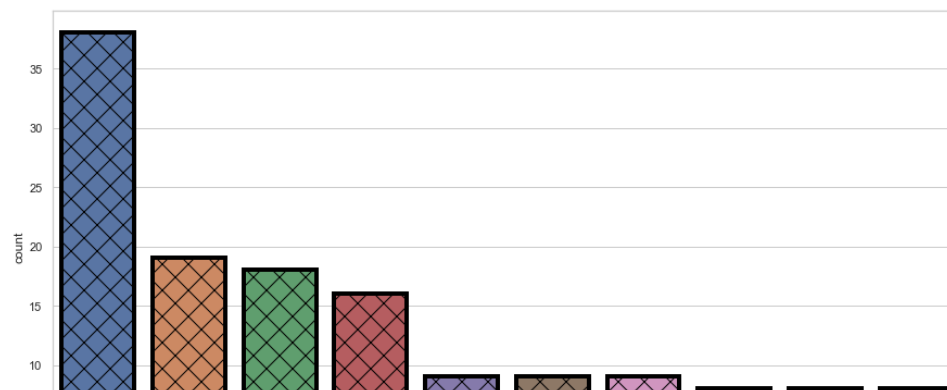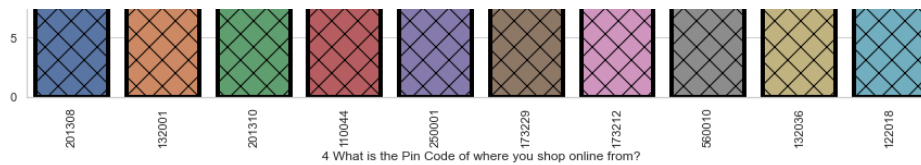
```
In [23]: sns.catplot(data.iloc[:,3],order=data.iloc[:,3].value_counts().index[:10], data=data, kind='count')
         plt.xticks(rotation=90)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
C:\Users\LONGVI~1\AppData\Local\Temp/ipykernel_6656/4129827887.py in <module>
----> 1 sns.catplot(data.iloc[:,3],order=data.iloc[:,3].value_counts().index[:10], data=data, kind='count')
      2 plt.xticks(rotation=90)

~\anaconda3\lib\site-packages\seaborn\_decorators.py in inner_f(*args, **kwargs)
     44             )
     45             kwargs.update({k: arg for k, arg in zip(sig.parameters, args)})
---> 46         return f(**kwargs)
     47     return inner_f
     48

~\anaconda3\lib\site-packages\seaborn\categorical.py in catplot(x, y, hue, data, row, col, col_wrap, estimator, ci, n_boot, units, seed, o
rder, hue_order, row_order, col_order, kind, height, aspect, orient, color, palette, legend, legend_out, sharex, sharey, margin_titles, fa
cet_kws, **kwargs)
   3845
   3846         # Draw the plot onto the facets
-> 3847         g.map_dataframe(plot_func, x=x, y=y, hue=hue, **plot_kws)
   3848
   3849         if p.orient == "h":

~\anaconda3\lib\site-packages\seaborn\axisgrid.py in map_dataframe(self, func, *args, **kwargs)
    782             for i, val in enumerate(args[:2]):
    783                 axis_labels[i] = val
--> 784         self._finalize_grid(axis_labels)
    785
    786         return self

~\anaconda3\lib\site-packages\seaborn\axisgrid.py in _finalize_grid(self, axlabels)
    811     def _finalize_grid(self, axlabels):
    812         """Finalize the annotations and layout."""
--> 813         self.set_axis_labels(*axlabels)
    814         self.set_titles()
    815         self.tight_layout()

~\anaconda3\lib\site-packages\seaborn\axisgrid.py in set_axis_labels(self, x_var, y_var, clear_inner, **kwargs)
    838         if x_var is not None:
    839             self._x_var = x_var
--> 840             self.set_xlabels(x_var, clear_inner=clear_inner, **kwargs)
    841         if y_var is not None:
    842             self._y_var = y_var

~\anaconda3\lib\site-packages\seaborn\axisgrid.py in set_xlabels(self, label, clear_inner, **kwargs)
    850             label = self._x_var
    851         for ax in self._bottom_axes:
--> 852             ax.set_xlabel(label, **kwargs)
    853         if clear_inner:
    854             for ax in self._not_bottom_axes:

~\anaconda3\lib\site-packages\matplotlib\axes\_base.py in set_xlabel(self, xlabel, fontdict, labelpad, loc, **kwargs)
   3336         elif loc == 'right':
   3337             kwargs.update(x=1, horizontalalignment='right')
-> 3338         return self.xaxis.set_label_text(xlabel, fontdict, **kwargs)
   3339
   3340     def invert_xaxis(self):

~\anaconda3\lib\site-packages\matplotlib\axis.py in set_label_text(self, label, fontdict, **kwargs)
   1560         """
   1561         self.isDefault_label = False
-> 1562         self.label.set_text(label)
   1563         if fontdict is not None:
   1564             self.label.update(fontdict)

~\anaconda3\lib\site-packages\matplotlib\text.py in set_text(self, s)
   1213         if s is None:
   1214             s = ''
-> 1215         if s != self._text:
   1216             self._text = str(s)
   1217             self.stale = True

~\anaconda3\lib\site-packages\pandas\core\generic.py in __nonzero__(self)
   1535     @final
   1536     def __nonzero__(self):
-> 1537         raise ValueError(
   1538             f"The truth value of a {type(self).__name__} is ambiguous. "
   1539             "Use a.empty, a.bool(), a.item(), a.any() or a.all()."

ValueError: The truth value of a Series is ambiguous. Use a.empty, a.bool(), a.item(), a.any() or a.all().
```

0
2013063200201310100425000173229732126001032030622018
4 What is the Pin Code of where you shop online from?

Since How Long You are Shopping Online ?

```
data.iloc[:,4].unique()
```
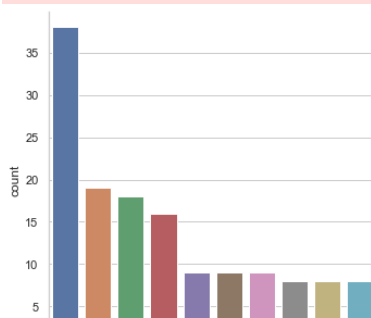
```
array(['Above 4 years', '3-4 years', '2-3 years', 'Less than 1 year',
       '1-2 years'], dtype=object)
```
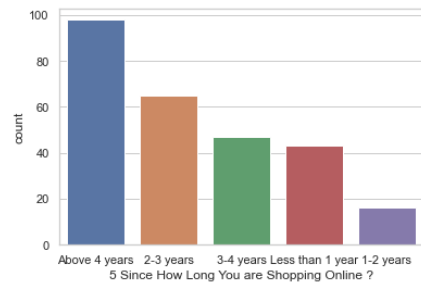
```
sns.countplot(data.iloc[:,4], order=data.iloc[:,4].value_counts().index)
```

```
<AxesSubplot:xlabel='5 Since How Long You are Shopping Online ?', ylabel='count'>
```

```
sns.countplot(data.iloc[:,4], order=data.iloc[:,4].value_counts().index, hue=data.iloc[:,0])
```

```
<AxesSubplot:xlabel='5 Since How Long You are Shopping Online ?', ylabel='count'>
```


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

```
data.iloc[:,5].unique()
```
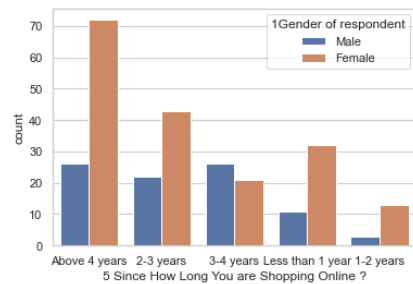
```
array(['31-40 times', '41 times and above', 'Less than 10 times',
       '11-20 times', '21-30 times', '42 times and above'], dtype=object)
```

```
plt.figure(figsize=(15,8))
sns.countplot(data.iloc[:,5], order=data.iloc[:,5].value_counts().index)
```

```
<AxesSubplot:xlabel='6 How many times you have made an online purchase in the past 1 year?', ylabel='count'>
```
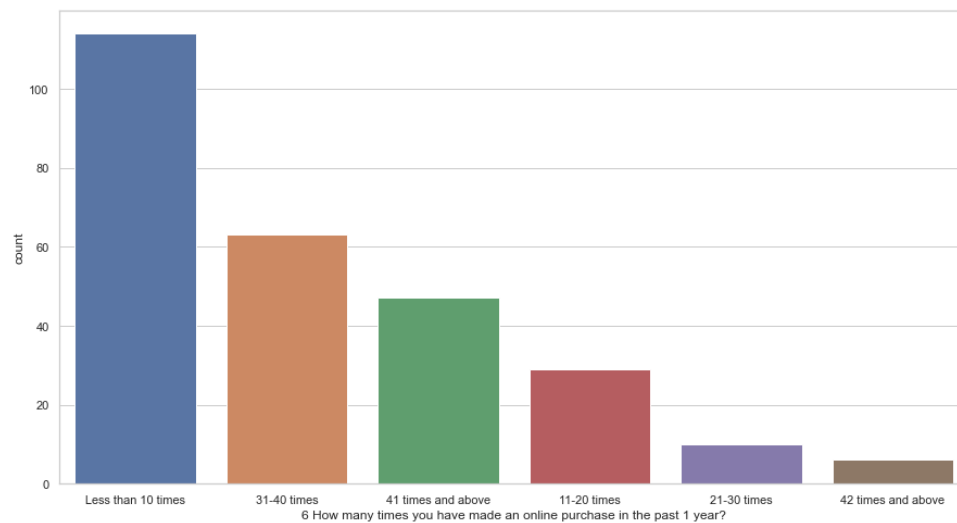
```
plt.figure(figsize=(10,6))
plt.pie(data.iloc[:,5].value_counts().values, labels=data.iloc[:,5].value_counts().index,autopct='%1.2f%%' )
```

```
([<matplotlib.patches.Wedge at 0x176fde517c0>,
  <matplotlib.patches.Wedge at 0x176fde51f40>,
  <matplotlib.patches.Wedge at 0x176fde616a0>,
```

```
 <matplotlib.patches.Wedge at 0x176fde61df0>,
 <matplotlib.patches.Wedge at 0x176fde6e550>,
 <matplotlib.patches.Wedge at 0x176fde6ec70>],
[Text(0.2608478314432671, 1.0686245406275046, 'Less than 10 times'),
 Text(-1.0638912143466908, -0.279527250971929, '31-40 times'),
 Text(-0.03211202236526024, -1.0995311810128956, '41 times and above'),
 Text(0.8324707301727624, -0.7190218935509738, '11-20 times'),
 Text(1.0638912437893187, -0.27952713891215775, '21-30 times'),
 Text(1.0973005095121944, -0.07701682818890117, '42 times and above')],
[Text(0.14228063533269114, 0.5828861130695479, '42.38%'),
 Text(-0.5803042987345586, -0.15246940962105215, '23.42%'),
 Text(-0.01751564856286922, -0.5997442805524885, '17.47%'),
 Text(0.45407494373059765, -0.39219376011871293, '10.78%'),
 Text(0.5803043147941738, -0.15246934849754057, '3.72%'),
 Text(0.598527550643015, -0.04200917901212791, '2.23%')])
```
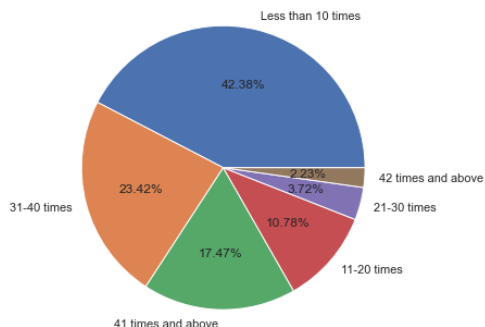

In [31]:
```python
plt.figure(figsize=(15,8))
sns.countplot(data.iloc[:,5], order=data.iloc[:,5].value_counts().index, hue=data.iloc[:,1])
```

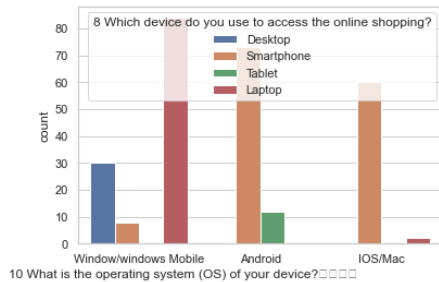Out[31]: `<AxesSubplot:xlabel='6 How many times you have made an online purchase in the past 1 year?', ylabel='count'>`
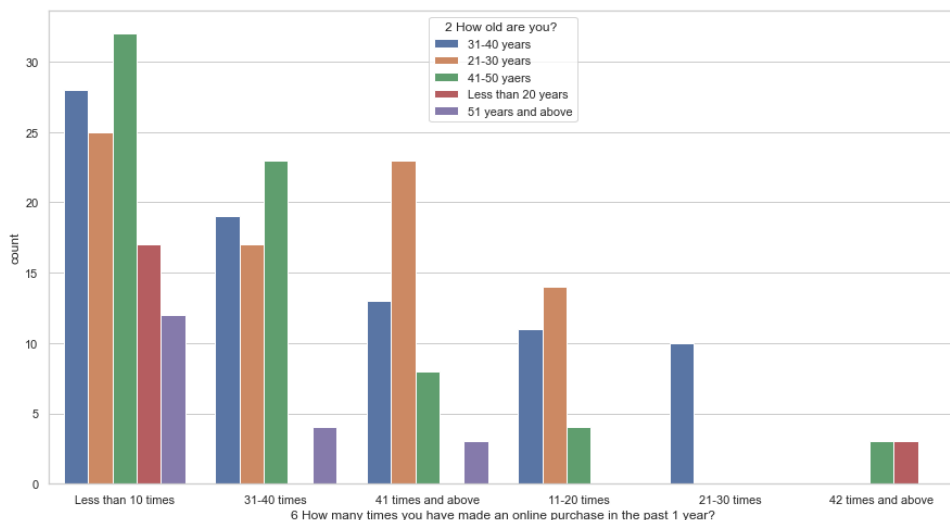
In [32]:
```python
plt.figure(figsize=(15,8))
sns.countplot(data.iloc[:,5], order=data.iloc[:,5].value_counts().index, hue=data.iloc[:,0])
```

Out[32]: `<AxesSubplot:xlabel='6 How many times you have made an online purchase in the past 1 year?', ylabel='count'>`
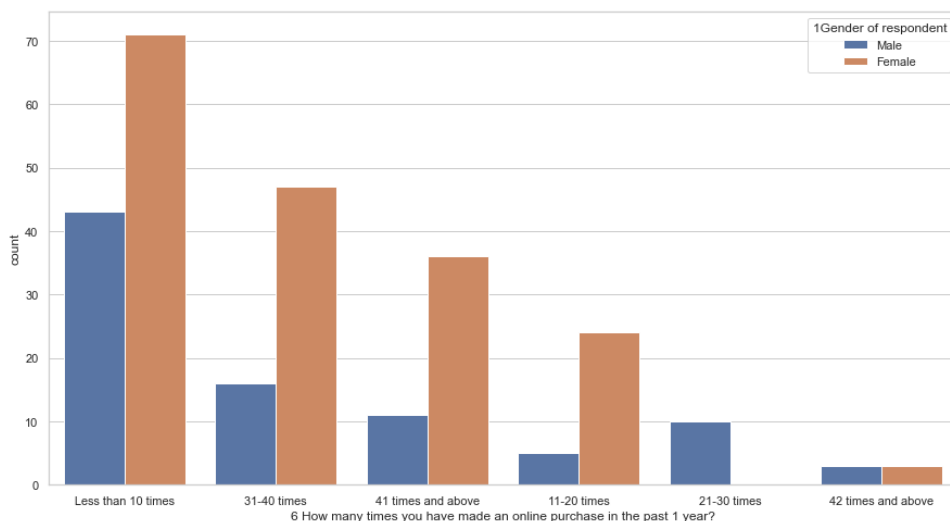
How do you access the internet while shopping on-line?

```
In [33]: data.iloc[:,6].unique()
```

```
Out[33]: array(['Dial-up', 'Wi-Fi', 'Mobile Internet', 'Mobile internet'],
               dtype=object)
```

```
In [34]: data.iloc[:,6].replace('Mobile internet','Mobile Internet' , inplace=True)
```

```
In [35]: data.iloc[:,6].unique()
```

```
Out[35]: array(['Dial-up', 'Wi-Fi', 'Mobile Internet'], dtype=object)
```

```
In [36]: sns.countplot(data.iloc[:,6])
```

```
Out[36]: <AxesSubplot:xlabel='7 How do you access the internet while shopping on-line?', ylabel='count'>
```
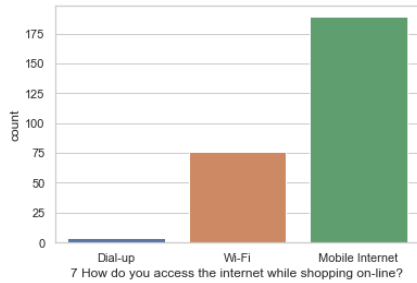


```
In [37]: plt.pie(data.iloc[:,6].value_counts().values,labels=data.iloc[:,6].value_counts().index, autopct='%1.2f%%')
```

```
Out[37]: ([<matplotlib.patches.Wedge at 0x176fe0417c0>,
           <matplotlib.patches.Wedge at 0x176fe041ee0>,
           <matplotlib.patches.Wedge at 0x176fe051640>],
          [Text(-0.6538172444459921, 0.8846033070620128, 'Mobile Internet'),
           Text(0.611794599497865, -0.9141703167492058, 'Wi-Fi'),
           Text(1.0987999480057231, -0.05136802763023519, 'Dial-up')],
          [Text(-0.35662758787963206, 0.4825108947610979, '70.26%'),
           Text(0.33370614518061076, -0.49863835459047584, '28.25%'),
           Text(0.5993454261849398, -0.028018924161946464, '1.49%')])
```
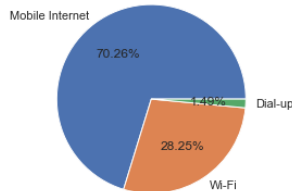

Which device do you use to access the online shopping?

```
In [39]: data.iloc[:,7].unique()
```

```
Out[39]: array(['Desktop', 'Smartphone', 'Tablet', 'Laptop'], dtype=object)
```

```
In [40]: sns.countplot(data.iloc[:,7], order=data.iloc[:,7].value_counts().index)
```

```
Out[40]: <AxesSubplot:xlabel='8 Which device do you use to access the online shopping?', ylabel='count'>
```
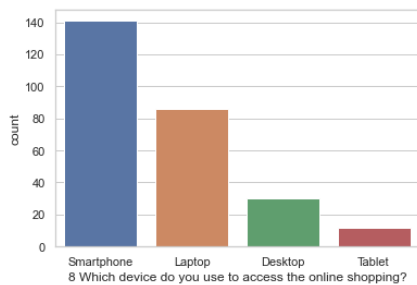


```
In [41]: sns.countplot(data.iloc[:,7], order=data.iloc[:,7].value_counts().index, hue=data.iloc[:,6])
```

```
Out[41]: <AxesSubplot:xlabel='8 Which device do you use to access the online shopping?', ylabel='count'>
```

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

```
In [42]:  plt.pie(data.iloc[:,7].value_counts().values,labels=data.iloc[:,7].value_counts().index ,autopct='%1.2f%%')
```

```
Out[42]:  ([<matplotlib.patches.Wedge at 0x176fe358b80>,
            <matplotlib.patches.Wedge at 0x176fe3682b0>,
            <matplotlib.patches.Wedge at 0x176fe3689d0>,
            <matplotlib.patches.Wedge at 0x176fe374130>],
           [Text(-0.0834230375273617, 1.09683207320433, 'Smartphone'),
            Text(-0.4431031919672626, -1.0068066156260713, 'Laptop'),
            Text(0.8884059264483868, -0.6486408172874906, 'Desktop'),
            Text(1.0892152372401829, -0.1536560020429145, 'Tablet')],
           [Text(-0.045503475014924556, 0.5982720399296344, '52.42%'),
            Text(-0.2416926501639614, -0.5491672448869479, '31.97%'),
            Text(0.4845850507900291, -0.35380408215681297, '11.15%'),
            Text(0.5941174021310088, -0.08381236475068062, '4.46%')])
```



```
In [43]:  data.iloc[:,7].value_counts().index
```

```
Out[43]:  Index(['Smartphone', 'Laptop', 'Desktop', 'Tablet'], dtype='object')
```
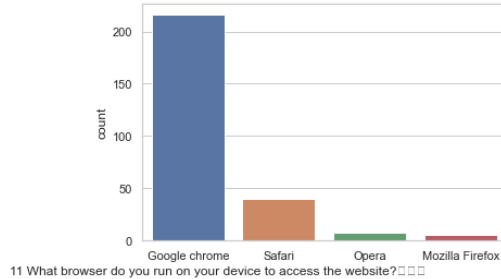
What is the screen size of your mobile device?

```
In [44]:  data.iloc[:,8].unique()
```

```
Out[44]:  array(['Others', '4.7 inches', '5.5 inches', '5 inches'], dtype=object)
```

```
In [45]:  data.iloc[:,8].value_counts()
```

```
Out[45]:  Others        134
          5.5 inches     99
          4.7 inches     29
          5 inches        7
          Name: 9 What is the screen size of your mobile device?\t\t\t\t\t\t                                          , dtype: int64
```

```
In [46]:  sns.countplot(data.iloc[:,8],order=data.iloc[:,8].value_counts().index, hue=data.iloc[:,7])
```

```
Out[46]:  <AxesSubplot:xlabel='9 What is the screen size of your mobile device?\t\t\t\t\t\t                                          ', ylabel='count'>
```



```
In [47]:  inches=data[data.iloc[:,8]=='5.5 inches']
```

```
In [48]:  inches['8 Which device do you use to access the online shopping?'].unique()
```

```
Out[48]:  array(['Smartphone', 'Tablet'], dtype=object)
```

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

```
In [49]:  data.iloc[:,9].unique()
```

```
Out[49]:  array(['Window/windows Mobile', 'IOS/Mac', 'Android'], dtype=object)
```

```
In [50]:  sns.countplot(data.iloc[:,9], order=data.iloc[:,9].value_counts().index)
```

```
Out[50]:  <AxesSubplot:xlabel='10 What is the operating system (OS) of your device?\t\t\t\t                                          ', ylabel='count'>
```

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

In [51]: `plt.pie(data.iloc[:,9].value_counts().values, labels=data.iloc[:,9].value_counts().index, autopct='%1.2f%%')`

Out[51]:
```
([<matplotlib.patches.Wedge at 0x176fe494dc0>,
  <matplotlib.patches.Wedge at 0x176ff803340>,
  <matplotlib.patches.Wedge at 0x176ff803a60>],
 [Text(0.1600135136943039, 1.088299441989751, 'Window/windows Mobile'),
  Text(-0.8408110078825647, -0.709250906959946, 'Android'),
  Text(0.8240168432030088, -0.7286948895921722, 'IOS/Mac')],
 [Text(0.0872800983787112, 0.593617877448955, '45.35%'),
  Text(-0.4586241861177625, -0.38686413106906137, '31.60%'),
  Text(0.4494637326561866, -0.3974699397775484, '23.05%')])
```
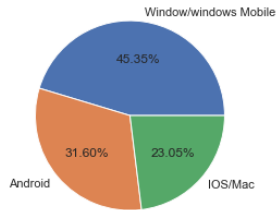

In [52]: `sns.countplot(data.iloc[:,9], order=data.iloc[:,9].value_counts().index, hue=data.iloc[:,7])`

Out[52]:
```
<AxesSubplot:xlabel='10 What is the operating system (OS) of your device?\t\t\t\t                     ', ylabel='coun
t'>
```


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

In [53]:
```
device=data[data.iloc[:,7]=='Smartphone']
device.iloc[:,9].value_counts()
```

Out[53]:
```
Android               73
IOS/Mac               60
Window/windows Mobile   8
Name: 10 What is the operating system (OS) of your device?\t\t\t\t                     , dtype: int64
```

In [54]:
```
plt.pie(device.iloc[:,9].value_counts().values,labels=device.iloc[:,9].value_counts().index, autopct='%1.2f%%', shadow=True, startangle=9(
plt.title('Smart Phone Distribution')
```

Out[54]: `Text(0.5, 1.0, 'Smart Phone Distribution')`
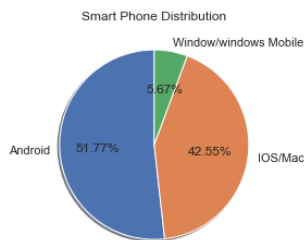
What browser do you run on your device to access the website?

In [56]: `data.iloc[:,10].unique()`

Out[56]:
```
array(['Google chrome', 'Safari', 'Opera', 'Mozilla Firefox'],
      dtype=object)
```

In [57]: `plt.pie(data.iloc[:,10].value_counts().values,labels=data.iloc[:,10].value_counts().index, autopct='%1.2f%%')`

Out[57]:
```
([<matplotlib.patches.Wedge at 0x176ff905bb0>,
  <matplotlib.patches.Wedge at 0x176ff9143a0>,
  <matplotlib.patches.Wedge at 0x176ff914ac0>,
  <matplotlib.patches.Wedge at 0x176ff921220>],
 [Text(-0.8959206432410285, 0.6382211223506958, 'Google chrome'),
```

```
Text(0.7890891567059849, -0.7663799989359311, 'Safari'),
 Text(1.075783976200419, -0.2295404900021587, 'Opera'),
 Text(1.0981251172858342, -0.06419678174155553, 'Mozilla Firefox')],
[Text(-0.4886839872223791, 0.3481206121912886, '80.30%'),
 Text(0.43041226729417353, -0.4180254539650533, '14.87%'),
 Text(0.5867912597456831, -0.12520390363752318, '2.97%'),
 Text(0.5989773367013641, -0.03501642640448483, '1.86%')])
```
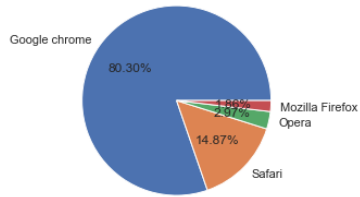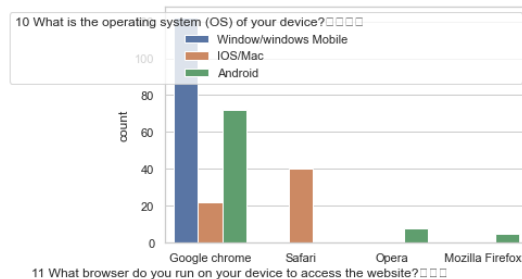

In [58]:
```
sns.countplot(data.iloc[:,10])
```

Out[58]:
```
<AxesSubplot:xlabel='11 What browser do you run on your device to access the website?\t\t\t
', ylabel='count'>
```


In [59]:
```
sns.countplot(data.iloc[:,10], hue=data.iloc[:,9])
```

Out[59]:
```
<AxesSubplot:xlabel='11 What browser do you run on your device to access the website?\t\t\t
', ylabel='count'>
```


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

In [60]:
```
data.iloc[:,11].unique()
```

Out[60]:
```
array(['Search Engine', 'Content Marketing', 'Display Adverts'],
      dtype=object)
```

In [61]:
```
df.iloc[:,12].unique()
```

Out[61]:
```
<AxesSubplot:xlabel='12 Which channel did you follow to arrive at your favorite online store for the first time?
', ylabel='count'>
```
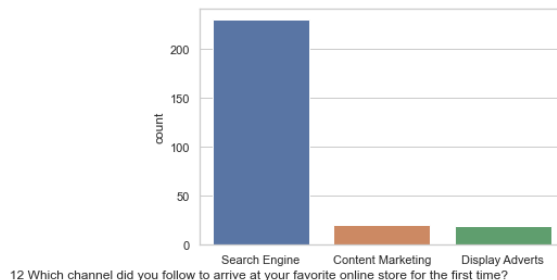

In [62]:
```
plt.pie(data.iloc[:,11].value_counts().values,labels=data.iloc[:,11].value_counts().index,autopct='%1.2f%%')
```

Out[62]:
```
([<matplotlib.patches.Wedge at 0x176ffa88700>,
  <matplotlib.patches.Wedge at 0x176ffa88e50>,
  <matplotlib.patches.Wedge at 0x176ffa98550>],
 [Text(-0.9878586335145461, 0.48387531471524137, 'Search Engine'),
  Text(0.8571466477589428, -0.6894197736035768, 'Content Marketing'),
  Text(1.0730299554841816, -0.2420882372888358, 'Display Adverts')],
 [Text(-0.5388319919170251, 0.26393398984446771, '85.50%'),
  Text(0.46753453514124144, -0.37604714923831456, '7.43%'),
```
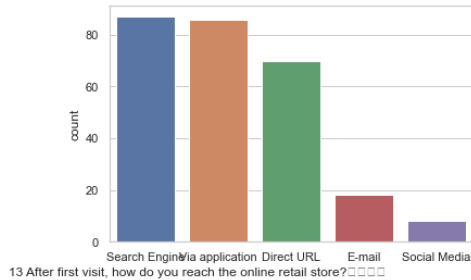
Text(0.585289066627/353, -0.13204812943027405, '7.06%')])

Search Engine
85.50%
7.06% Display Adverts
7.43%
Content Marketing

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

```
In [63]:  data.iloc[:,12].unique()
```
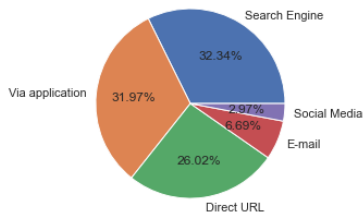
```
Out[63]:  array(['Search Engine', 'Via application', 'Direct URL', 'E-mail',
          'Social Media'], dtype=object)
```

```
In [64]:  plt.figure
          sns.countplot(data.iloc[:,12])
```

```
Out[64]:  <AxesSubplot:xlabel='13 After first visit, how do you reach the online retail store?\t\t\t\t
          ', ylabel='count'>
```


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

```
In [65]:  plt.pie(data.iloc[:,12].value_counts().values,labels=data.iloc[:,12].value_counts().index, autopct='%1.2f%%')
```

```
Out[65]:  ([<matplotlib.patches.Wedge at 0x176ffb411f0>,
           <matplotlib.patches.Wedge at 0x176ffb41640>,
           <matplotlib.patches.Wedge at 0x176ffb41d60>,
           <matplotlib.patches.Wedge at 0x176ffb504c0>,
           <matplotlib.patches.Wedge at 0x176ffb50c10>],
          [Text(0.57939658413736, 0.9350398912826978, 'Search Engine'),
           Text(-1.0939292404979593, 0.11540717821504015, 'Via application'),
           Text(0.16001351369430342, -1.088299441989751, 'Direct URL'),
           Text(1.0144141936551492, -0.42539845287797384, 'E-mail'),
           Text(1.0952024296482796, -0.10262376962724061, 'Social Media')],
          [Text(0.3160345004385599, 0.5100217588814715, '32.34%'),
           Text(-0.5966886766352505, 0.06294936993547644, '31.97%'),
           Text(0.08728009837871094, -0.5936178774489955, '26.02%'),
           Text(0.5533168329028085, -0.23203551975162207, '6.69%'),
           Text(0.5973831434445162, -0.055976601614858505, '2.97%')]])
```


Search Engine
32.34%
2.97% Social Media
6.69%
E-mail
Via application 31.97%
26.02%
Direct URL

```
In [66]:  sns.countplot(data.iloc[:,11],hue= data.iloc[:,12])
```

```
Out[66]:  <AxesSubplot:xlabel='12 Which channel did you follow to arrive at your favorite online store for the first time?
          ', ylabel='count'>
```


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

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

```
In [67]:  data.iloc[:,13].unique()
```