

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

```
In [2]: df=pd.read_excel(r'customer_retention_excel.xlsx.xlsx')
```

```
In [3]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 269 entries, 0 to 268
Data columns (total 71 columns):
#   Column
Non-Null Count  Dtype
---  -
-----
0   1Gender of respondent
269 non-null    object
1   2 How old are you?
269 non-null    object
2   3 Which city do you shop online from?
269 non-null    object
3   4 What is the Pin Code of where you shop online from?
269 non-null    int64
4   5 Since How Long You are Shopping Online ?
269 non-null    object
5   6 How many times you have made an online purchase in the past 1 year?
269 non-null    object
6   7 How do you access the internet while shopping on-line?
269 non-null    object
7   8 Which device do you use to access the online shopping?
269 non-null    object
8   9 What is the screen size of your mobile device?
269 non-null    object
9   10 What is the operating system (OS) of your device?
269 non-null    object
10  11 What browser do you run on your device to access the website?
269 non-null    object
11  12 Which channel did you follow to arrive at your favorite online store for the first time?
269 non-null    object
```

12 13 After first visit, how do you reach the online retail store?
269 non-null object

13 14 How much time do you explore the e- retail store before making a purchase decision?
269 non-null object

14 15 What is your preferred payment Option?
269 non-null object

15 16 How frequently do you abandon (selecting an items and leaving without making payment) your shopping cart?
269 non-null object

16 17 Why did you abandon the "Bag", "Shopping Cart"?
269 non-null object

17 18 The content on the website must be easy to read and understand
269 non-null object

18 19 Information on similar product to the one highlighted is important for product comparison
269 non-null object

19 20 Complete information on listed seller and product being offered is important for purchase decision.
269 non-null object

20 21 All relevant information on listed products must be stated clearly
269 non-null object

21 22 Ease of navigation in website
269 non-null object

22 23 Loading and processing speed
269 non-null object

23 24 User friendly Interface of the website
269 non-null object

24 25 Convenient Payment methods
269 non-null object

25 26 Trust that the online retail store will fulfill its part of the transaction at the stipulated time
269 non-null object

26 27 Empathy (readiness to assist with queries) towards the customers
269 non-null object

27 28 Being able to guarantee the privacy of the customer
269 non-null object

28 29 Responsiveness, availability of several communication channels (email, online rep, twitter, phone etc.)
269 non-null object

29 30 Online shopping gives monetary benefit and discounts
269 non-null object

30 31 Enjoyment is derived from shopping online
269 non-null object

31 32 Shopping online is convenient and flexible
269 non-null object

32 33 Return and replacement policy of the e-tailer is important for purchase decision
269 non-null object

33 34 Gaining access to loyalty programs is a benefit of shopping online
269 non-null object

34 35 Displaying quality Information on the website improves satisfaction of customers
269 non-null object

35 36 User derive satisfaction while shopping on a good quality website or application
269 non-null object

36 37 Net Benefit derived from shopping online can lead to users satisfaction
269 non-null object
37 38 User satisfaction cannot exist without trust
269 non-null object
38 39 Offering a wide variety of listed product in several category
269 non-null object
39 40 Provision of complete and relevant product information
269 non-null object
40 41 Monetary savings
269 non-null object
41 42 The Convenience of patronizing the online retailer
269 non-null object
42 43 Shopping on the website gives you the sense of adventure
269 non-null object
43 44 Shopping on your preferred e-tailer enhances your social status
269 non-null object
44 45 You feel gratification shopping on your favorite e-tailer
269 non-null object
45 46 Shopping on the website helps you fulfill certain roles
269 non-null object
46 47 Getting value for money spent
269 non-null object
47 From the following, tick any (or all) of the online retailers you have shopped from;
269 non-null object
48 Easy to use website or application
269 non-null object
49 Visual appealing web-page layout
269 non-null object
50 Wild variety of product on offer
269 non-null object
51 Complete, relevant description information of products
269 non-null object
52 Fast loading website speed of website and application
269 non-null object
53 Reliability of the website or application
269 non-null object
54 Quickness to complete purchase
269 non-null object
55 Availability of several payment options
269 non-null object
56 Speedy order delivery
269 non-null object
57 Privacy of customers' information
269 non-null object
58 Security of customer financial information
269 non-null object
59 Perceived Trustworthiness
269 non-null object

```

60 Presence of online assistance through multi-channel
269 non-null object
61 Longer time to get logged in (promotion, sales period)
269 non-null object
62 Longer time in displaying graphics and photos (promotion, sales period)
269 non-null object
63 Late declaration of price (promotion, sales period)
269 non-null object
64 Longer page loading time (promotion, sales period)
269 non-null object
65 Limited mode of payment on most products (promotion, sales period)
269 non-null object
66 Longer delivery period
269 non-null object
67 Change in website/Application design
269 non-null object
68 Frequent disruption when moving from one page to another
269 non-null object
69 Website is as efficient as before
269 non-null object
70 Which of the Indian online retailer would you recommend to a friend?
269 non-null object
dtypes: int64(1), object(70)
memory usage: 149.3+ KB

```

In [4]: `df.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?	10 What is the operating system (OS) of your device?	...	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)	I
0	Male	31-40 years	Delhi	110009	Above 4 years	31-40 times	Dial-up	Desktop	Others	Window/windows Mobile	...	Amazon.in	Amazon.in	Flipkart.com	
1	Female	21-30 years	Delhi	110030	Above 4 years	41 times and above	Wi-Fi	Smartphone	4.7 inches	IOS/Mac	...	Amazon.in, Flipkart.com	Myntra.com	snapdeal.com	S
2	Female	21-30 years	Greater Noida	201308	3-4 years	41 times and above	Mobile Internet	Smartphone	5.5 inches	Android	...	Myntra.com	Myntra.com	Myntra.com	
3	Male	21-	Karnal	132001	3-4 years	Less than	Mobile	Smartphone	5.5	IOS/Mac	...	Snapdeal.com	Myntra.com,	Myntra.com	

		30 years				10 times	Internet		inches				Snapdeal.com		
4	Female	21-30 years	Bangalore	530068	2-3 years	11-20 times	Wi-Fi	Smartphone	4.7 inches		IOS/Mac	...	Flipkart.com, Paytm.com	Paytm.com	Paytm.com

```
In [5]: type(df)
```

```
In [6]: df.columns
```

```

'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')

```

```
In [22]: df.isnull().sum()
```

```
Out[22]: 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
```

```
In [7]: #setting up show max rows and columns
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)
```

```
In [ ]: #pre processing the column names
```

```
In [8]: from string import digits
#removing tab spaces
df.columns=df.columns.str.replace('\t','')
#removing digits

remove_digits=str.maketrans('','',digits)
df.columns=df.columns.str.translate(remove_digits)

#removing leading and trailing spaces
df.columns=df.columns.str.strip()
```

```
In [9]: df.head()
```

Out[9]:

Gender of respondent	How old are you?	Which city do you shop online from?	What is the Pin Code of where you shop online from?	Since How Long You are Shopping Online ?	How many times you have made an online purchase in the past year?	How do you access the internet while shopping on-line?	Which device do you use to access the online shopping?	What is the screen size of your mobile device?	What is the operating system (OS) of your device?	What browser do you run on your device to access the website?	Which channel did you follow to arrive at your favorite online store for the first time?	After first visit, how do you reach the online retail store?	How much time do you explore the e-retail store before making a purchase decision?	V pre pa O
----------------------	------------------	-------------------------------------	---	--	---	--	--	--	---	---	--	--	--	------------

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- (Free
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	Cred
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- (Free
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	Cred
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	Cred

In [10]: `df.shape`

Out[10]: (269, 71)

In [11]: `df.dtypes`

Out[11]:

Gender of respondent	object
How old are you?	object
Which city do you shop online from?	object
What is the Pin Code of where you shop online from?	int64
Since How Long You are Shopping Online ?	object
How many times you have made an online purchase in the past year?	object
How do you access the internet while shopping on-line?	object
Which device do you use to access the online shopping?	object
What is the screen size of your mobile device?	object
What is the operating system (OS) of your device?	object
What browser do you run on your device to access the website?	object
Which channel did you follow to arrive at your favorite online store for the first time?	object
After first visit, how do you reach the online retail store?	object
How much time do you explore the e- retail store before making a purchase decision?	object
What is your preferred payment Option?	object
How frequently do you abandon (selecting an items and leaving without making payment) your shopping cart?	object
Why did you abandon the "Bag", "Shopping Cart"?	object
The content on the website must be easy to read and understand	object

Information on similar product to the one highlighted is important for product comparison	object
Complete information on listed seller and product being offered is important for purchase decision.	object
All relevant information on listed products must be stated clearly	object
Ease of navigation in website	object
Loading and processing speed	object
User friendly Interface of the website	object
Convenient Payment methods	object
Trust that the online retail store will fulfill its part of the transaction at the stipulated time	object
Empathy (readiness to assist with queries) towards the customers	object
Being able to guarantee the privacy of the customer	object
Responsiveness, availability of several communication channels (email, online rep, twitter, phone etc.)	object
Online shopping gives monetary benefit and discounts	object
Enjoyment is derived from shopping online	object
Shopping online is convenient and flexible	object
Return and replacement policy of the e-tailer is important for purchase decision	object
Gaining access to loyalty programs is a benefit of shopping online	object
Displaying quality Information on the website improves satisfaction of customers	object
User derive satisfaction while shopping on a good quality website or application	object
Net Benefit derived from shopping online can lead to users satisfaction	object
User satisfaction cannot exist without trust	object
Offering a wide variety of listed product in several category	object
Provision of complete and relevant product information	object
Monetary savings	object
The Convenience of patronizing the online retailer	object
Shopping on the website gives you the sense of adventure	object
Shopping on your preferred e-tailer enhances your social status	object
You feel gratification shopping on your favorite e-tailer	object
Shopping on the website helps you fulfill certain roles	object
Getting value for money spent	object
From the following, tick any (or all) of the online retailers you have shopped from;	object
Easy to use website or application	object
Visual appealing web-page layout	object
Wild variety of product on offer	object
Complete, relevant description information of products	object
Fast loading website speed of website and application	object
Reliability of the website or application	object
Quickness to complete purchase	object
Availability of several payment options	object
Speedy order delivery	object
Privacy of customers' information	object
Security of customer financial information	object
Perceived Trustworthiness	object
Presence of online assistance through multi-channel	object
Longer time to get logged in (promotion, sales period)	object
Longer time in displaying graphics and photos (promotion, sales period)	object
Late declaration of price (promotion, sales period)	object
Longer page loading time (promotion, sales period)	object
Limited mode of payment on most products (promotion, sales period)	object

Longer delivery period	object
Change in website/Application design	object
Frequent disruption when moving from one page to another	object
Website is as efficient as before	object
Which of the Indian online retailer would you recommend to a friend?	object
dtype: object	

```
In [12]: df.nunique()
```

Out[12]:	Gender of respondent	2
	How old are you?	5
	Which city do you shop online from?	11
	What is the Pin Code of where you shop online from?	39
	Since How Long You are Shopping Online ?	5
	How many times you have made an online purchase in the past year?	6
	How do you access the internet while shopping on-line?	4
	Which device do you use to access the online shopping?	4
	What is the screen size of your mobile device?	4
	What is the operating system (OS) of your device?	3
	What browser do you run on your device to access the website?	4
	Which channel did you follow to arrive at your favorite online store for the first time?	3
	After first visit, how do you reach the online retail store?	5
	How much time do you explore the e- retail store before making a purchase decision?	5
	What is your preferred payment Option?	3
	How frequently do you abandon (selecting an items and leaving without making payment) your shopping cart?	4
	Why did you abandon the "Bag", "Shopping Cart"?	5
	The content on the website must be easy to read and understand	4
	Information on similar product to the one highlighted is important for product comparison	4
	Complete information on listed seller and product being offered is important for purchase decision.	5
	All relevant information on listed products must be stated clearly	4
	Ease of navigation in website	4
	Loading and processing speed	5
	User friendly Interface of the website	5
	Convenient Payment methods	3
	Trust that the online retail store will fulfill its part of the transaction at the stipulated time	4
	Empathy (readiness to assist with queries) towards the customers	4
	Being able to guarantee the privacy of the customer	3
	Responsiveness, availability of several communication channels (email, online rep, twitter, phone etc.)	4
	Online shopping gives monetary benefit and discounts	5
	Enjoyment is derived from shopping online	5
	Shopping online is convenient and flexible	4
	Return and replacement policy of the e-tailer is important for purchase decision	3
	Gaining access to loyalty programs is a benefit of shopping online	5
	Displaying quality Information on the website improves satisfaction of customers	3
	User derive satisfaction while shopping on a good quality website or application	3
	Net Benefit derived from shopping online can lead to users satisfaction	4
	User satisfaction cannot exist without trust	5
	Offering a wide variety of listed product in several category	4

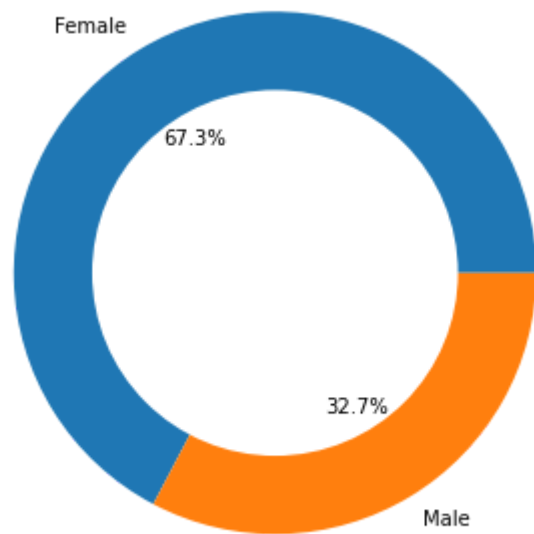
Provision of complete and relevant product information	4
Monetary savings	4
The Convenience of patronizing the online retailer	3
Shopping on the website gives you the sense of adventure	5
Shopping on your preferred e-tailer enhances your social status	5
You feel gratification shopping on your favorite e-tailer	5
Shopping on the website helps you fulfill certain roles	5
Getting value for money spent	3
From the following, tick any (or all) of the online retailers you have shopped from;	9
Easy to use website or application	10
Visual appealing web-page layout	10
Wild variety of product on offer	9
Complete, relevant description information of products	11
Fast loading website speed of website and application	10
Reliability of the website or application	10
Quickness to complete purchase	9
Availability of several payment options	11
Speedy order delivery	6
Privacy of customers' information	11
Security of customer financial information	11
Perceived Trustworthiness	9
Presence of online assistance through multi-channel	10
Longer time to get logged in (promotion, sales period)	10
Longer time in displaying graphics and photos (promotion, sales period)	10
Late declaration of price (promotion, sales period)	8
Longer page loading time (promotion, sales period)	11
Limited mode of payment on most products (promotion, sales period)	8
Longer delivery period	6
Change in website/Application design	7
Frequent disruption when moving from one page to another	8
Website is as efficient as before	8
Which of the Indian online retailer would you recommend to a friend?	8

dtype: int64

```
In [13]: personal_info=['Gender of respondent','How old are you?','Which city do you shop online from?','What is the Pin Code of where y
```

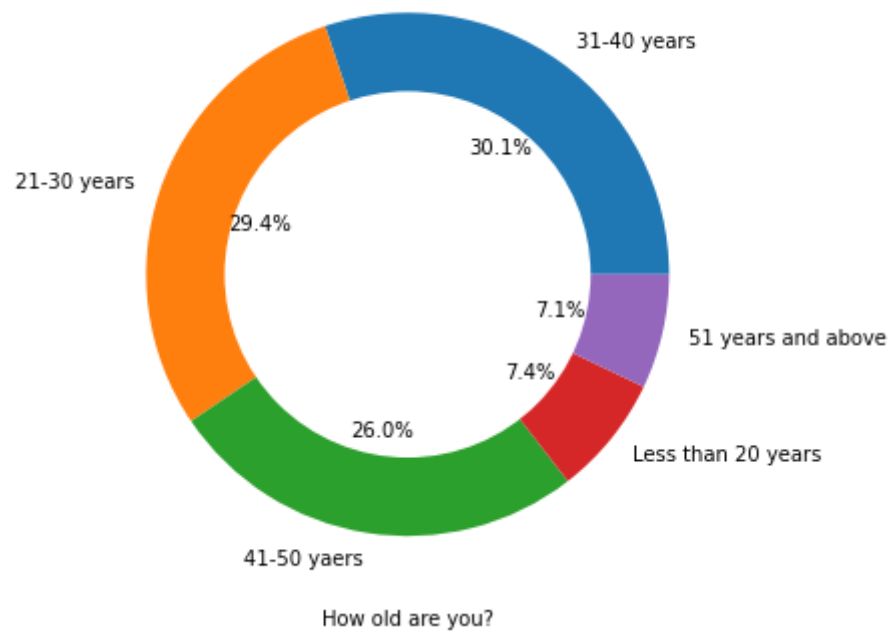
```
In [14]: for i in personal_info:
    if i!='What is the Pin Code of where you shop online from?':
        plt.figure(figsize=(8,6))
        df[i].value_counts().plot.pie(autopct='%1.1f%%')
        center=plt.Circle((0,0),0.7,fc='white')
        fig=plt.gcf()
        fig.gca().add_artist(center)
        plt.xlabel(i)
        plt.ylabel('')
```

```
plt.figure()
```

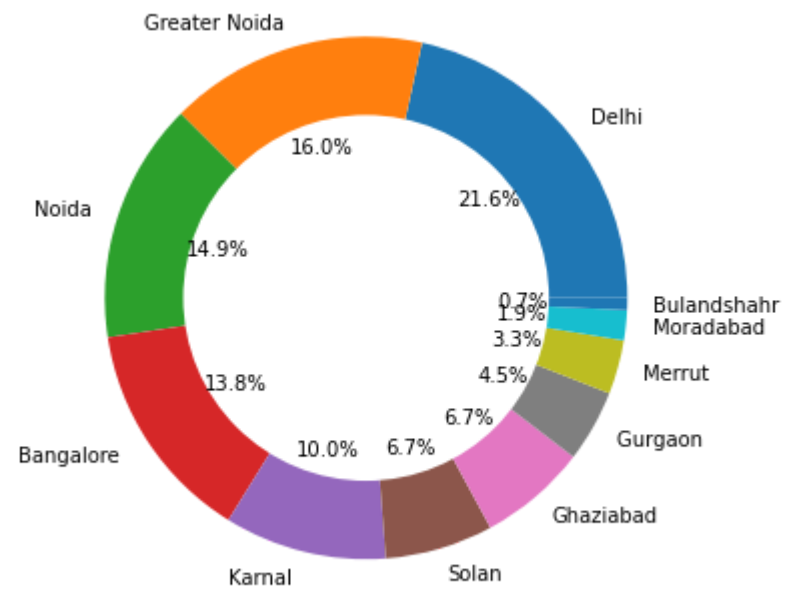


Gender of respondent

<Figure size 432x288 with 0 Axes>

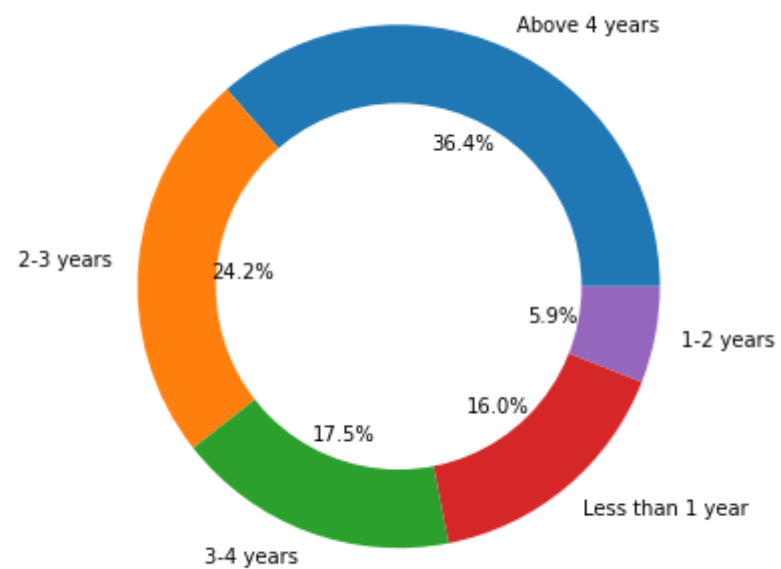


<Figure size 432x288 with 0 Axes>



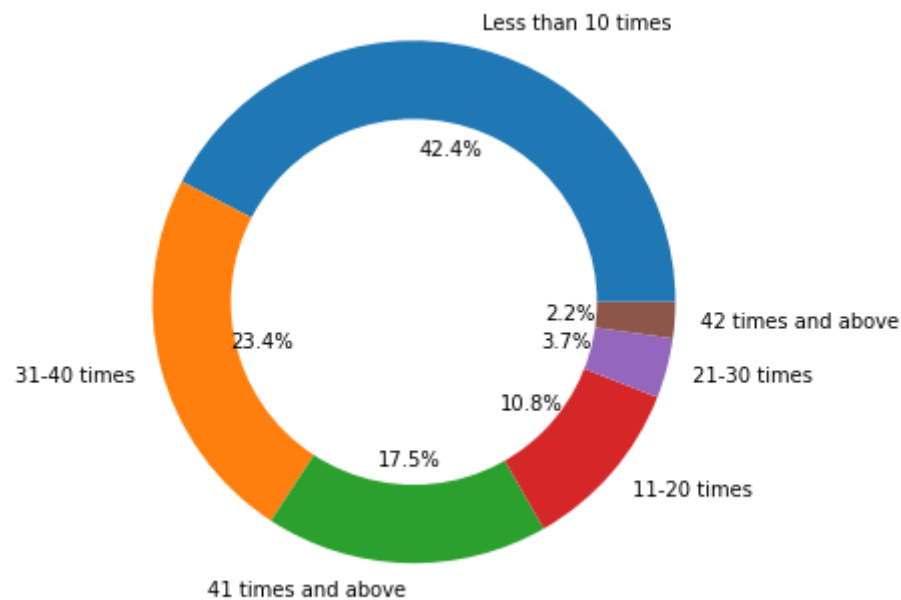
Which city do you shop online from?

<Figure size 432x288 with 0 Axes>



Since How Long You are Shopping Online ?

<Figure size 432x288 with 0 Axes>



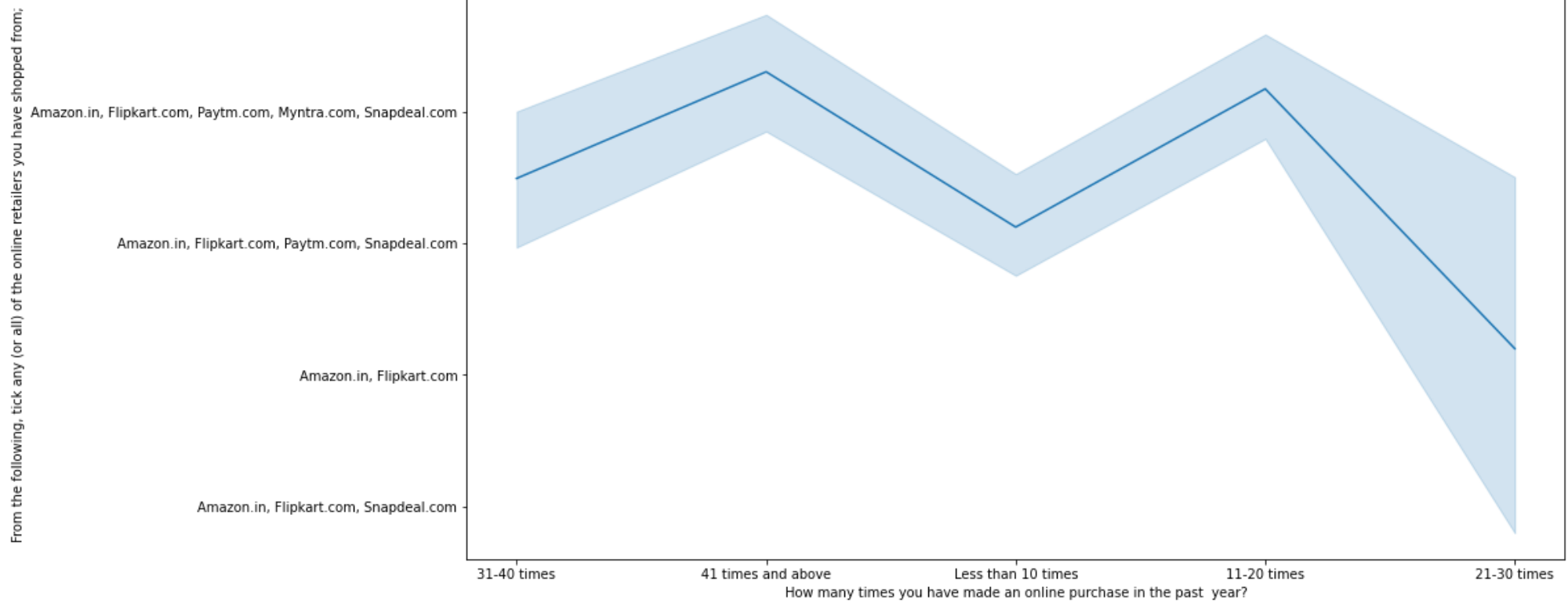
How many times you have made an online purchase in the past year?

<Figure size 432x288 with 0 Axes>

```
In [15]: #changing ambiguity of the column
#changing 42 times and above to 41 times and above
df['How many times you have made an online purchase in the past year?'].replace('42 times and above','41 times and above',inpl
```

```
In [16]: plt.figure(figsize=(15,8))
sns.lineplot(df['How many times you have made an online purchase in the past year?'],df['From the following, tick any (or all)
```

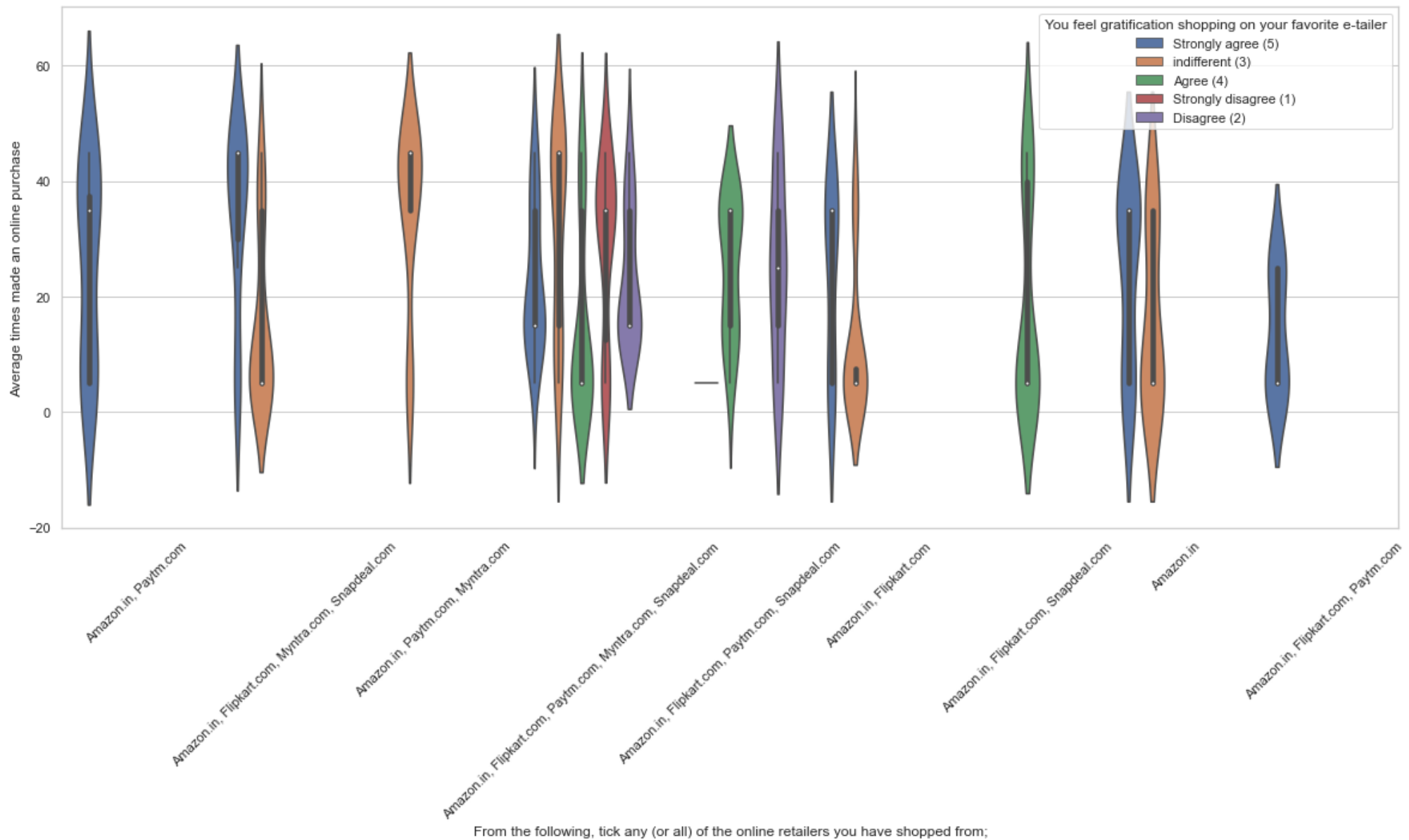
```
Out[16]: <AxesSubplot:xlabel='How many times you have made an online purchase in the past year?', ylabel='From the following, tick any
(or all) of the online retailers you have shopped from;'>
```



```
In [40]: dict={'31-40 times':35,'41 times and above':45,'Less than 10 times':5,'11-20 times':15,'21-30 times':25}
df['Average times made an online purchase']=df['How many times you have made an online purchase in the past year?'].replace(di
```

```
In [41]: plt.figure(figsize=(20,8))
sns.violinplot(df['From the following, tick any (or all) of the online retailers you have shopped from;'],
              df['Average times made an online purchase'],hue=df['You feel gratification shopping on your favorite e-tailer'])
plt.xticks(rotation=45)
```

```
Out[41]: (array([0, 1, 2, 3, 4, 5, 6, 7, 8]),
 [Text(0, 0, 'Amazon.in, Paytm.com'),
  Text(1, 0, 'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'),
  Text(2, 0, 'Amazon.in, Paytm.com, Myntra.com'),
  Text(3, 0, 'Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com'),
  Text(4, 0, 'Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com'),
  Text(5, 0, 'Amazon.in, Flipkart.com'),
  Text(6, 0, 'Amazon.in, Flipkart.com, Snapdeal.com'),
  Text(7, 0, 'Amazon.in'),
  Text(8, 0, 'Amazon.in, Flipkart.com, Paytm.com')])
```

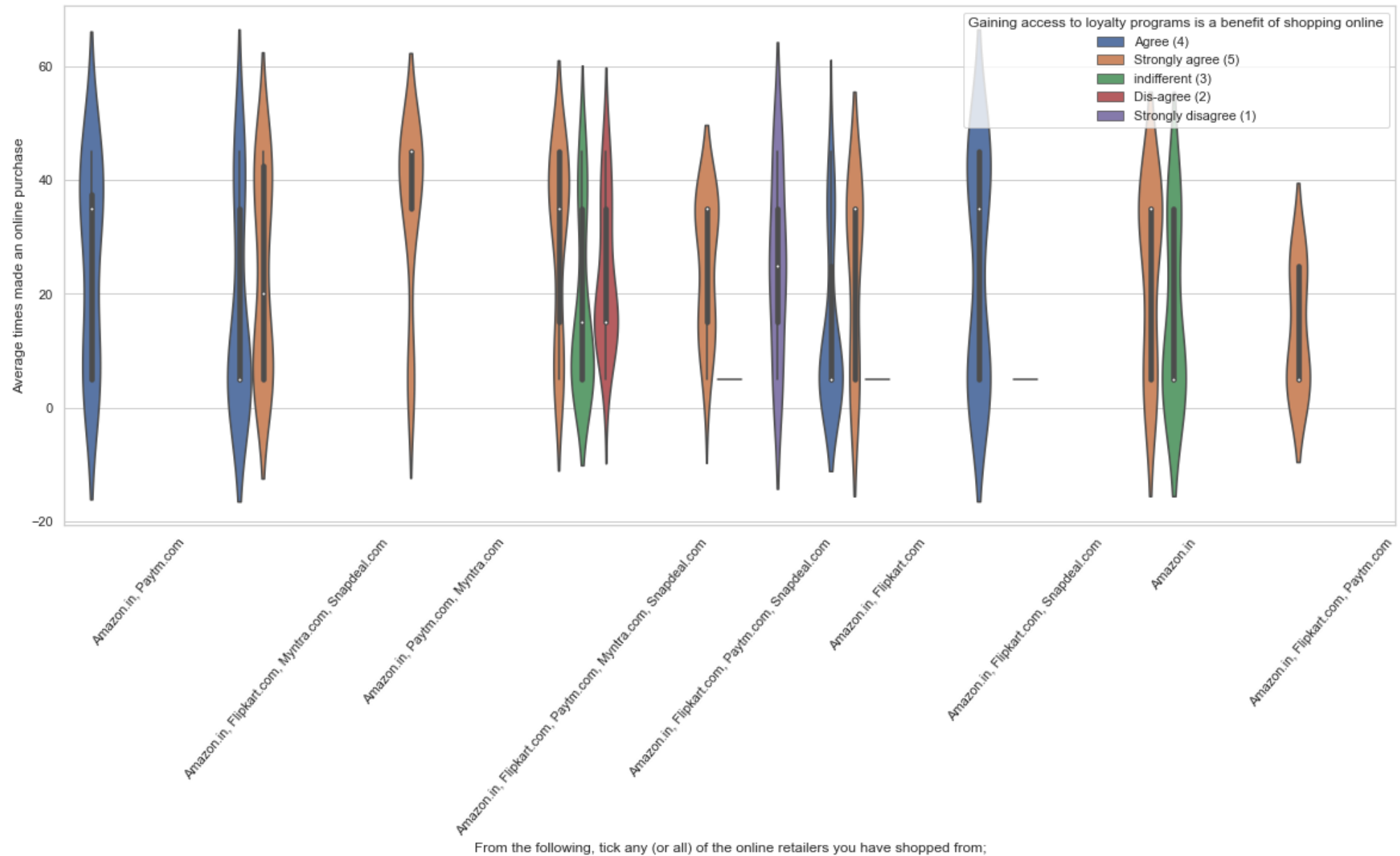


```
In [42]: plt.figure(figsize=(20,8))
sns.violinplot(df['From the following, tick any (or all) of the online retailers you have shopped from;'],df['Average times made an online purchase'])
plt.xticks(rotation=50)
```

```
Out[42]: (array([0, 1, 2, 3, 4, 5, 6, 7, 8]),
 [Text(0, 0, 'Amazon.in, Paytm.com'),
  Text(1, 0, 'Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com'),
  Text(2, 0, 'Amazon.in, Paytm.com, Myntra.com'),
  Text(3, 0, 'Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com'),
  Text(4, 0, 'Amazon.in, Flipkart.com'),
  Text(5, 0, 'Amazon.in, Flipkart.com, Snapdeal.com'),
  Text(6, 0, 'Amazon.in'),
  Text(7, 0, 'Amazon.in, Flipkart.com, Paytm.com')])
```

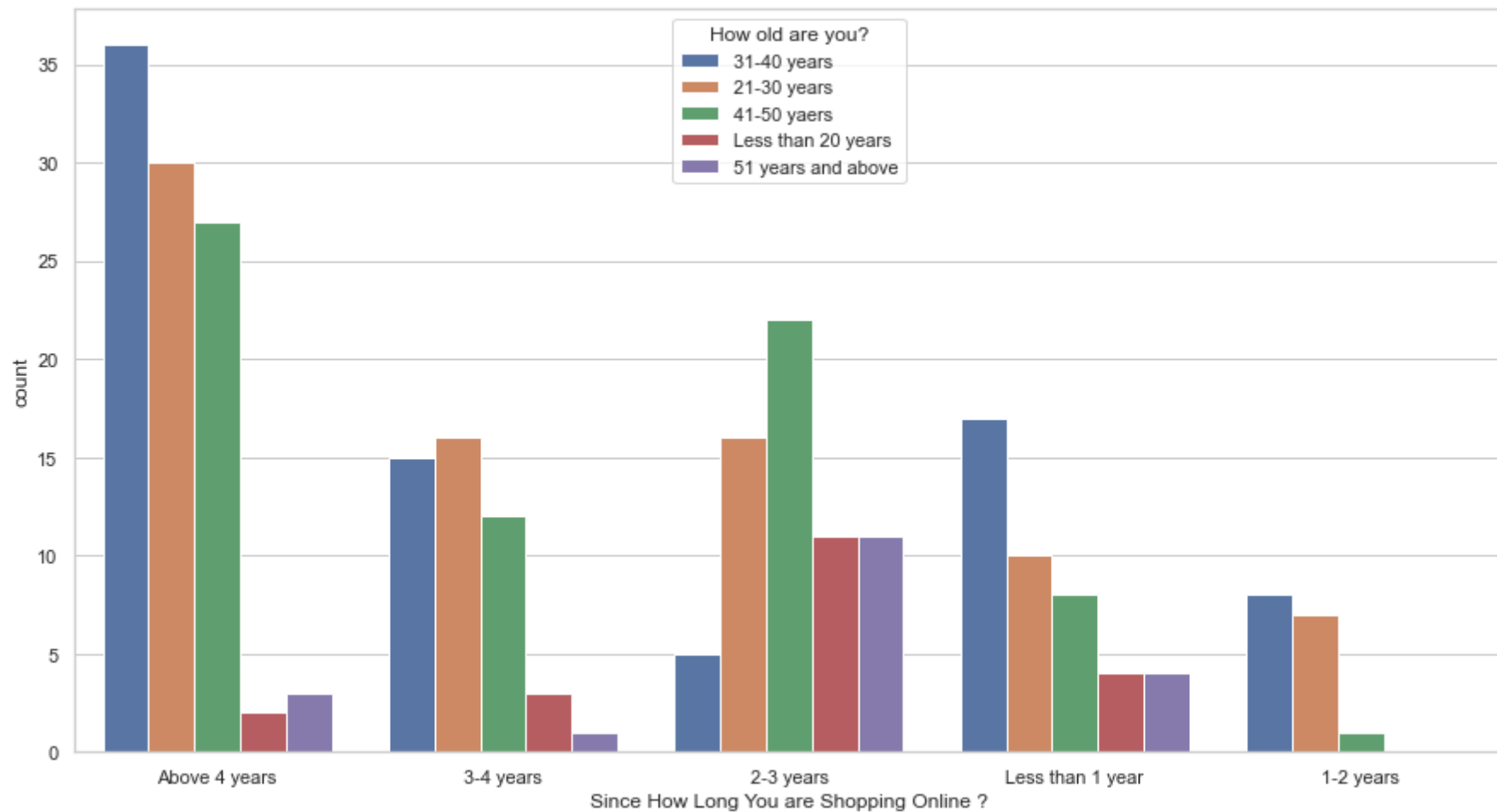


```
Text(4, 0, 'Amazon.in, Flipkart.com, Paytm.com, Snapdeal.com'),
Text(5, 0, 'Amazon.in, Flipkart.com'),
Text(6, 0, 'Amazon.in, Flipkart.com, Snapdeal.com'),
Text(7, 0, 'Amazon.in'),
Text(8, 0, 'Amazon.in, Flipkart.com, Paytm.com')]]
```



```
In [44]: plt.figure(figsize=(15,8))
sns.countplot(df['Since How Long You are Shopping Online ?'],hue=df['How old are you?'])
```

```
Out[44]: <AxesSubplot: xlabel='Since How Long You are Shopping Online ?', ylabel='count'>
```



```
In [45]: #converting years to no for better analysis
```

```
In [46]: df['Since How Long You are Shopping Online ?'].unique()
```

```
Out[46]: array(['Above 4 years', '3-4 years', '2-3 years', 'Less than 1 year',  
              '1-2 years'], dtype=object)
```

```
In [54]: dict={'Above 4 years':4.5,'3-4 years':3.5,'2-3 years':2.5,'Less than 1 year':0.5,'1-2 years':1.5}  
df['Average years of shopping online']=df['Since How Long You are Shopping Online ?'].replace(dict)
```

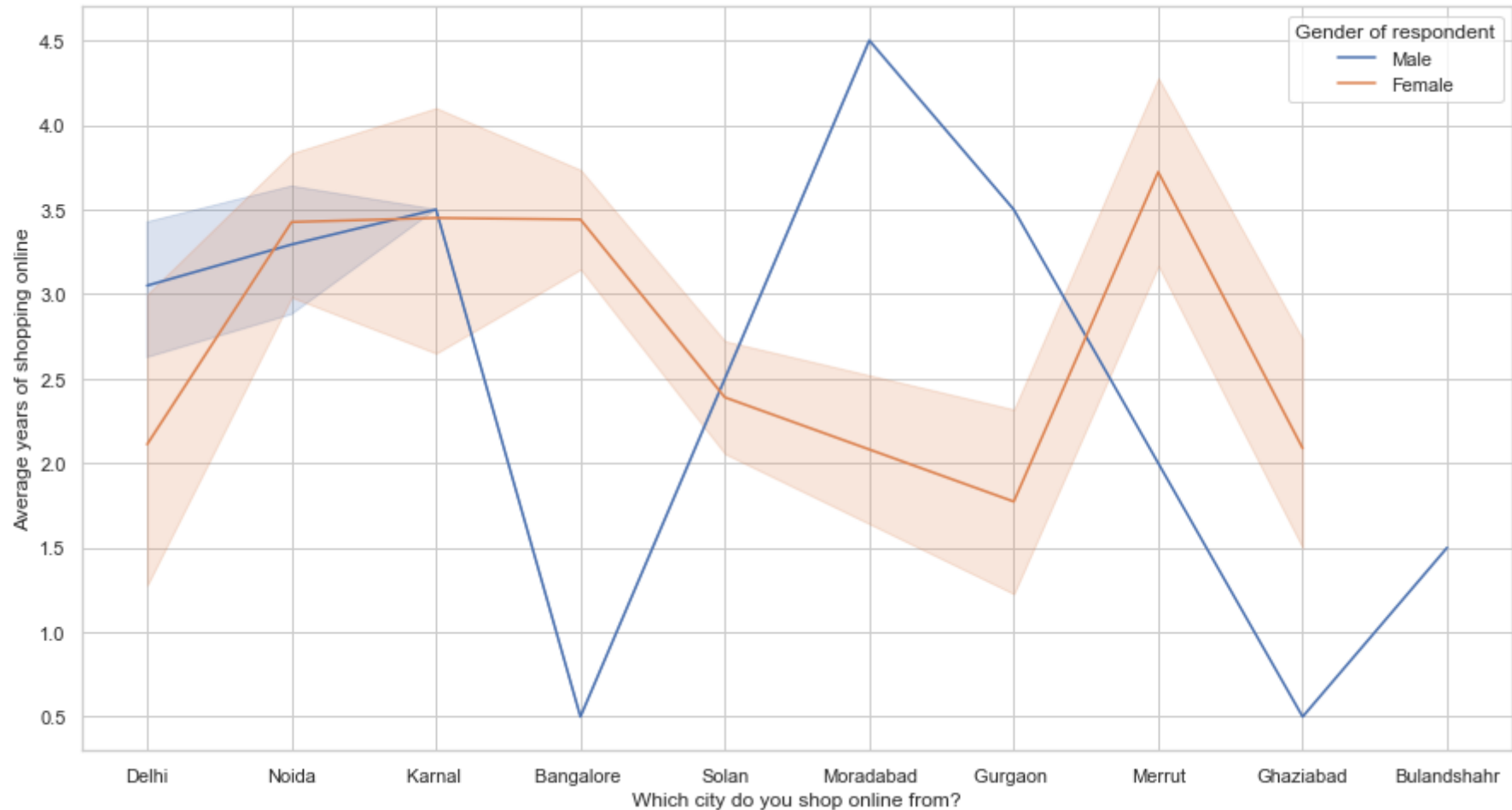
```
In [55]: df['Which city do you shop online from?'].unique()
```

```
Out[55]: array(['Delhi', 'Noida', 'Karnal ', 'Bangalore ', 'Solan', 'Moradabad',  
        'Gurgaon ', 'Merrut', 'Ghaziabad', 'Bulandshahr'], dtype=object)
```

```
In [56]: #changing greater noida to noida  
df['Which city do you shop online from?'].replace({'Greater Noida':'Noida'},inplace=True)
```

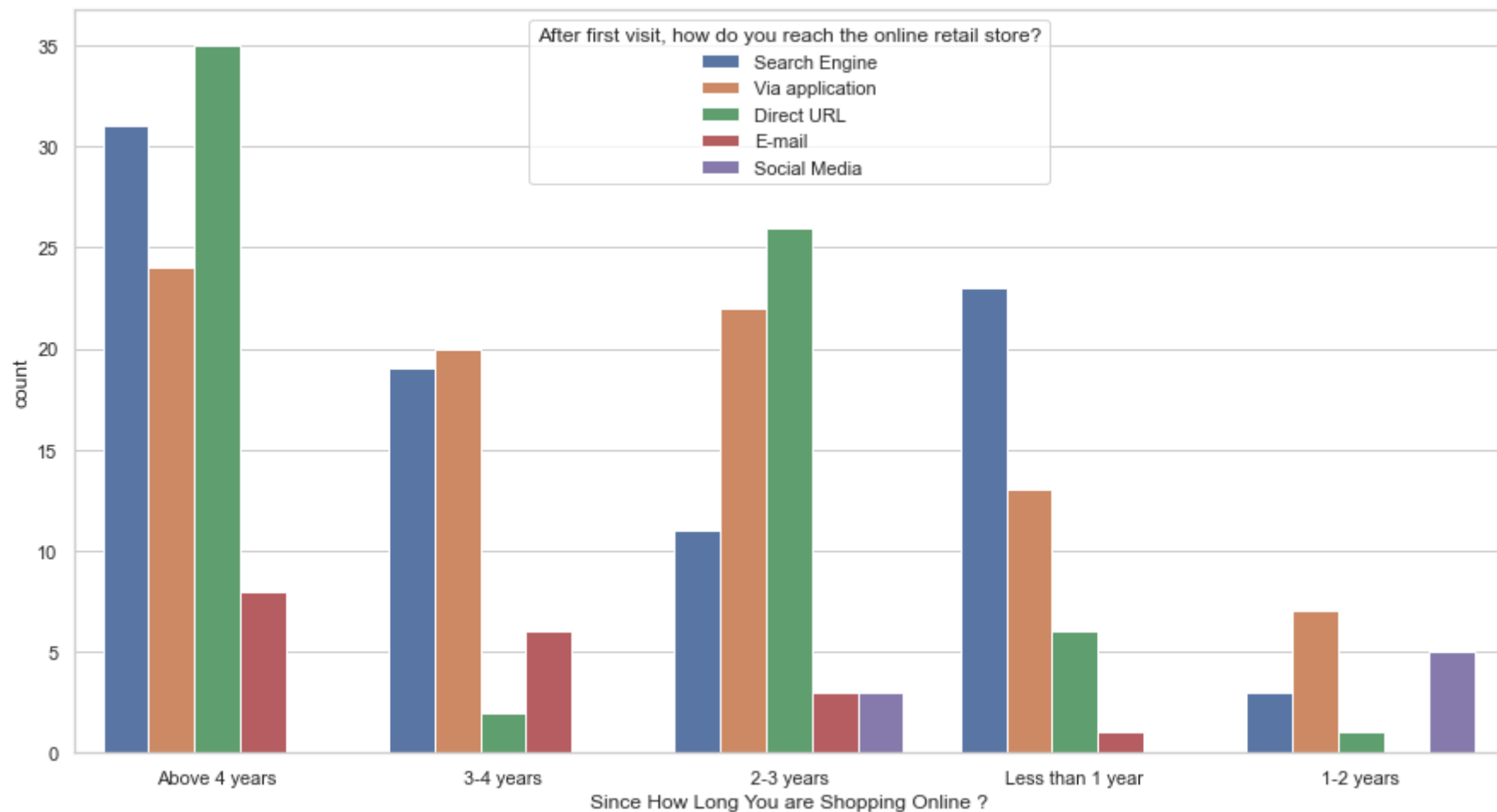
```
In [57]: plt.figure(figsize=(15,8))  
sns.lineplot(df['Which city do you shop online from?'],df['Average years of shopping online'],hue=df['Gender of respondent'])
```

```
Out[57]: <AxesSubplot:xlabel='Which city do you shop online from?', ylabel='Average years of shopping online'>
```



```
In [58]: plt.figure(figsize=(15,8))  
sns.countplot(df['Since How Long You are Shopping Online ?'],hue=df['After first visit, how do you reach the online retail stor
```

```
Out[58]: <AxesSubplot:xlabel='Since How Long You are Shopping Online ?', ylabel='count'>
```



In [60]:

```
#brand image
performance=['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']
```

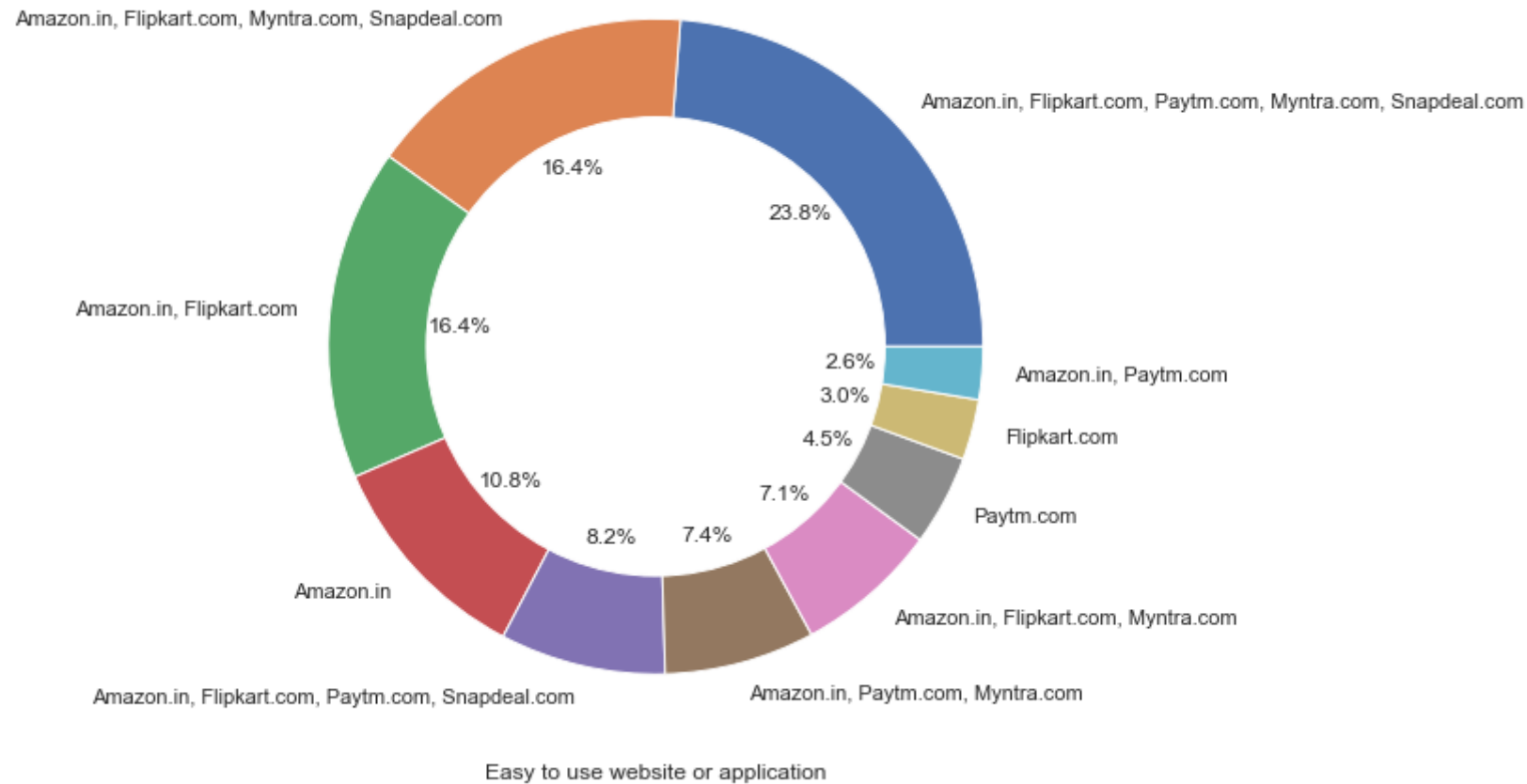
In [62]:

```
for i in performance:
    plt.figure(figsize=(10,8))
```

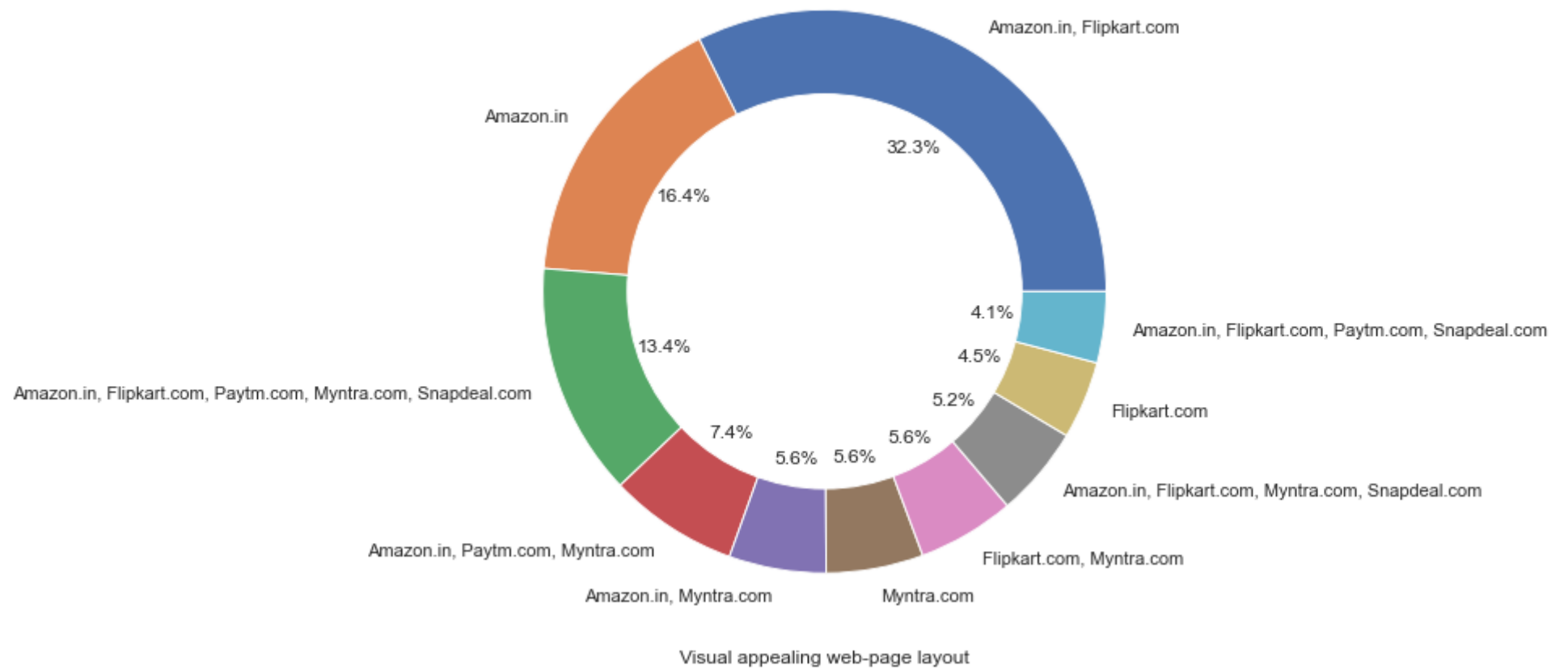
```

df[i].value_counts().plot.pie(autopct='%1.1f%%')
centre98=plt.Circle((0,0),0.7,fc='white')
fig=plt.gcf()
fig.gca().add_artist(centre98)
plt.xlabel(i)
plt.ylabel('')
plt.figure()

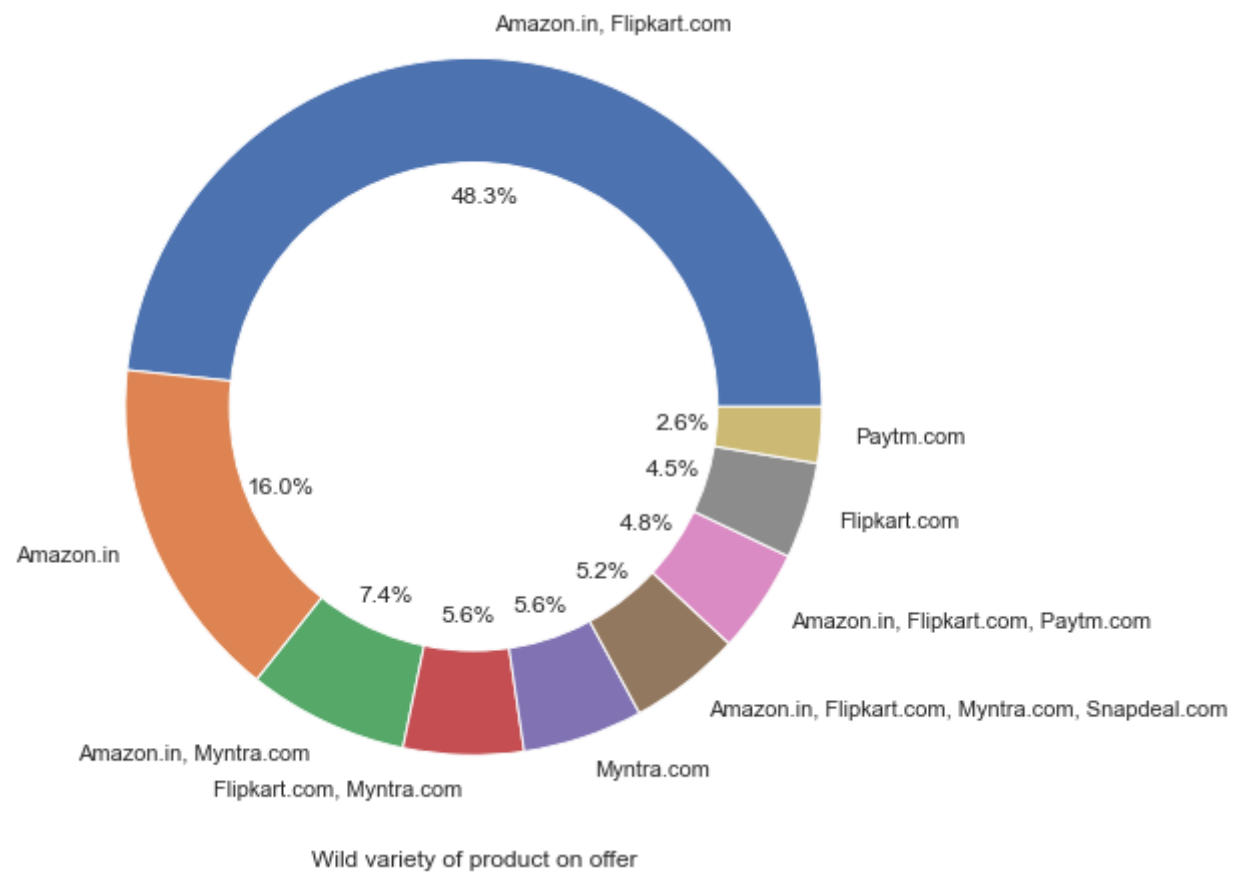
```



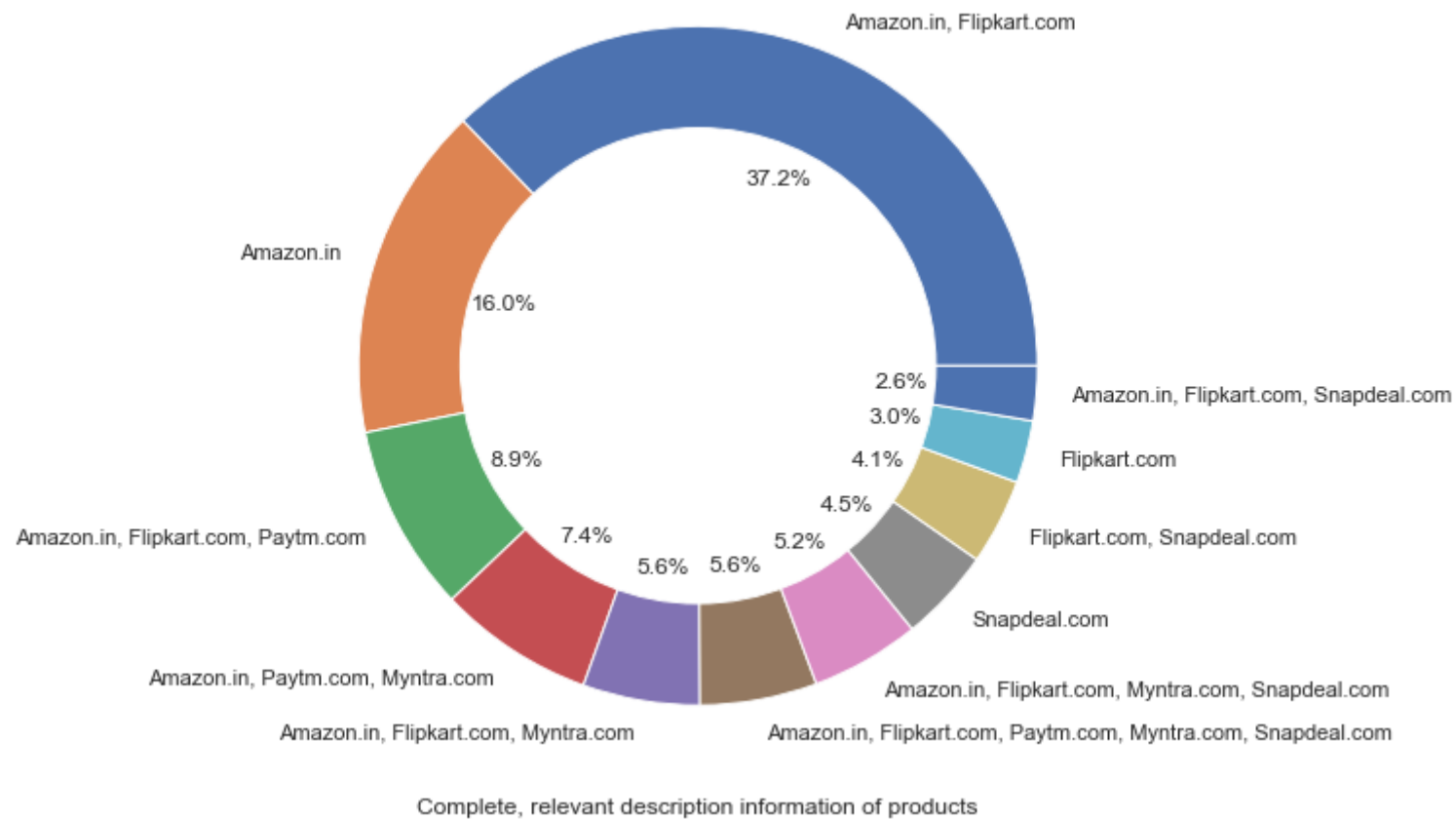
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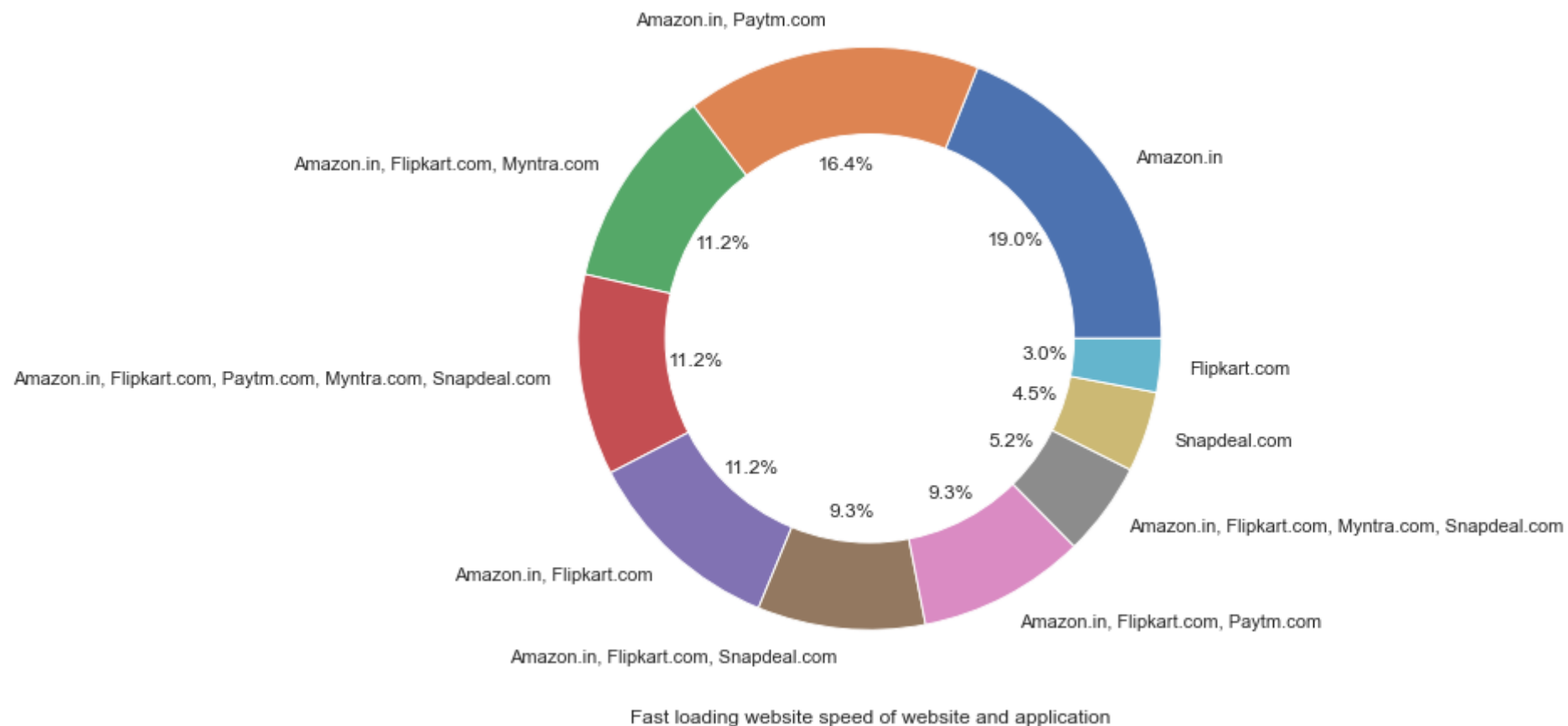
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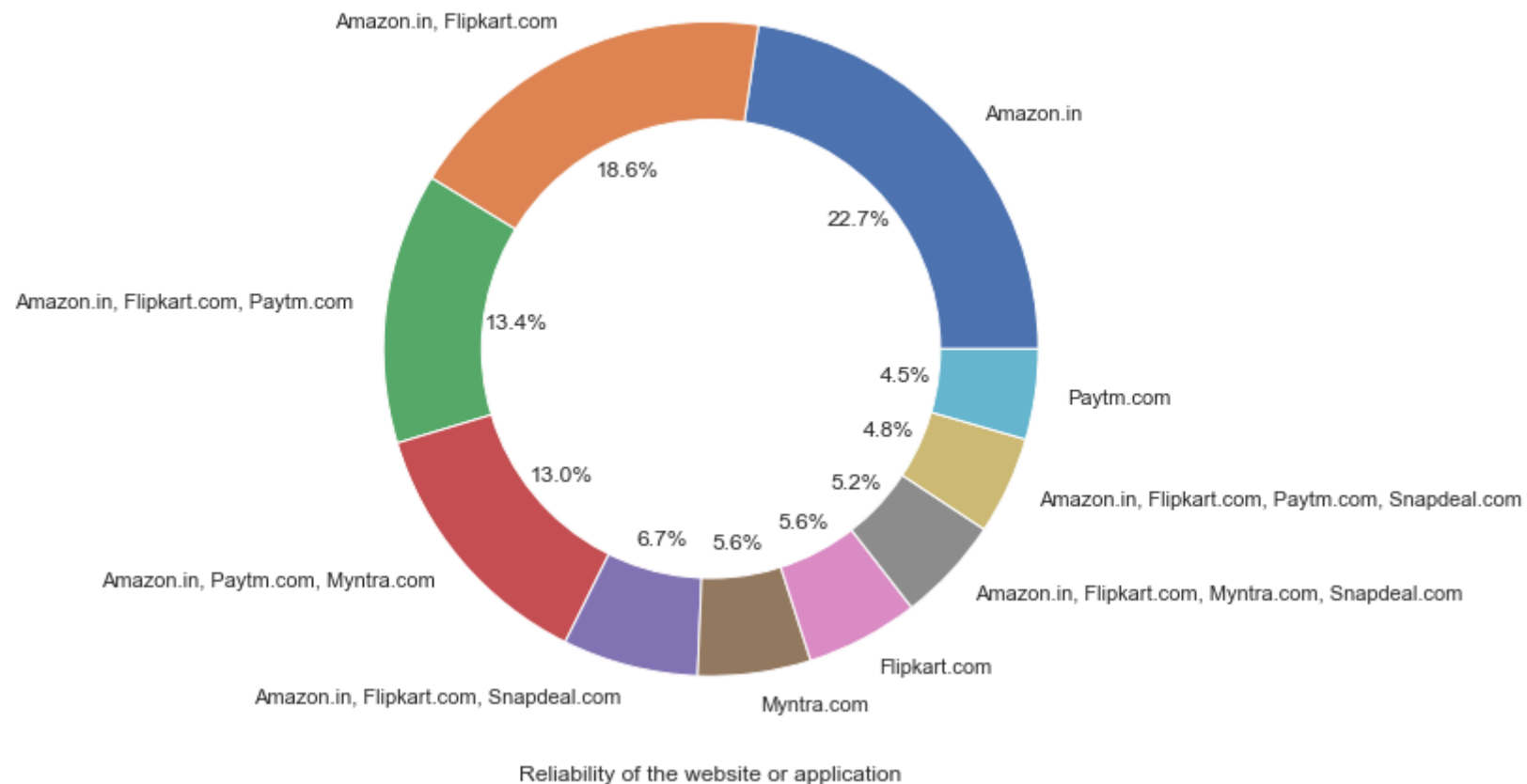
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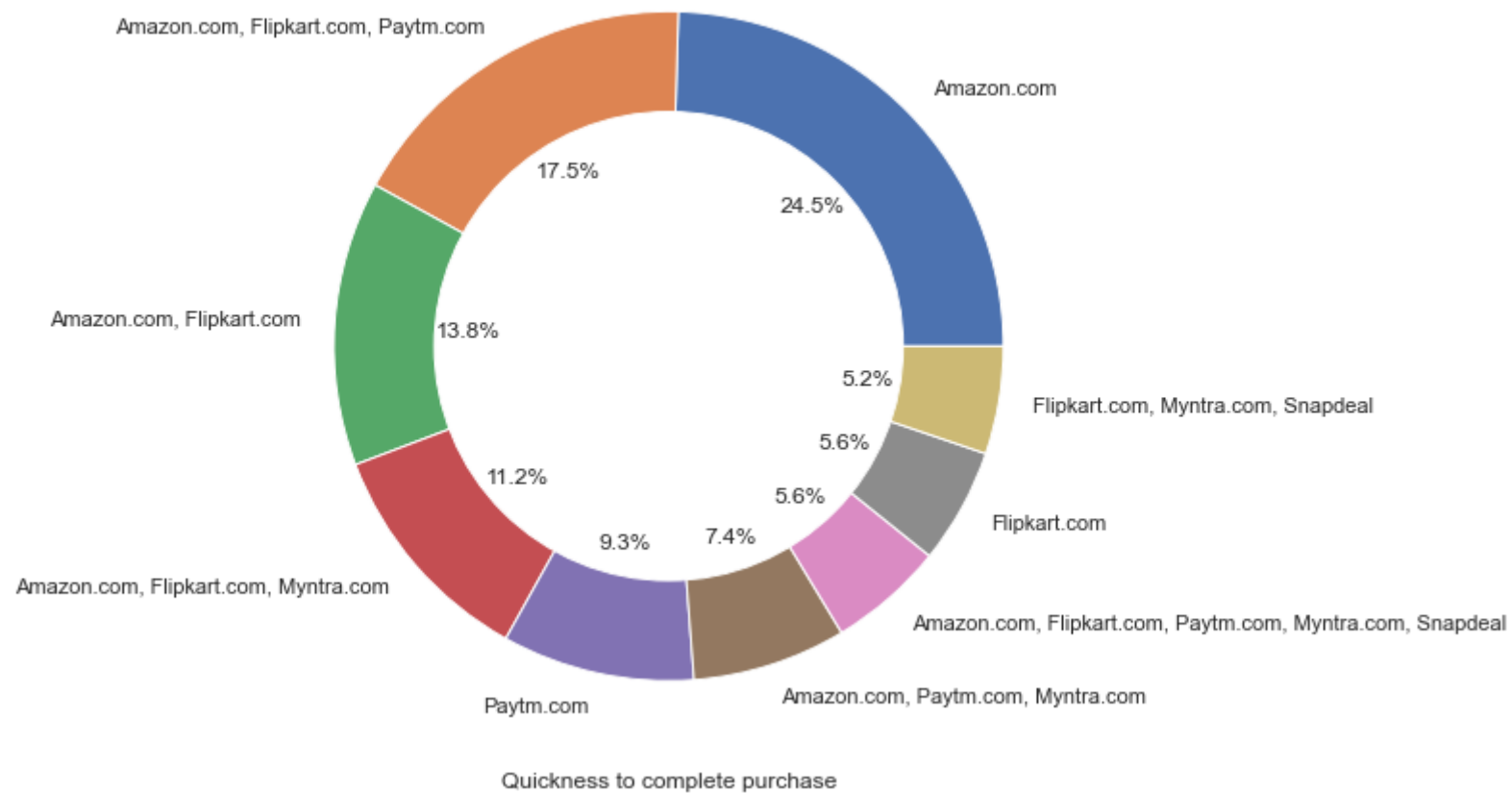
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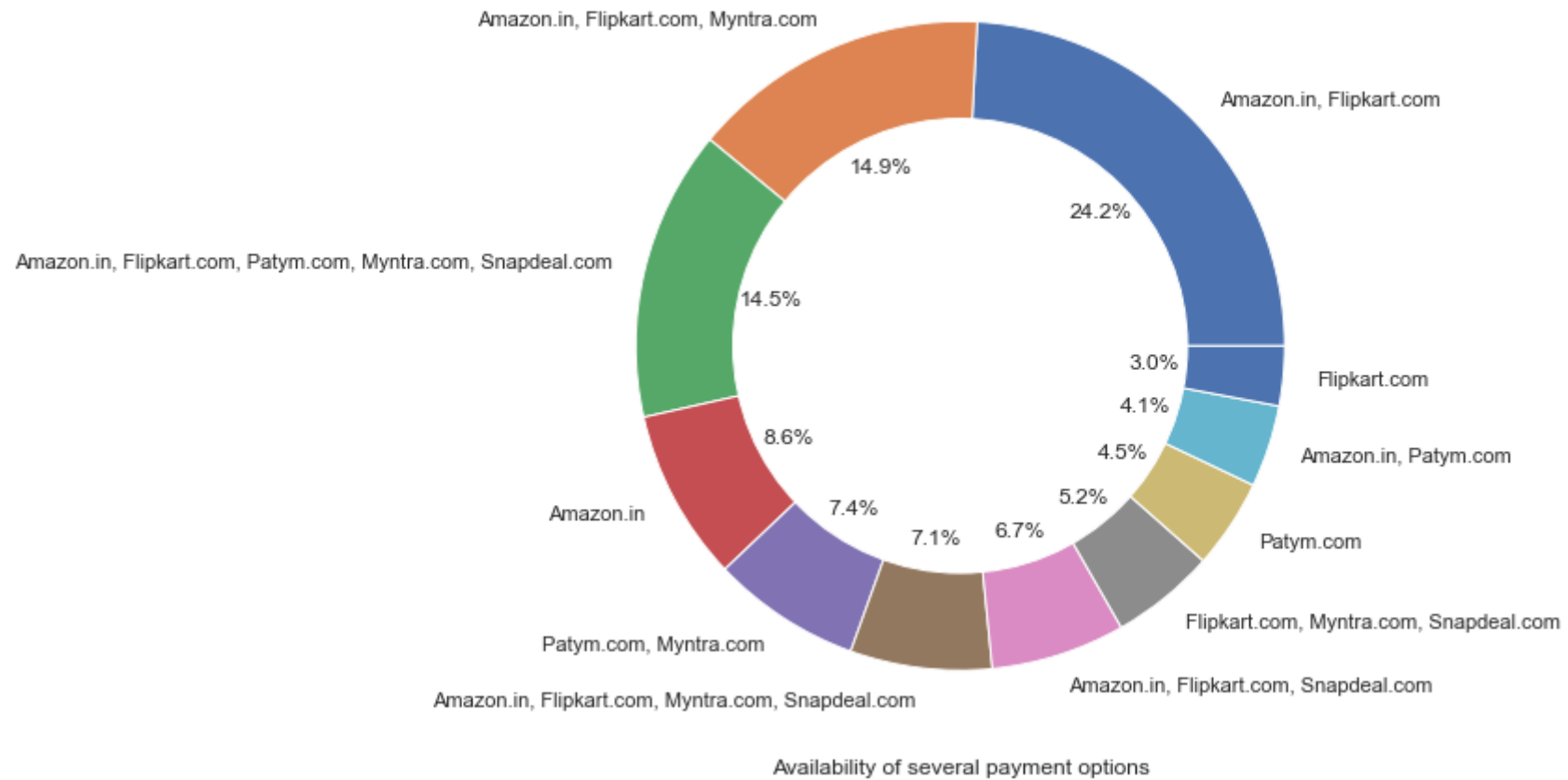
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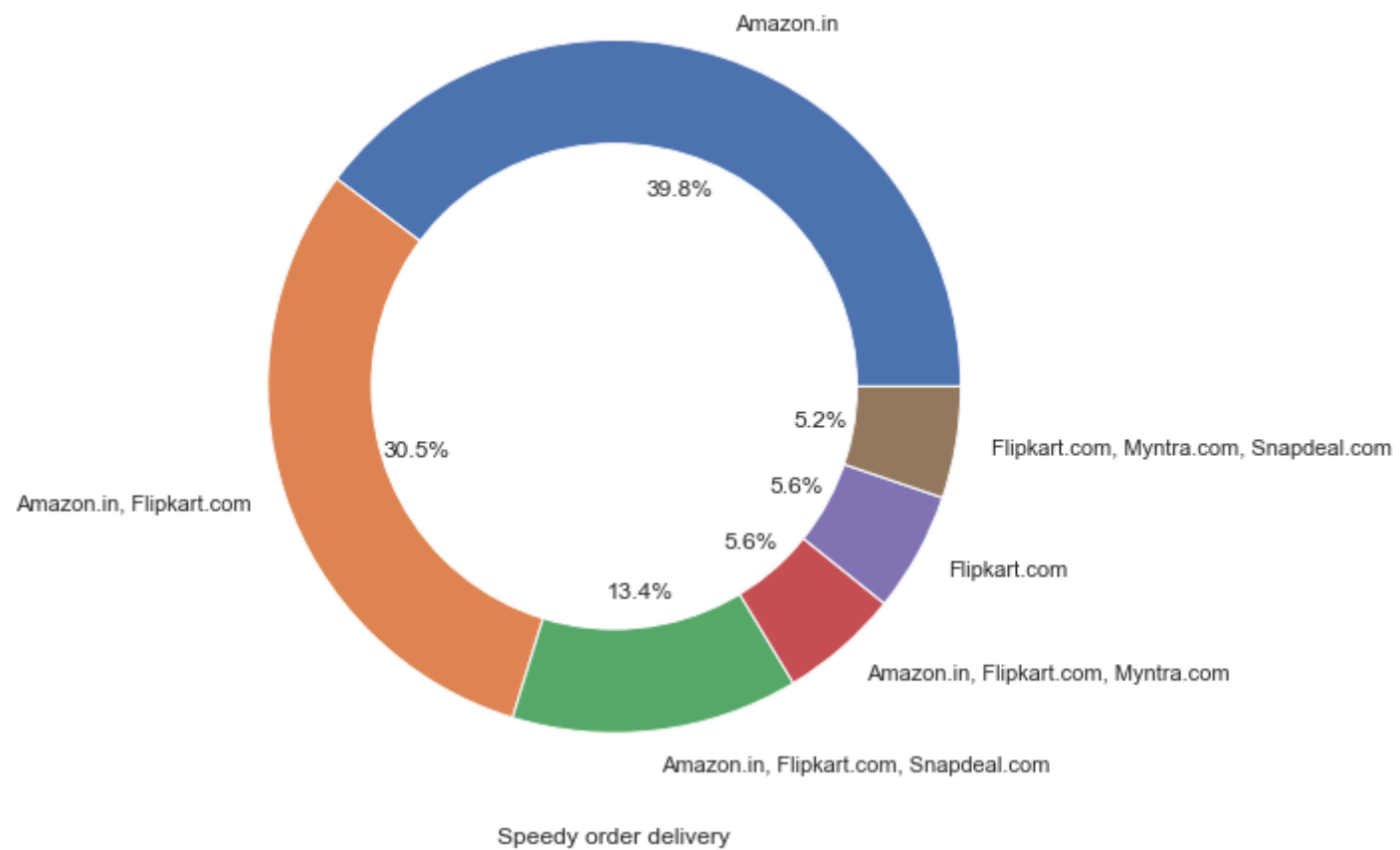
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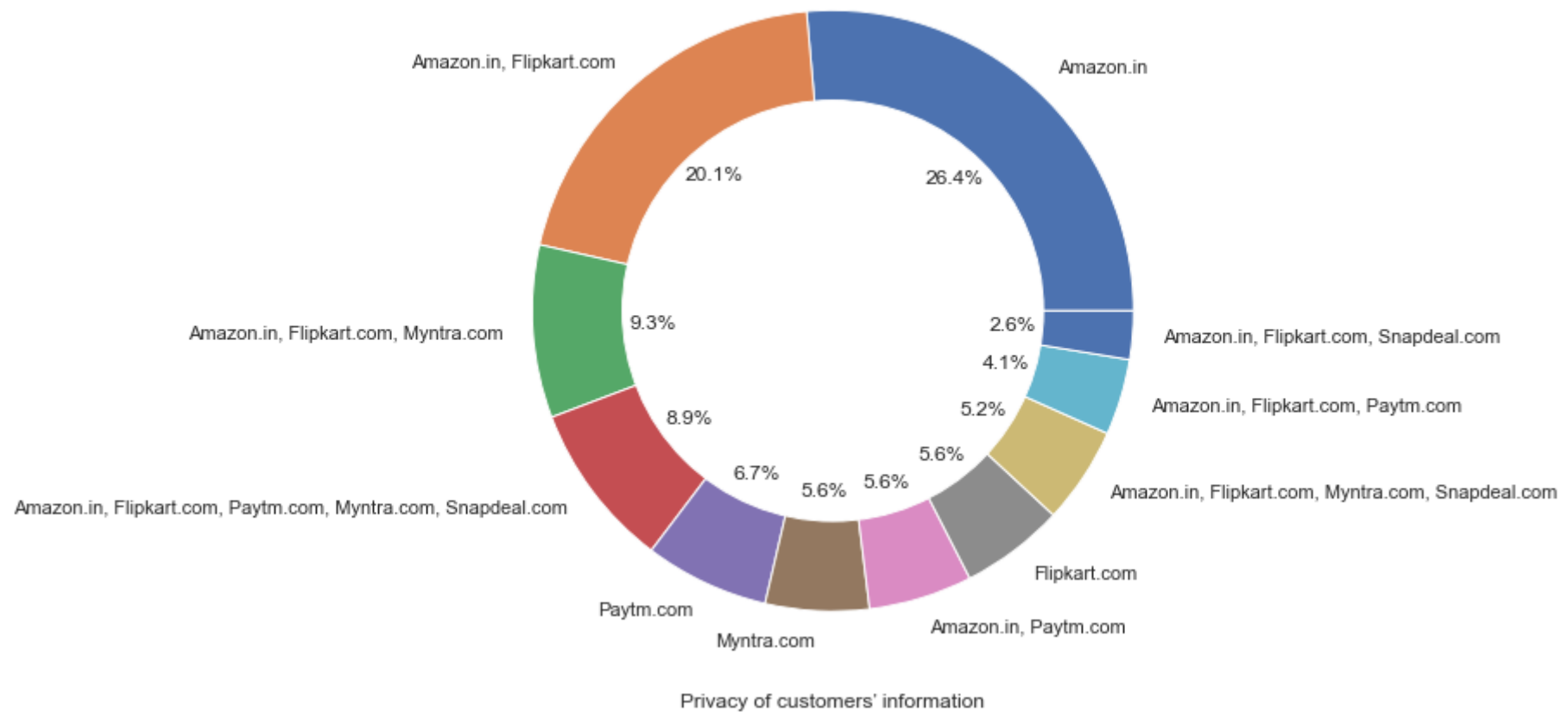
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<Figure size 432x288 with 0 Axes>

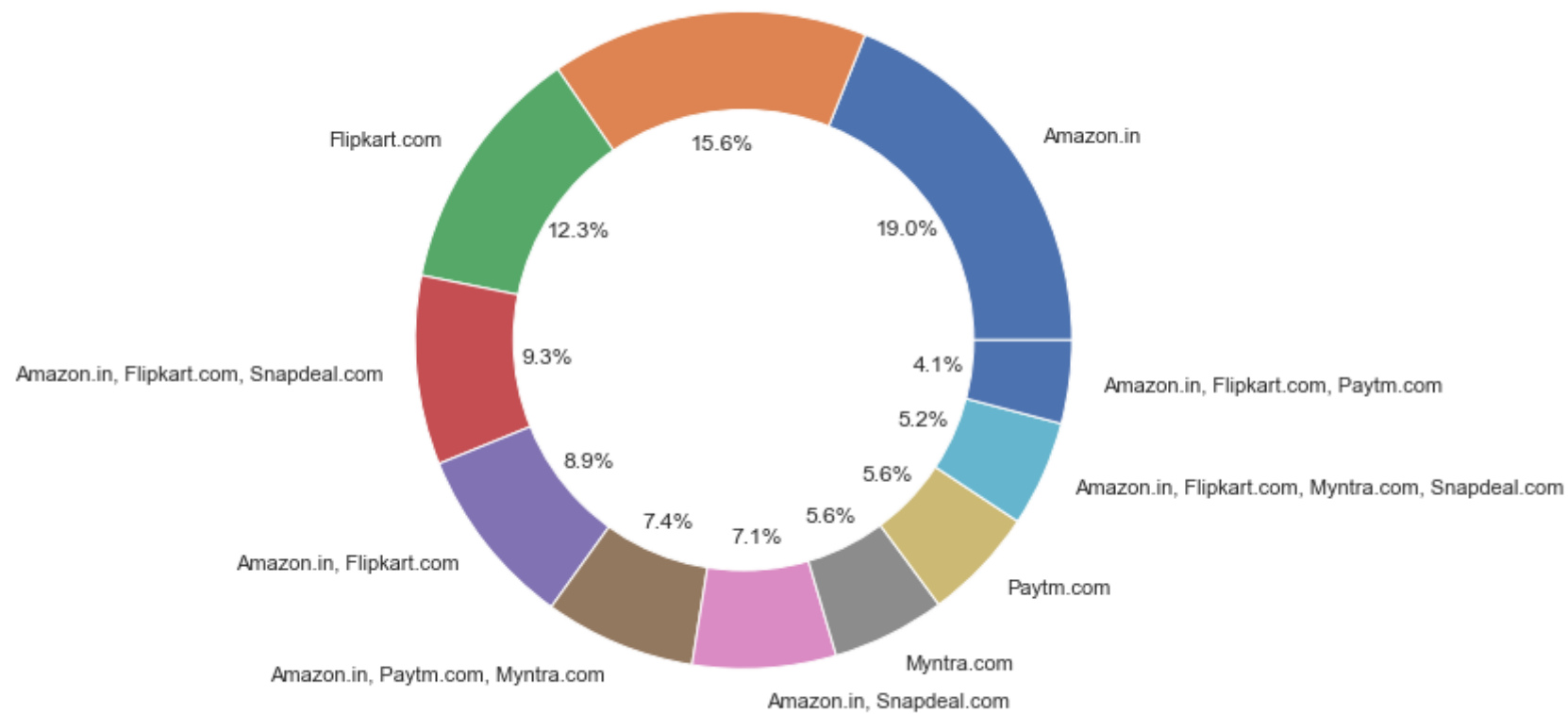


<Figure size 432x288 with 0 Axes>



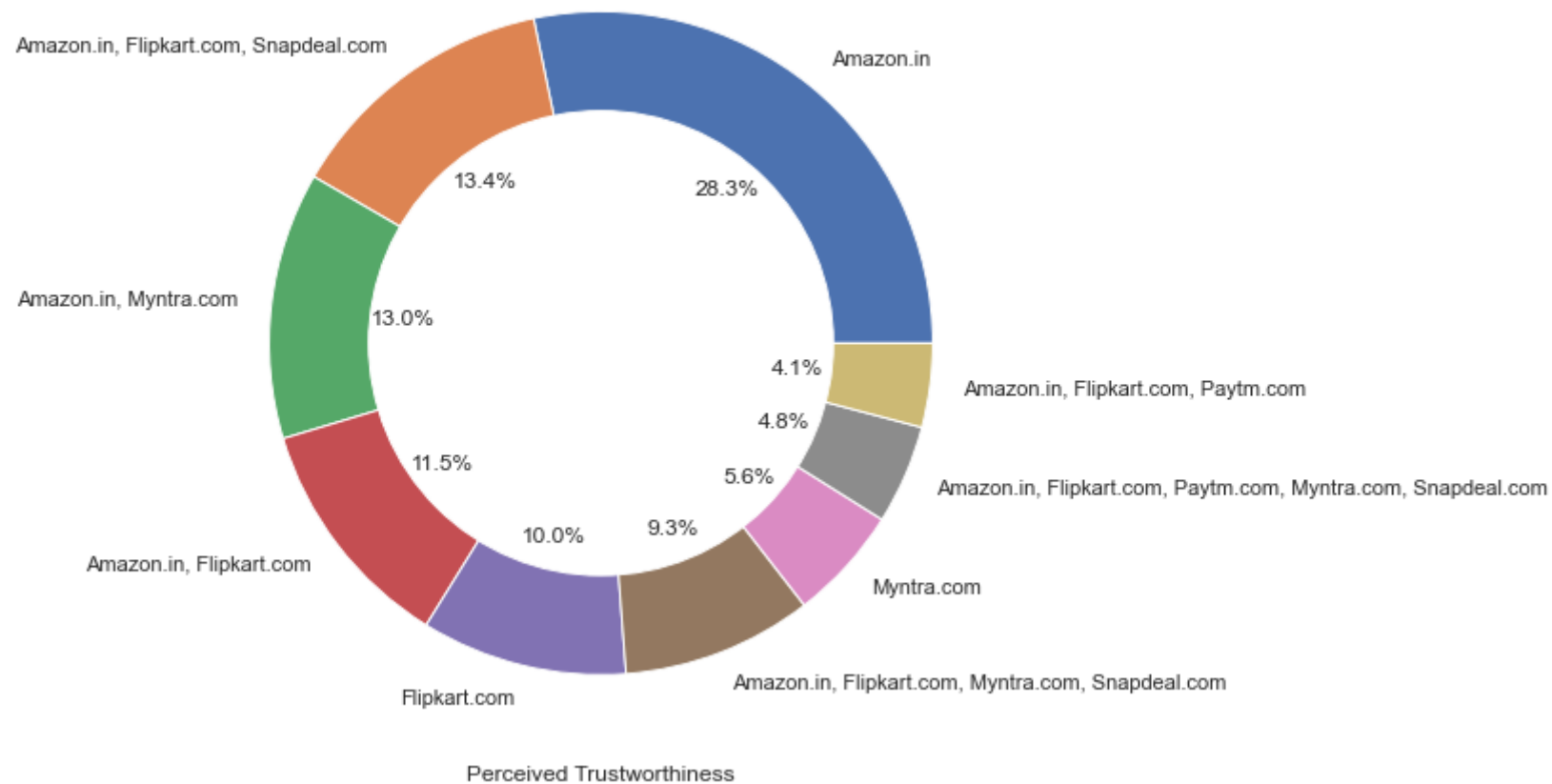
<Figure size 432x288 with 0 Axes>

Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com

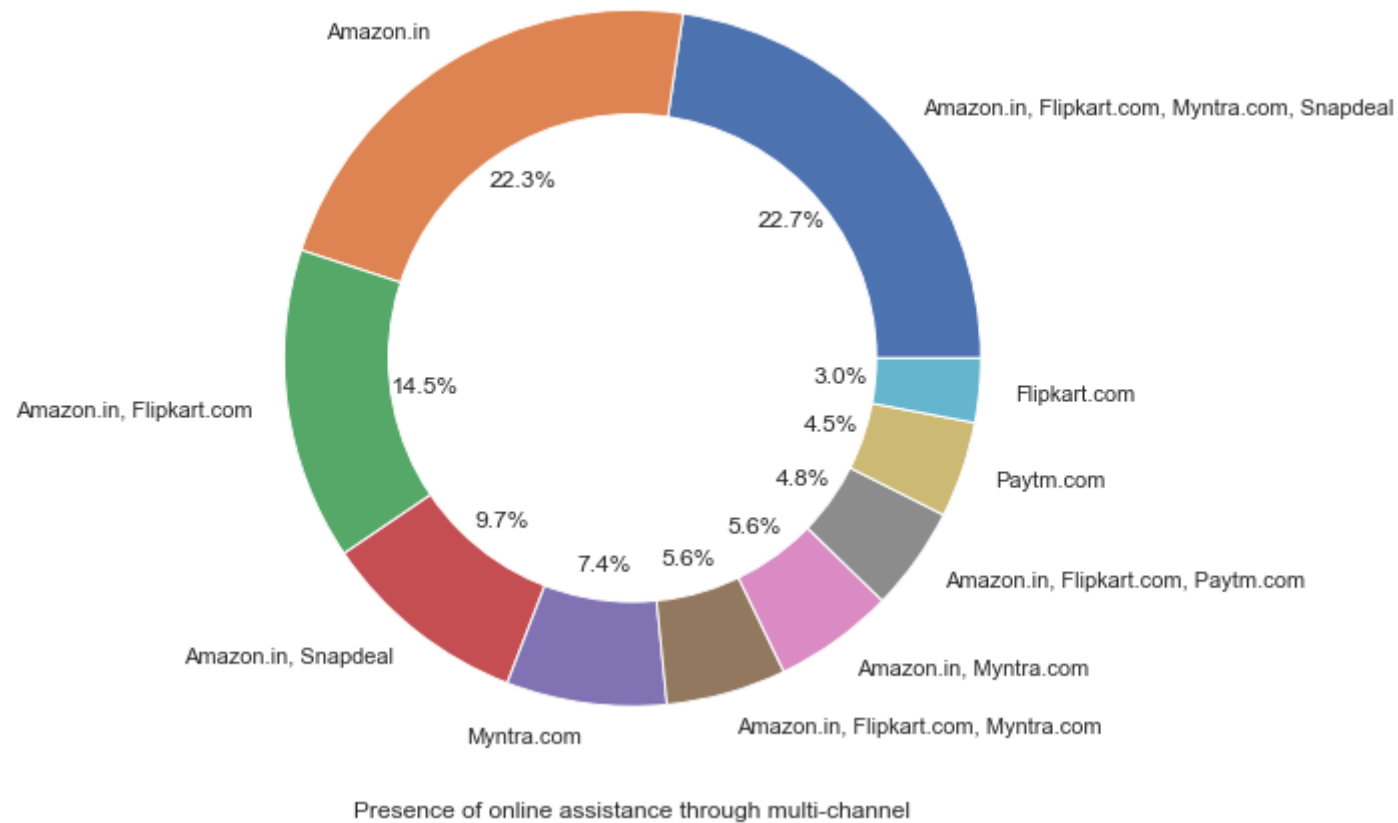


Security of customer financial information

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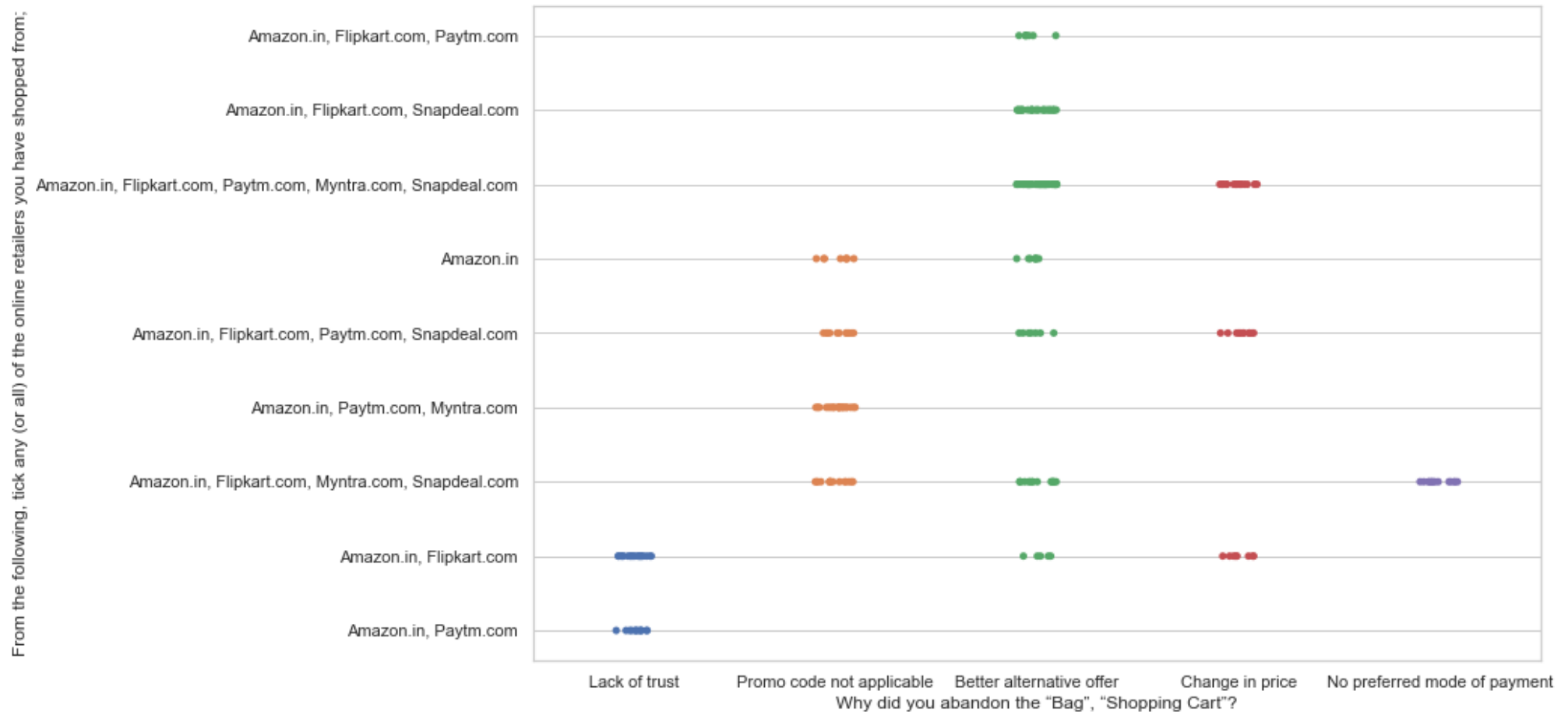
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```
In [64]: plt.figure(figsize=(12,8))
sns.stripplot(df['Why did you abandon the "Bag", "Shopping Cart"?'],df['From the following, tick any (or all) of the online retailers you have shopped from;'])
```

Out[64]: <AxesSubplot:xlabel='Why did you abandon the "Bag", "Shopping Cart"?', ylabel='From the following, tick any (or all) of the online retailers you have shopped from;*>

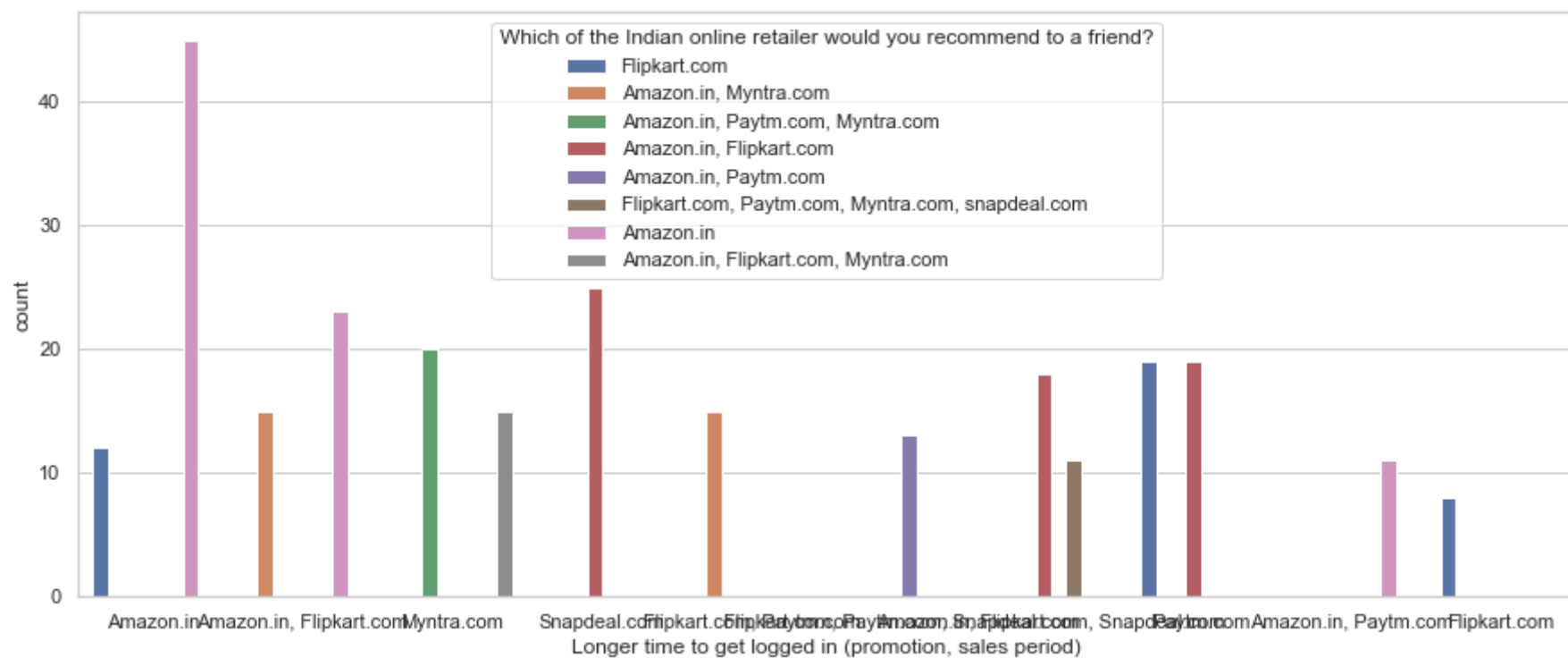


In [66]:

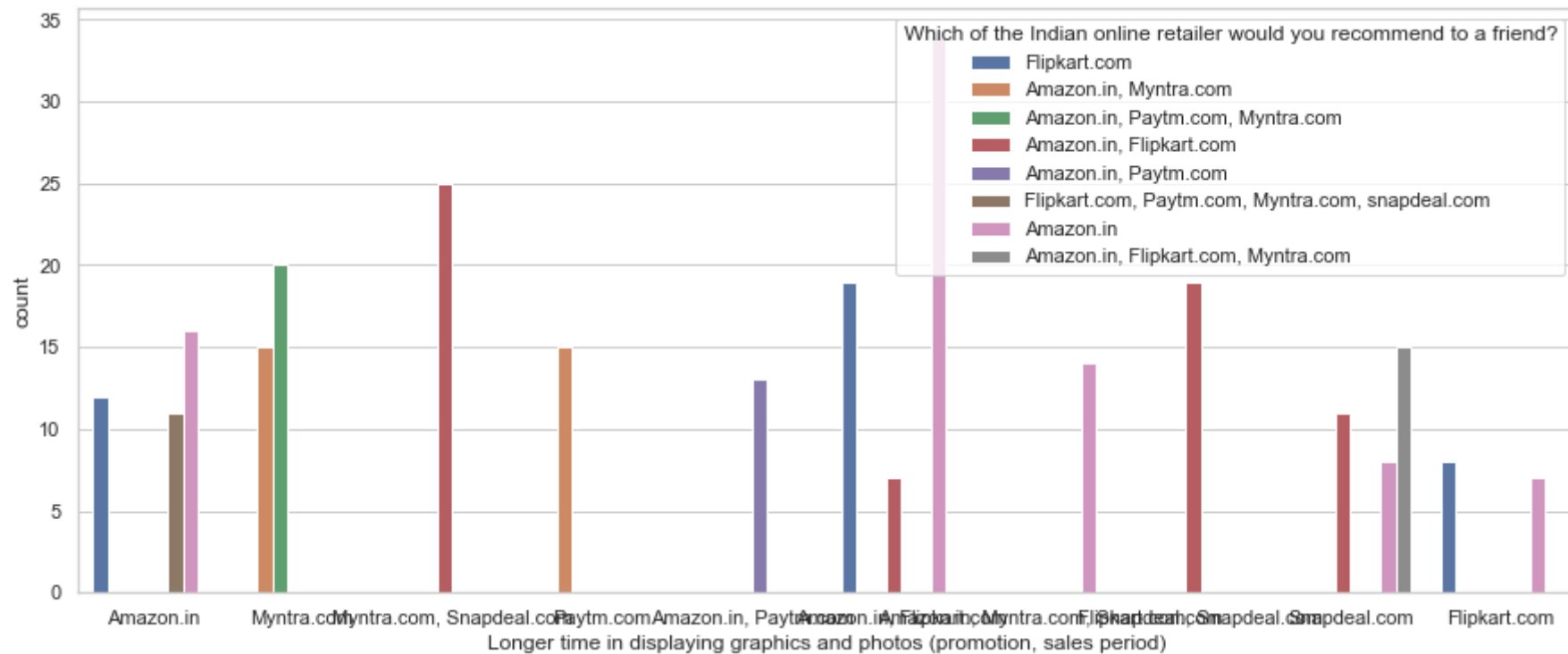
```
#Collecting all the negative remarks about a brand
negativity=['Longer time to get logged in (promotion, sales period)',
            'Longer time in displaying graphics and photos (promotion, sales period)',
            'Late declaration of price (promotion, sales period)',
            'Longer page 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']
```

In [68]:

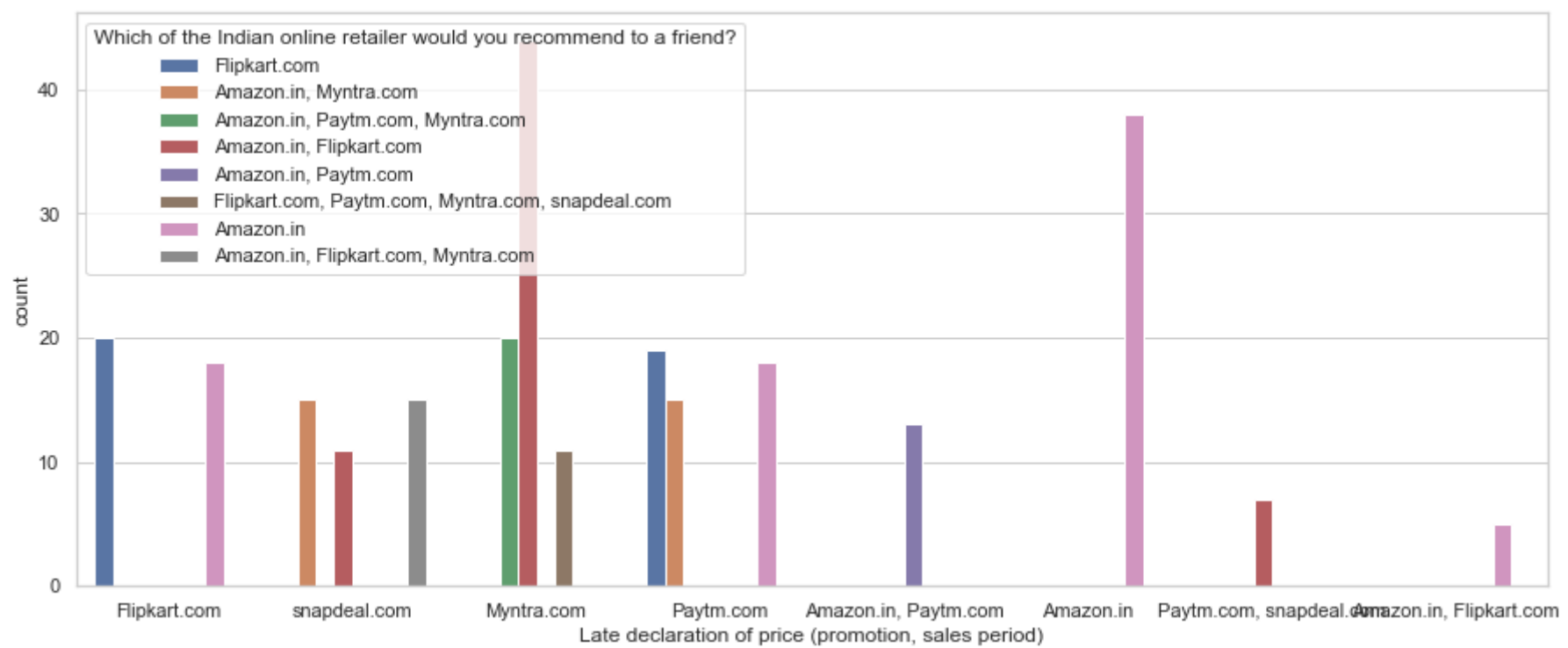
```
for i in negativity:
    plt.figure(figsize=(15,6))
    sns.countplot(df[i],hue=df['Which of the Indian online retailer would you recommend to a friend?'])
    plt.xticks()
    plt.figure()
```



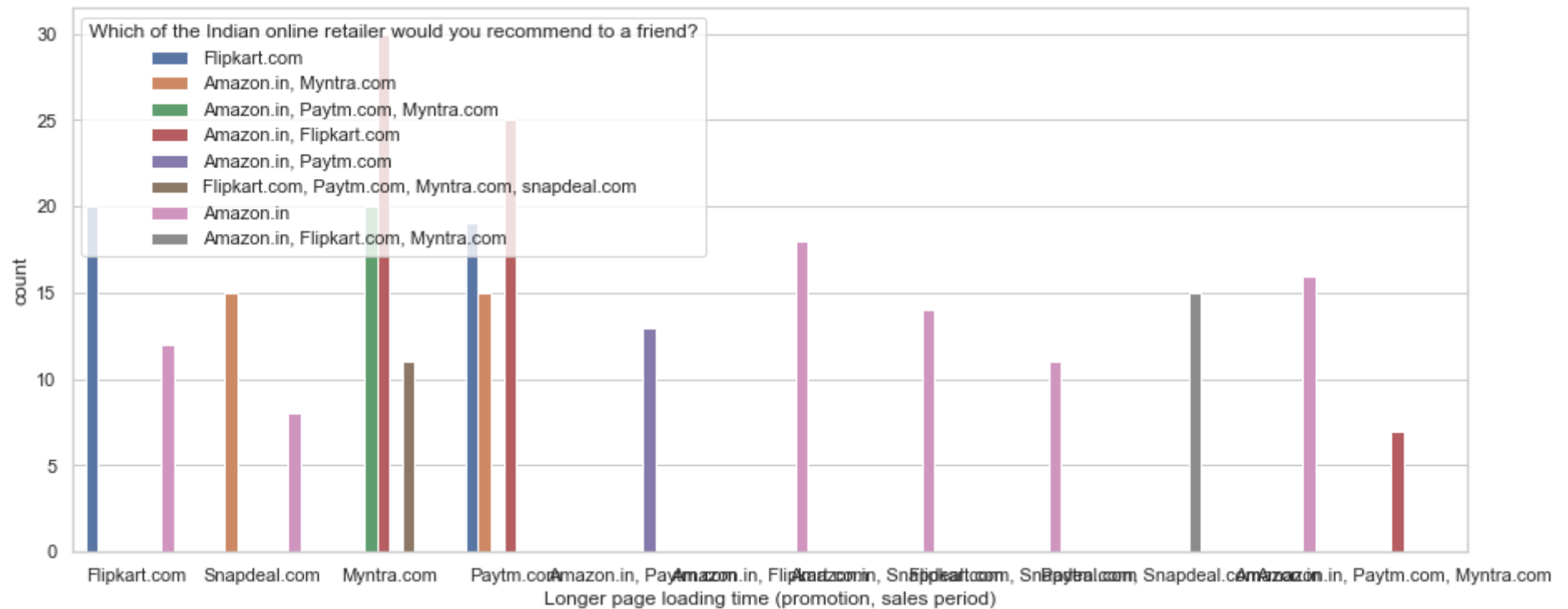
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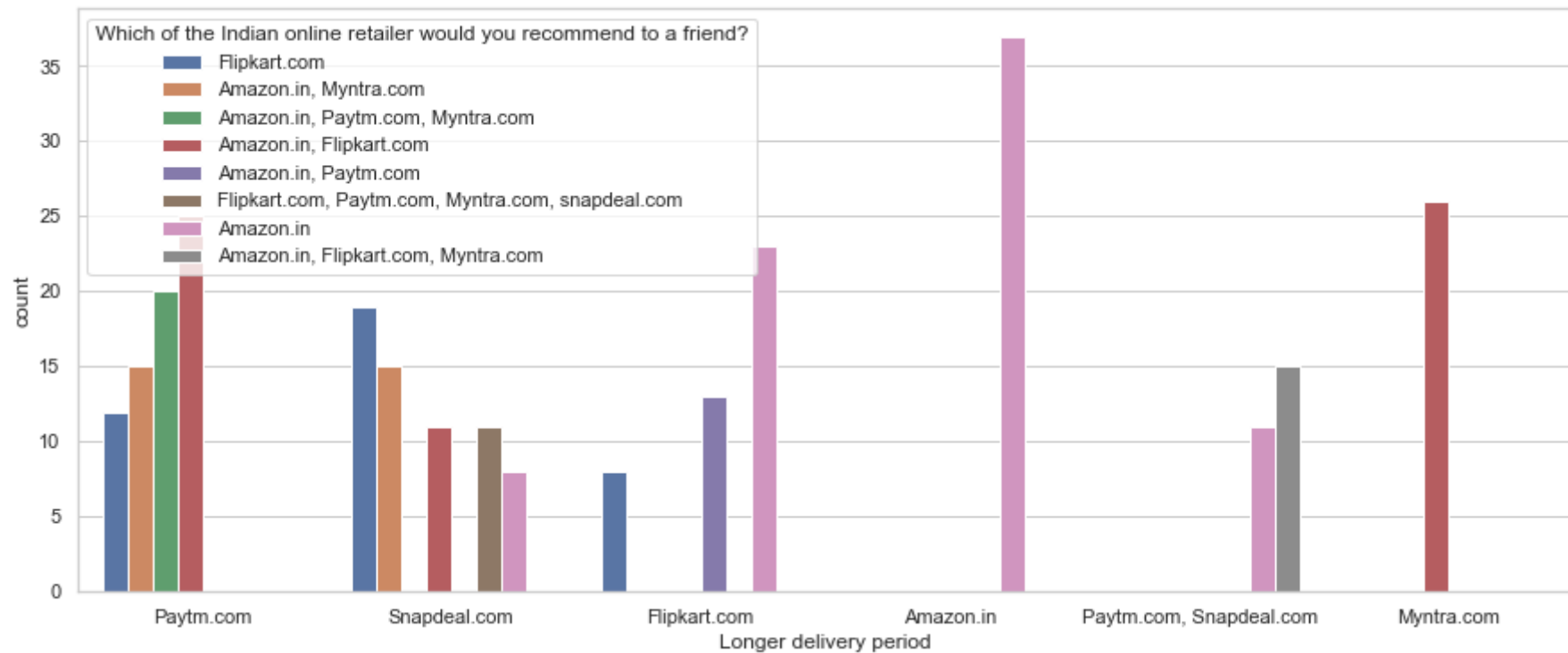
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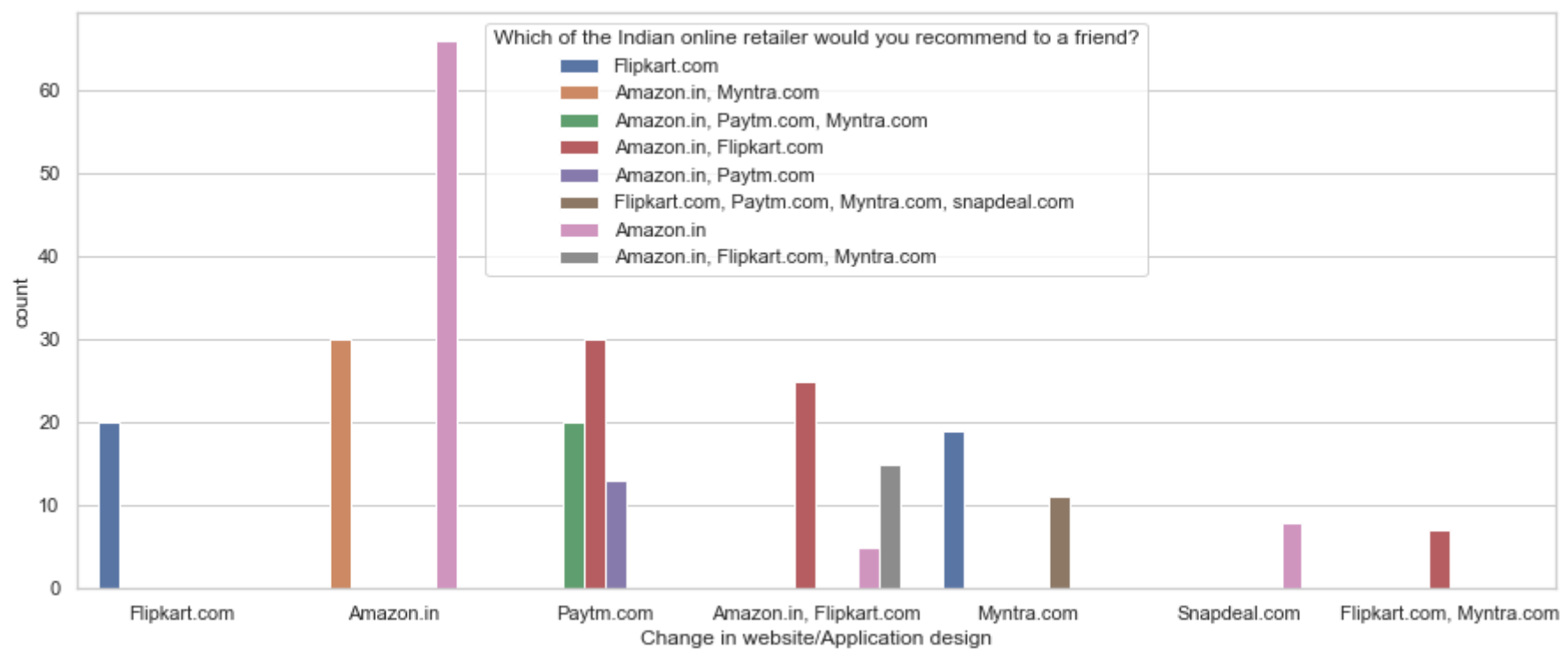
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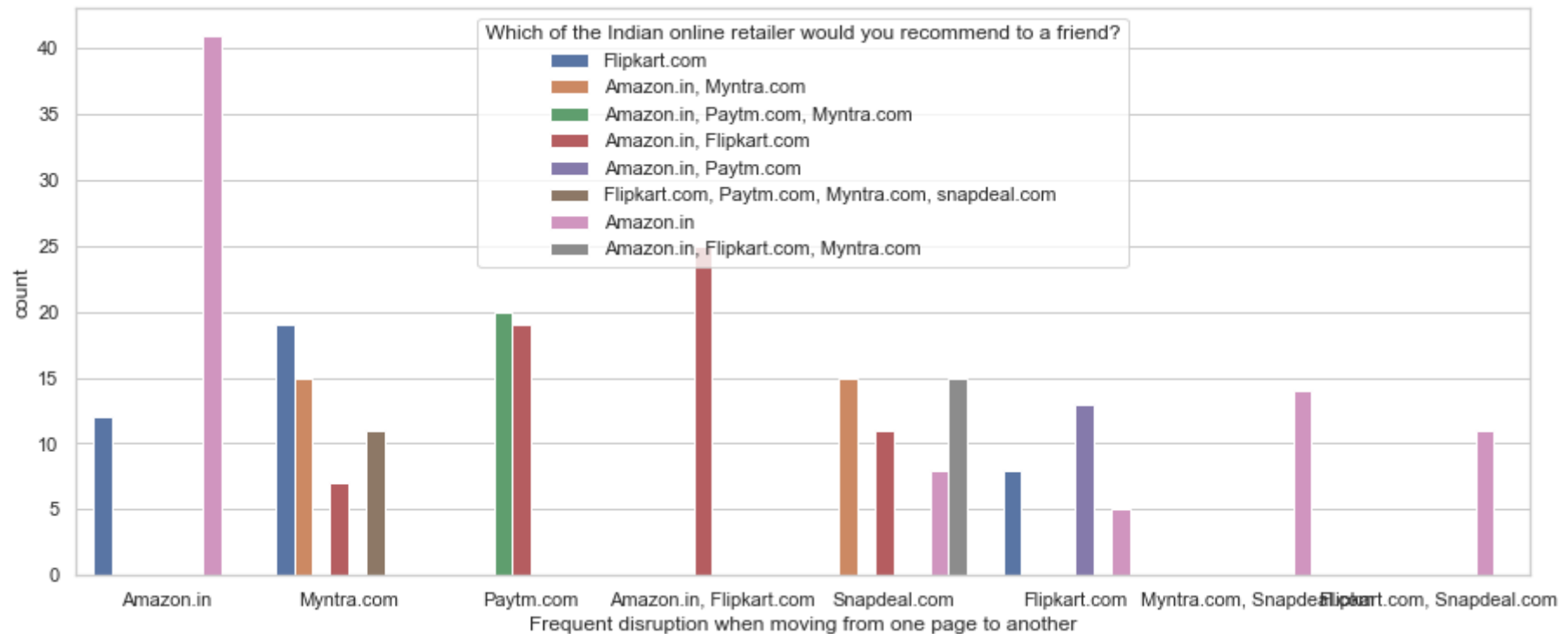
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