



Customer Retention- Analysis

Submitted by:

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(Internship 12)

ACKNOWLEDGMENT

I would like to thank my mentors at Data Trained, for their valuable and constructive suggestions during the planning and development of this project.

INTRODUCTION

- **Business Problem Framing**

The objective was to perform extensive data analysis on a given dataset and produce valuable insights that will help in customer retention

- **Conceptual Background of the Domain Problem**

Customer satisfaction has emerged as one of the most important factors that guarantee the success of online store; it has been posited as a key stimulant of purchase, repurchase intentions and customer loyalty. A comprehensive review of the literature, theories and models have been carried out to propose the models for customer activation and customer retention. Five major factors that contributed to the success of an e-commerce store have been identified as: service quality, system quality, information quality, trust and net benefit.

- **Motivation for the Problem Undertaken**

The combination of both utilitarian value and hedonistic values are needed to affect the repeat purchase intention (loyalty) positively
Objective behind the problem is to help ecommerce websites to find E-retail factors for customer activation and retention .

Analytical Problem Framing

- Mathematical/ Analytical Modeling of the Problem

1. The dataset consist of 71 features and 269 rows.
2. All of the attributes were of 'object' type except the pin code (int).
3. Dataset did not contained any null values.

- Data Sources and their formats

The data is collected from the Indian online shoppers. The sample data is in (.xlsx) format. The sample data for the reference is shown below:

```
In [62]: df=pd.read_excel('customer_retention_dataset.xlsx')
```

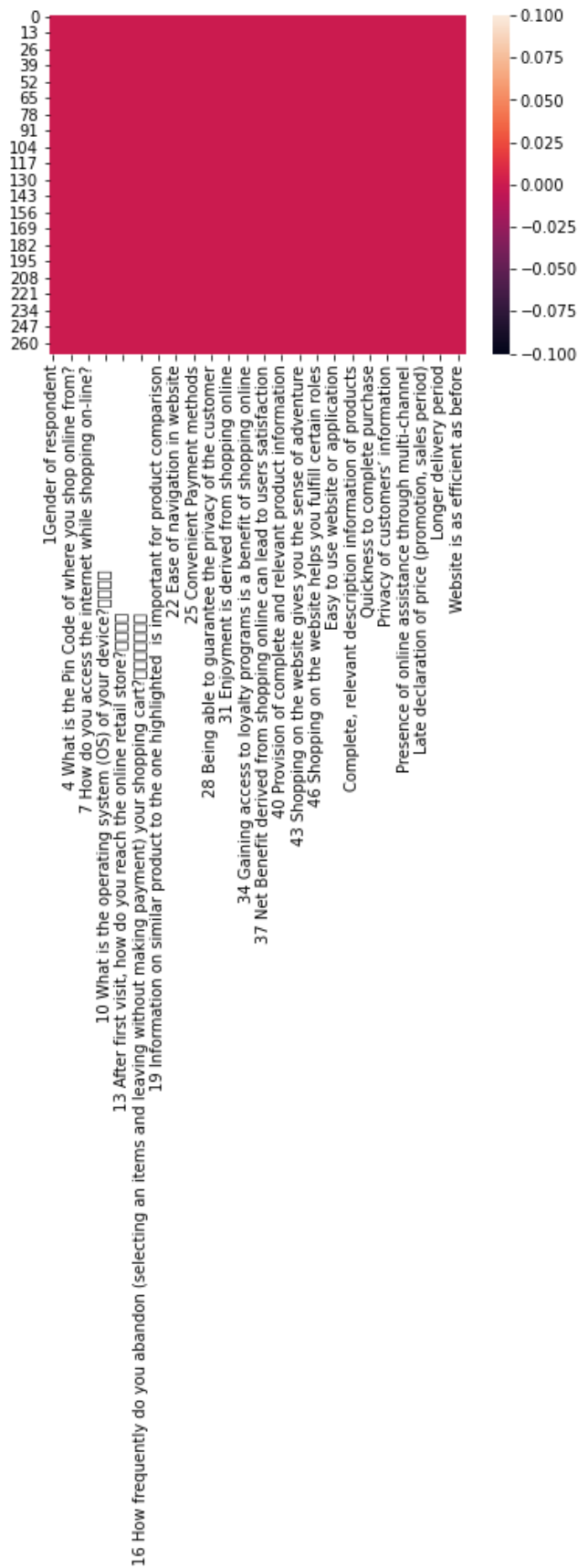
```
In [63]: df
```

```
Out[63]:
```

	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? (inches)	10 What is the operating system (OS) of your device? (Android, iOS, Windows)	Longer time to get logged in (promotion, sales period)	Longer time in displaying graphics and photos (promotion, sales period)	Lat declaration of price (promotion, sales period)
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.co
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.co
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.co
3	Male	21-30 years	Karnal	132001	3-4 years	Less than 10 times	Mobile Internet	Smartphone	5.5 inches	IOS/Mac	Snapdeal.com	Myntra.com, Snapdeal.com	Myntra.co
4	Female	21-30 years	Bangalore	530098	2-3 years	11-20 times	Wi-Fi	Smartphone	4.7 inches	IOS/Mac	Flipkart.com, Paytm.com	Paytm.com	Paytm.co
...
264	Female	21-30 years	Solan	173212	1-2 years	Less than 10 times	Mobile Internet	Smartphone	5.5 inches	Android	Amazon.in	Amazon.in	Amazon.i
265	Female	31-40 years	Ghaziabad	201008	1-2 years	31-40 times	Mobile Internet	Smartphone	Others	Android	Flipkart.com	Flipkart.com	Flipkart.co
266	Female	41-50 years	Bangalore	560010	2-3 years	Less than 10 times	Mobile internet	Laptop	Others	Window/windows Mobile	Amazon.in	Snapdeal.com	Amazon.i
267	Female	Less than 20	Solan	173229	2-3 years	Less than 10 times	Wi-Fi	Smartphone	5.5 inches	Android	Amazon.in	Amazon.in, Myntra.com	Amazon.i

Data Preprocessing

1 checking for null values in each column



The above heatmap shows that, no null values are present in the dataset.

- **Data Inputs- Logic- Output Relationships**

EDA was performed by creating valuable insights using various visualization libraries.

- **Hardware and Software Requirements and Tools Used**

- Framework-Anaconda
- IDE-Jupyter –Notebook
- Coding Language-Python
- Hardware used: system memory 8GB,
- Processor: core i3 Libraries used:
 - Below are the python library used in this project.
 - Pandas: To read the Data file in form of data.
 - Matplotlib: This library is typically used to plot the figures for better visualisation of data.
 - Seaborn: A advanced version of Matplotlib

Model/s Development and Evaluation

- **Identification of possible problem solving approaches**

Firstly I imported all the required libraries, followed by loading the data. Then did a statistical analysis on the dataset .Then deeply analyzed the data by finding a relationship between each attribute and the Customer according to given details and tried to find the factors that will help in Customer Retention.

- **Testing of Identified Approaches (Algorithms)**

Analysis carried out:

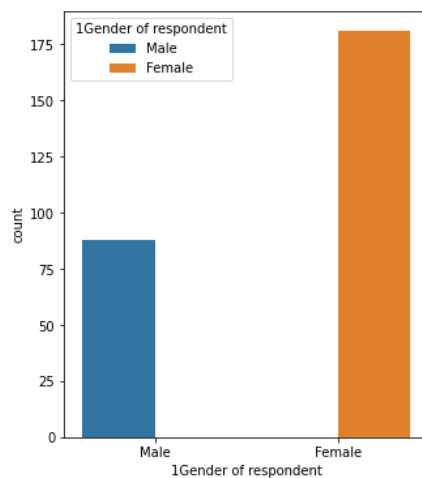
Visualizations were done using the seaborn library.

- **Visualizations and Observations**

visualizing each categorical column wrt count of each value

➤ **checking % of male & female present**

```
sns.countplot(df['1Gender of respondent'])
plt.title('Gender')
print(round(df['1Gender of respondent'].value_counts()/269*100),2)
Female      67.0
Male        33.0
Name: 1Gender of respondent, dtype: float64 2
```



We notice that Out of the total ,67% customer is female

visualizing each categorical column wrt count of each value

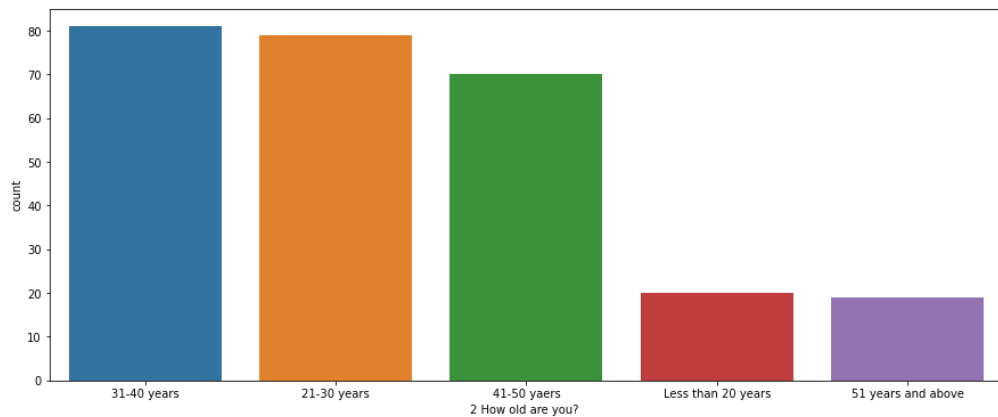
```
#visualizing each categorical column wrt count of each value
def value_count(column):
    diff_count=len(df[column].value_counts())
    if diff_count<5:
        plt.figure(figsize=(10,5))
    elif diff_count<10:
        plt.figure(figsize=(10,6))
        plt.xticks(rotation=90)
    elif diff_count<20:
        plt.figure(figsize=(25,6))
        plt.xticks(rotation=90)
    else:
```

```

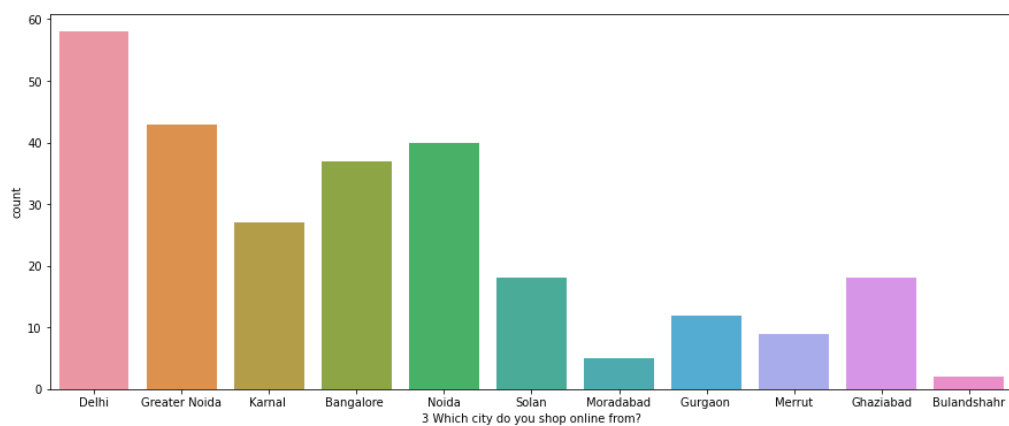
plt.figure(figsize=(20,6))
plt.xticks(rotation=90)
sns.countplot(x=column,data=df,orient='v')
plt.show()
#checking percentage of data classification in each string attribute
e
print(round(df[i].value_counts()/269*100),2)

for i in categorical:
    value_count(i)

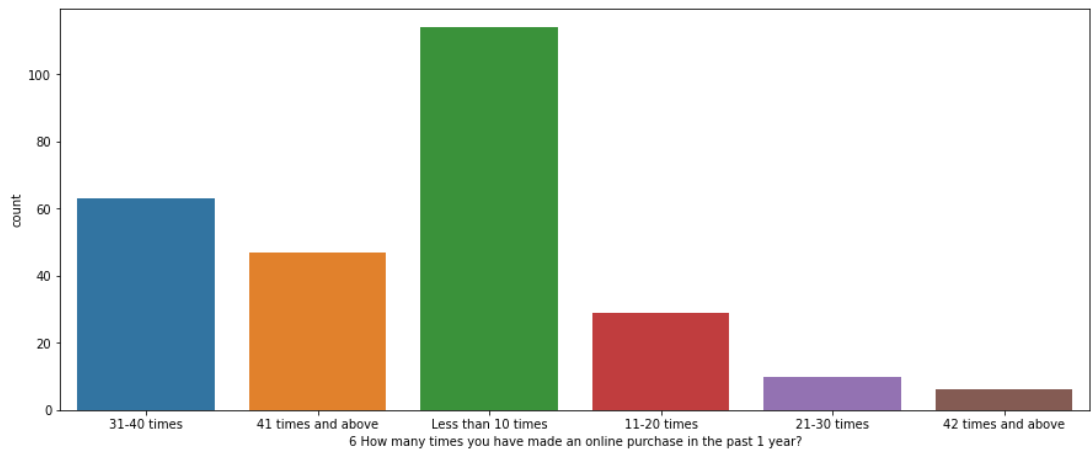
```



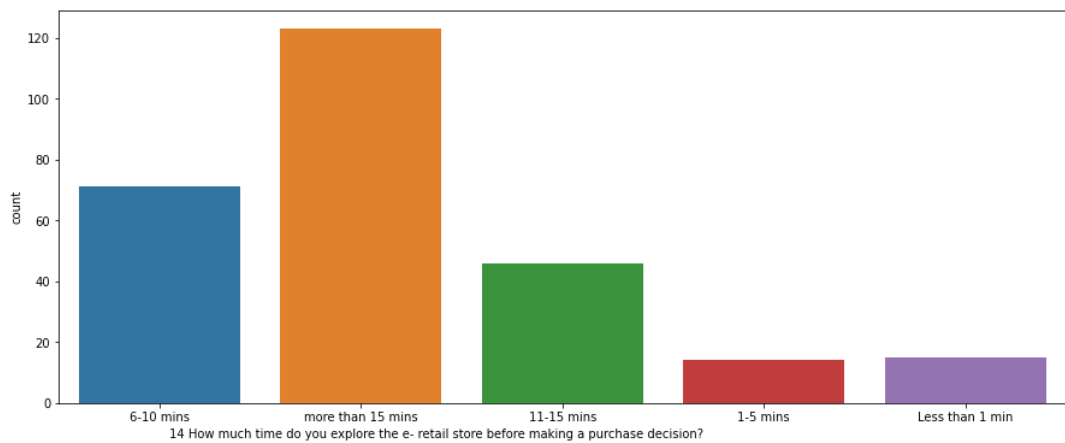
- Customers between 20 to 50 years shopped more from the online store. 75 % of customers are between 20 to 50



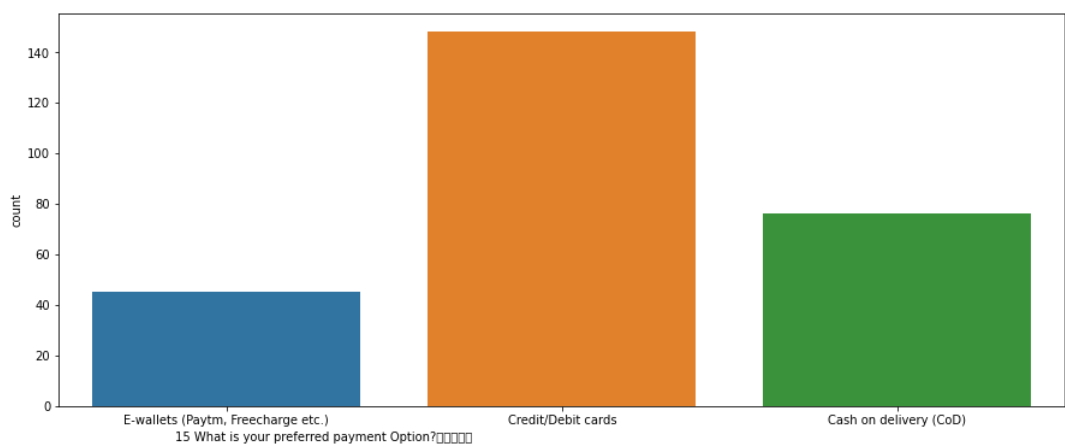
- Delhi,Bangalore,Noida are the cities with high number of buyers



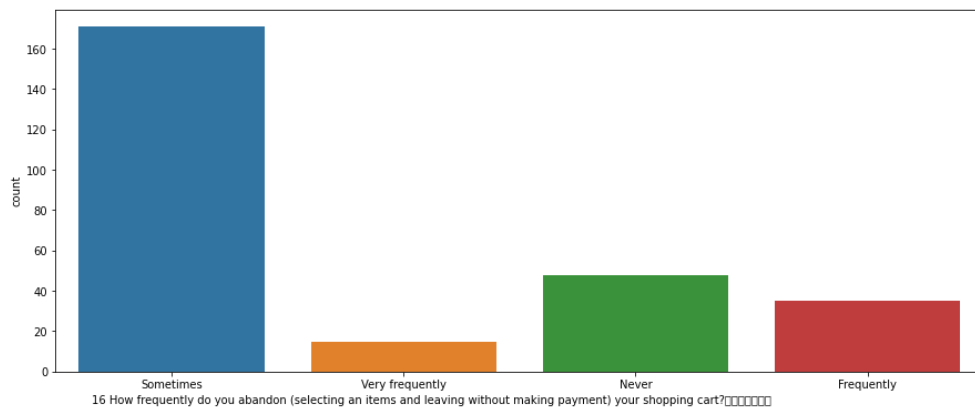
- In last one year 42% customers have purchased online less than 10 times, 23% customers purchased 31-40 times only 2 percent customers purchased more than 42 times



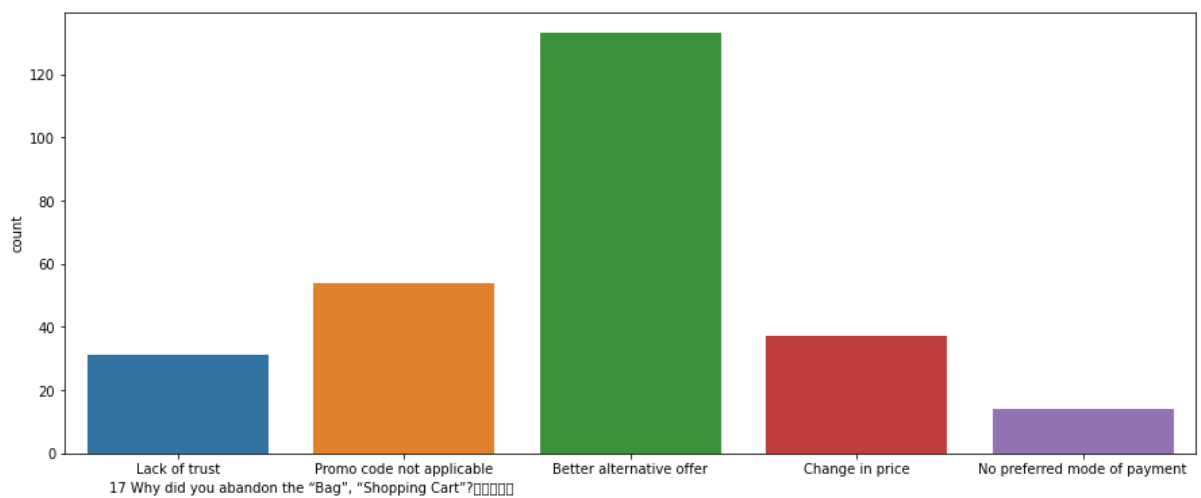
- 46% customers take at least 15 minutes before making a purchase, 26% take 6-10 minutes only



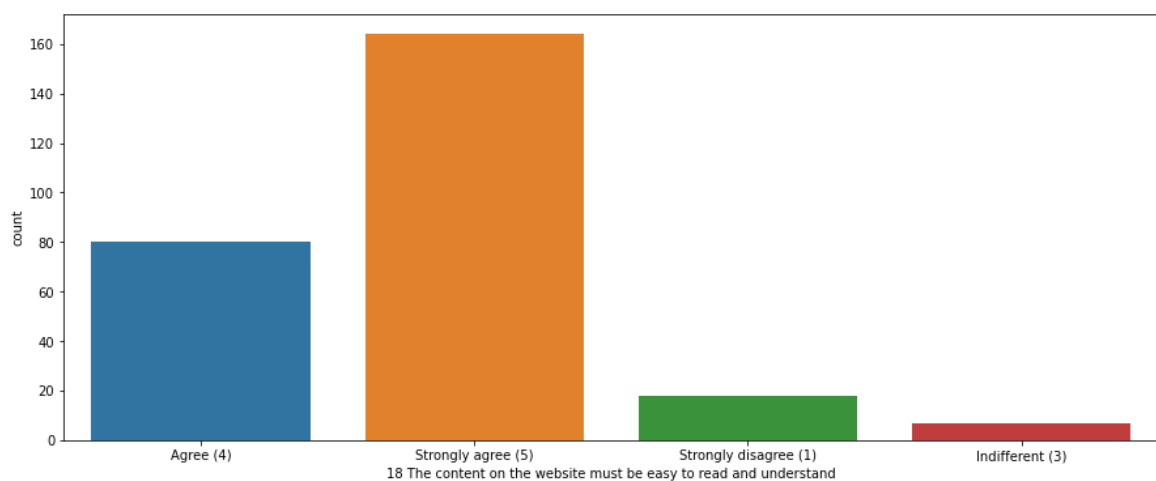
- 55% customers prefer Credit/Debit cards to make payments, 28% preferred COD and 17 % preferred Ewallets



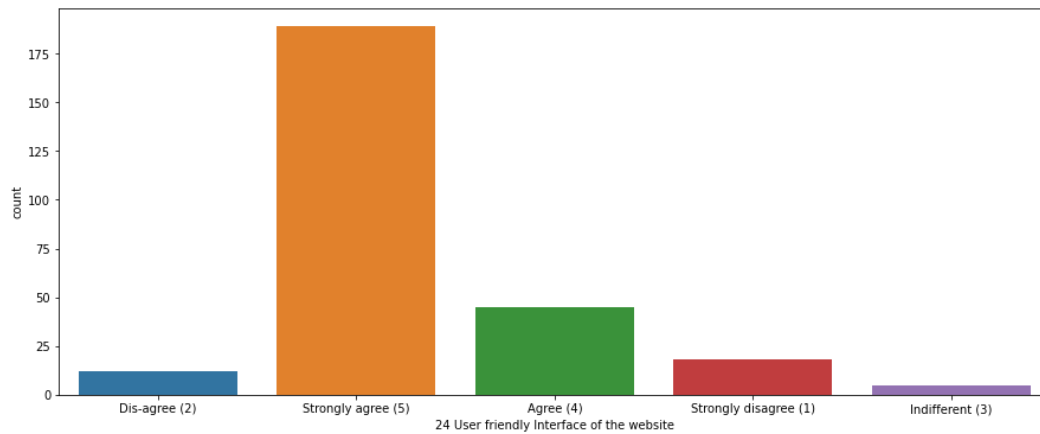
- 64% customers abandon their shopping cart sometimes, 19% abandon their cart frequently



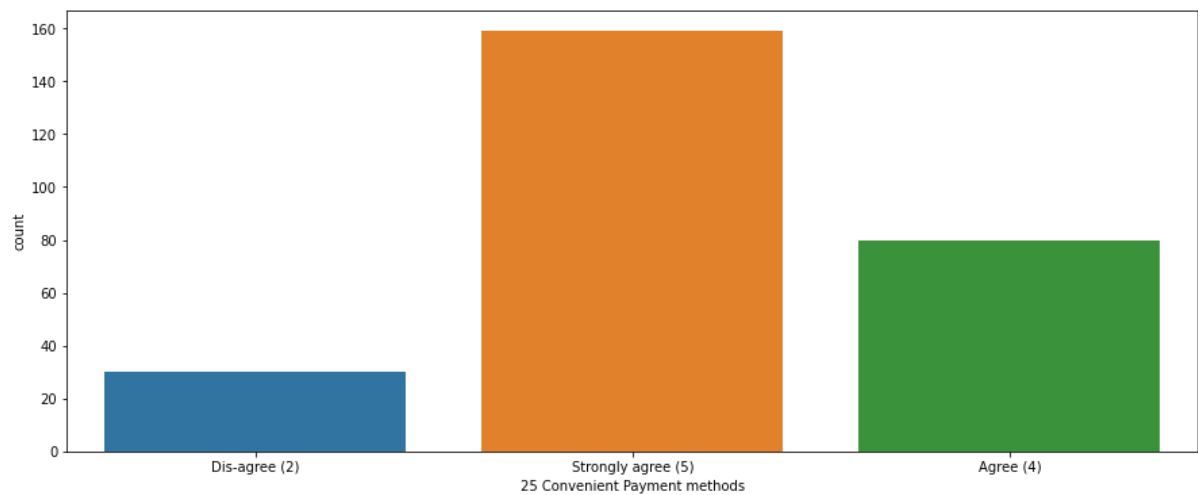
- 49% customers abandon their bag due to better alternative offer, 20% abandon due to promocode not applicable



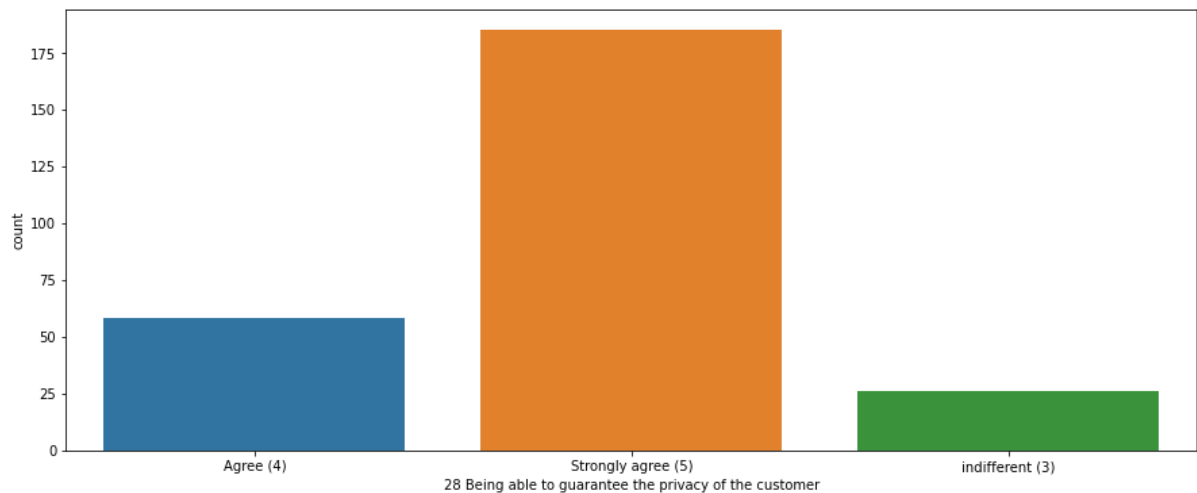
- 90% customers agrees all relevant information on listed products must be stated clearly.



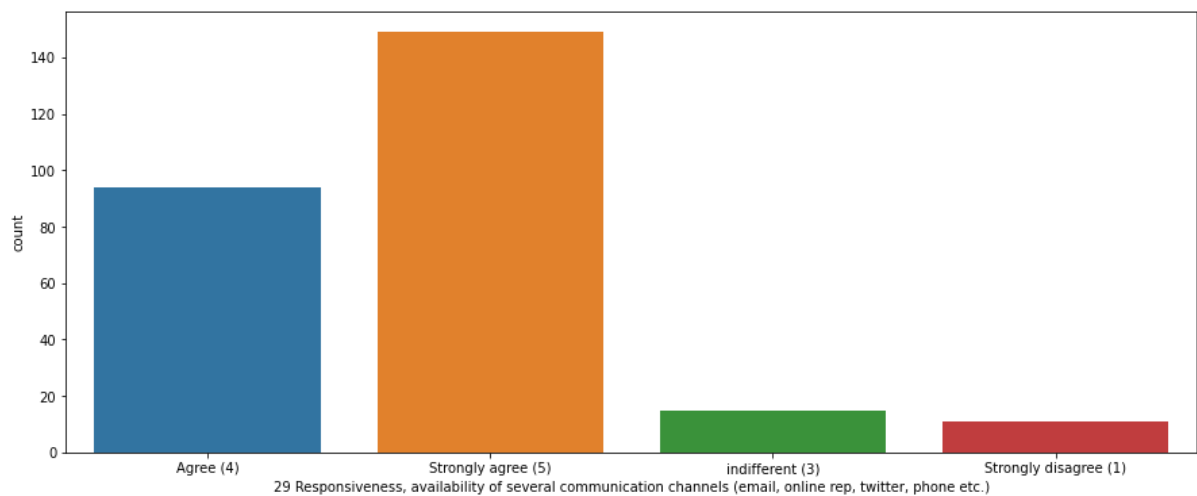
- 87% customers agree with user friendly website interface. The online stores should invest heavily in creating user friendly apps and websites, so that the customers do not have to work around much and the overall shopping experience is smooth



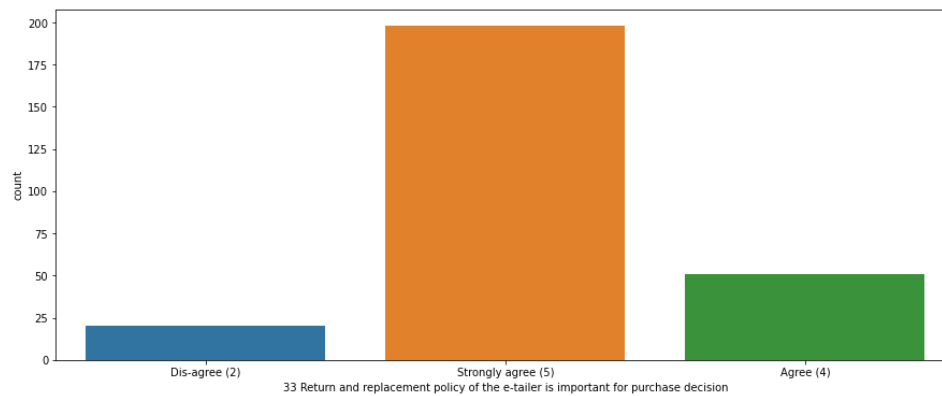
- 59% customers strongly agree with the convenient paying methods. The reluctance to make online payments is gradually reducing. The acceptance has been built by addressing the trust issue over time by giving customers an option to pay online or to pay Cash On Delivery (COD)



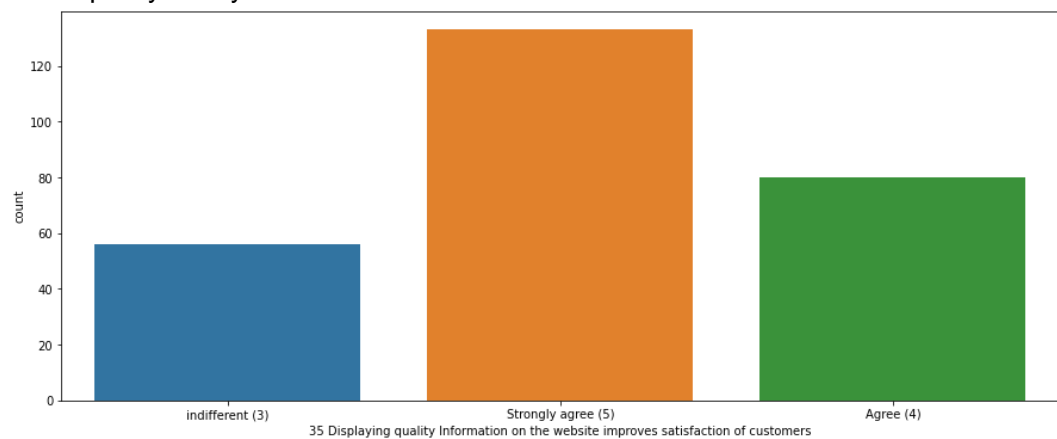
- Being able to guarantee the privacy of the customer: This also got 69% strongly agree. Customers are concerned about the unauthorized access to their data. Protecting user privacy will enable stores to drive more revenue and gain more customers



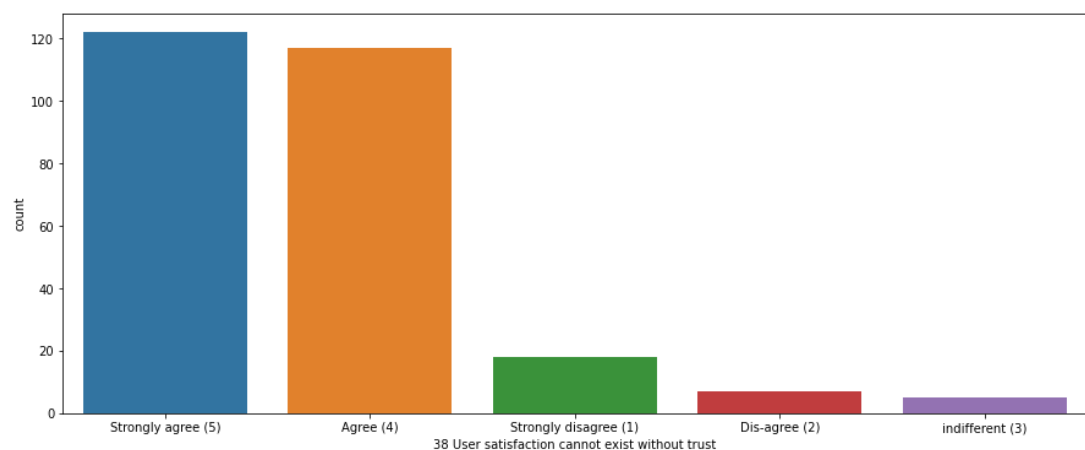
- Responsiveness, availability of several communication channels (email, online rep, twitter, phone etc.): 90% customers agreed to it. In case one channel is not available, customers can reach out to multiple channels which again is an important factor. Being able to communicate easily can make the difference in both their shopping experience as well as fulfill business goals of online store.



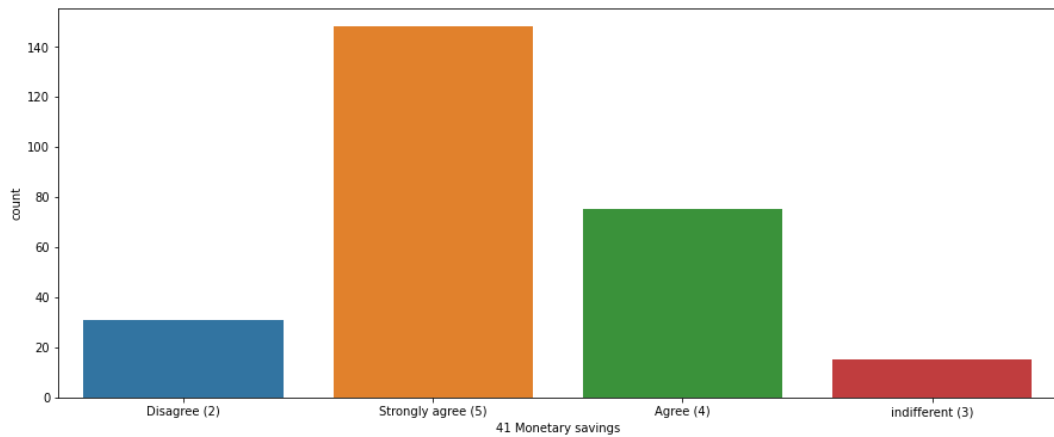
- 90% customers agree that return and replacement policy helps them making purchase decision. It is evident from the fact that people cannot actually try & touch the products ,they are purchasing before it reaches home and they would want to return or replace in case of dissatisfaction. Online shopping websites should make strategies around easy return and replacement policy if they want to retain their customers.



- Displaying quality Information on the website improves satisfaction of customers:80% customer agreed to it.It means displaying quality information have a significant association with customer satisfaction, and repurchase intentions



- User satisfaction cannot exist without trust:85% customers agree that customer satisfaction cannot be built without trust.Trust is important factor to attract e-commerce buyers.So, it is important for companies to learn how to manage consumers' trust



- 50% agree that online shopping gives monetary benefit and discounts to the customer: Most online shopping sites offer amazing round-the-year discounts. Banks and Digital Wallets have happily jumped on the online shopping bandwagon by providing Reward Points, and instant CashBack offers in addition to brand discounts, which will help to gain new customers

❖ Observation from all the count plot.

- 36% customers were found shopping online for more than 4 years , 24% were shopping for 2-3 years
- IN last one year 42% customers have purchased online less than 10 times, 23% customers purchased 31-40 times only 2 percent customers purchased more than 42 times
- 70% customers used mobile internet for online purchase,
- After first visit 32 % customers used search engine to reach online store and 32% uses application. We can assume that these customers have been retained by the E commerce website as they have downloaded the application on their phone and have a fair chance of shopping again. Also, there are a few customers who are using Desktop/Laptop, for which, there are no applications for online shopping and you have to stick with the web browser.
- 46% customers take at least 15 minutes before making a purchase, 26% take 6-10 minutes only
- 55% customers prefer Credit/Debit cards to make payments , 28% preferred COD and 17 % preferred Ewallets
- 49% customers abandon their bag due to better alternative offer, 20% abandon due to promocode not applicable

- 61% customers have strongly agreed to have easy website content which is easy to understand
- 43% customers agree that Information on similar product to the one highlighted is important for product comparison.
- 70% customers agree that Complete information on listed seller and product being offered is important for purchase decision
- 90% customers agrees all relevant information on listed products must be stated clearly.
- 90% cusotmers agreed that the website should be easily navigable
- 85% cusotmers had no issues with the loading and processing speed
- 52% customers trust that online store will fufill its part of transaction at stipulated time
- 85% customers like the organization's readiness to assist with queries
- 60% customers enjoys online shopping
- 84% customers agree that online shopping is convenient and flexible:
- Around 50% customers agree that gaining access to loyalty program is a benefit of shopping online
- Displaying quality Information on the website improves satisfaction of customers:80% customer agreed to it.It means displaying quality information have a significant association with customer satisfaction, and repurchase intentions
- 95% customers are satisfied while shopping on a good quality website
- Net Benefit derived from shopping online can lead to users satisfaction:90% customers agreed
- Offering a wide variety of listed product in several category:75% use agreed.

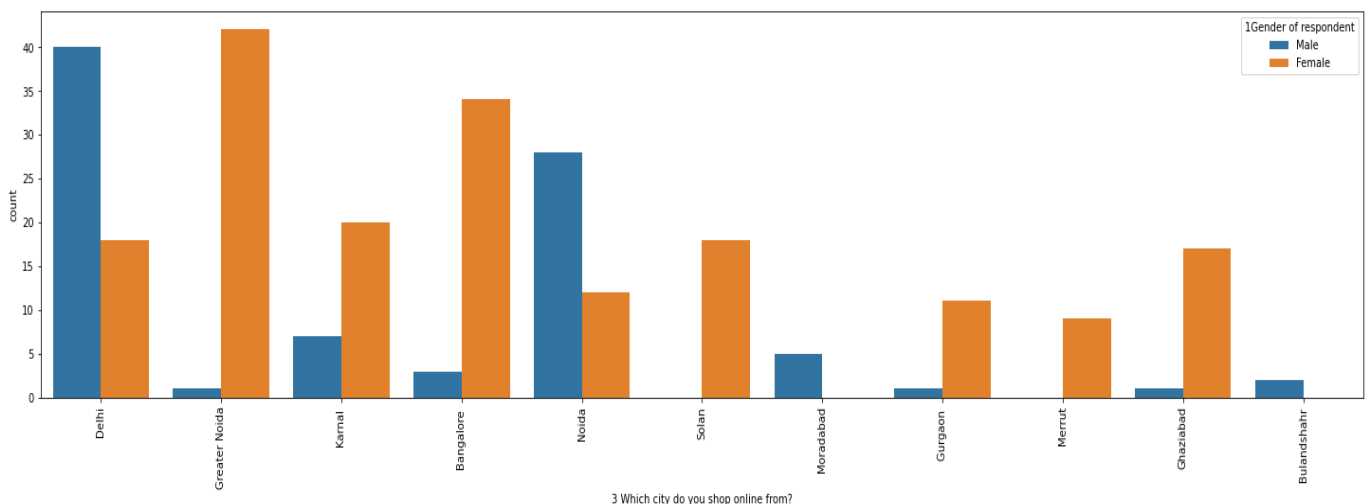
- 86% customers like to have complete and relevant information
- 80% customers agree to receive monetary savings while shopping online
- 50% agree with the convenience of patronizing the online retailer
- 50% customers agree that online shopping give the sense of adventure
- only 30% customers agree that online shopping enhances their social status
- 45% customers feel gratified while shopping with their favorite retailer
- 45% customers feel that shopping online helps them fulfill certain roles
- 85% customers agree they get value for their money while shopping online

Observations from Multiple Options based Questions .ie related to company name specific parameters,after 47th rows

- Maximum people have shopped from these 5 companies - Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com.
- 48% customers says flipkart, amaon shows wide variety of products
- 37% customers like flipkart and amazon in terms of displaying complete and relevant information of the products
- In terms of speed Amazon.in is liked by 90% customers , 60 % like Flipkart , 27% Myntra
- 78% customers trust Amazon to be reliable , 55% likes flipkart , 25% Myntra
- 80% customers likes Amazon's quickness to complete the purchase , 60% likes Flipart's, 30% likes myntra's
- 86% likes Amazon's delivery speed , 56% likes flipkart's , 5% likes myntra's
- 82% customers trust amazon in terms of keeping the privacy of their data, 56% trust flipkart 20% trust myntra , 12 % trust snapdeal
- 70% trust amazon in terms of keeping their financial information secured, 56% flipakrt, 34% myntra , 21% snapdeal , 22@ paytm
- 84% customers believe Amazon perceived trustworthiness, 43% - Flipkart , 33% - Myntra ,snapdeal 27% snapdeal

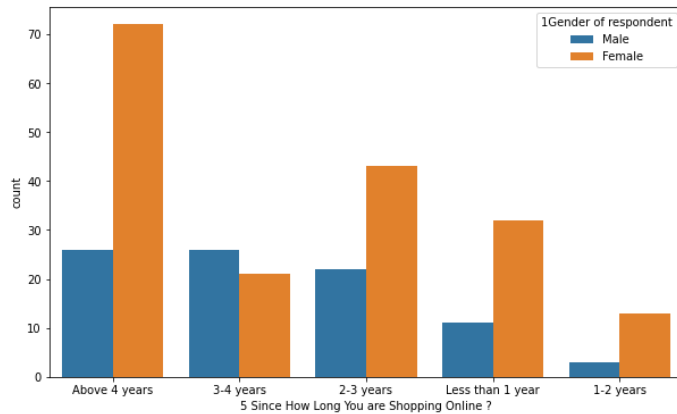
- 46% customers says that amazon takes longer time in displaying photos in sales/promotion , 35%- flipkart, 21% snapdeal, 14% myntra, 11% paytm
- In terms of longer page loading in promotion/sales -- 26% customer goes with myntra, 23% -flipkart,23% -amazon,24% snapdeal
- In terms of limited mode of payment on most products during sales period/promotions -- 41% goes with snapdeal, 40% -amazon,23% flipkart, 20% paytm and only 3% myntra . Hence myntra gives most payment options during sales/promotion.
- In terms of time taken in product delivery-- paytm has highest votes of 37%, snapdeal 24%, flipkart 16%, amazon 14% and snapdeal and myntra 10%. hence snapdeal and myntra takes minimum time for delivery among all.
- 20% customers dislikes disruptions while moving to another page on amazon, 24% on myntra, 27% snapdeal, 14% paytm,23% snapdeal
- 61% customers says that amazon website is as efficient as before, 43% for flipkart,22% for paytm,9% for snapdeal
- 81% customers would like to recommend amazon to a friend, 43% would like flipkart , 22% would like for myntra ,9% for paytm and least 4 % would like to recommed snapdeal

➤ Checking male/female shoppers vs which city do you shop online from?

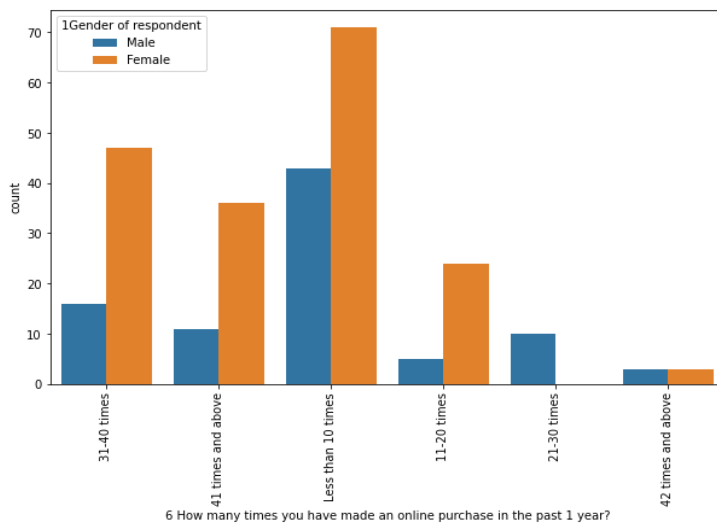


- Even though females are dominant in the dataset, female population using ecommerce is not dominant everywhere In Delhi and Noida more number of males are using ecommerce than female.

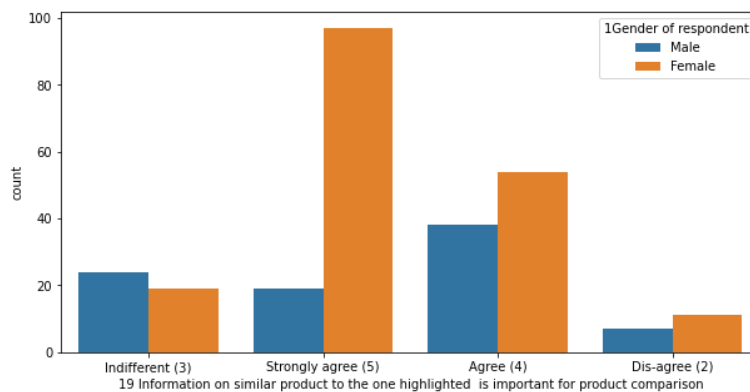
Bulandshahr and Moradabad - both cities in UttarPradesh has no female shoppers at all.



- Number of females who are shopping since long are more than number of males



- Most of the females usually takes more than 15 min, while most of the male spend 6-10 min before making a purchase decision.



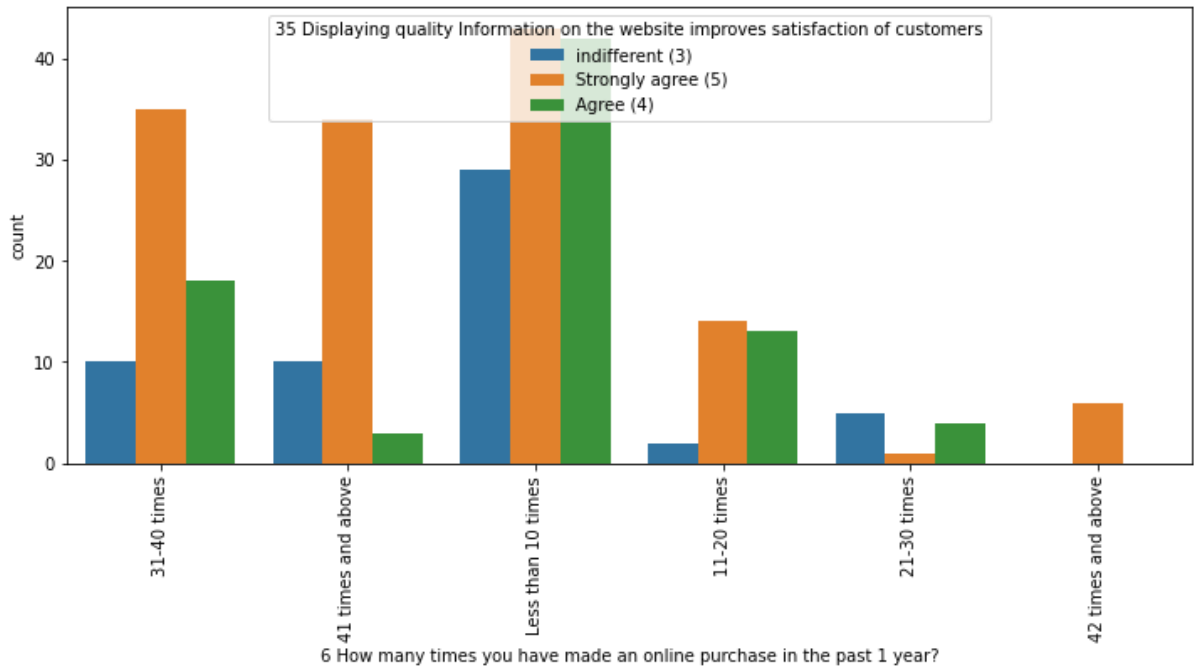
- More females strongly agree with the fact that there must be similar products to compare. Males do agree with the fact but the data suggests that it is okay if there exists a product but also okay if there does not exist one.

➤ Other observations

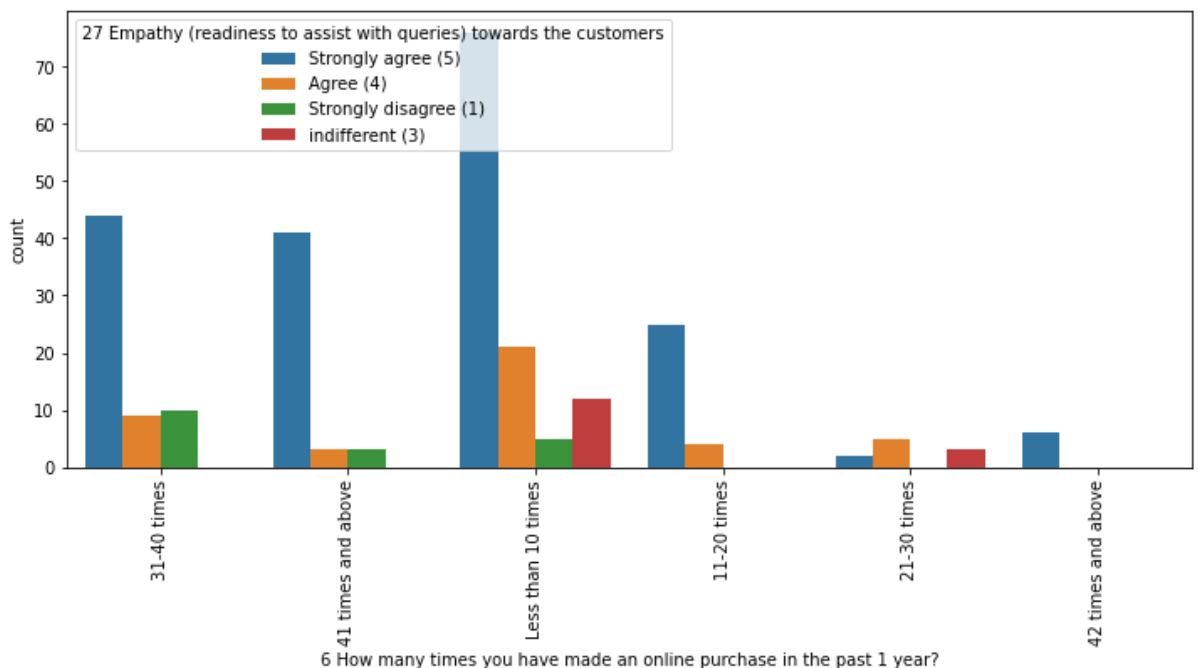
- Change in opinion is observed when asked if they enjoy shopping online, where females enjoyed shopping online while the response in males was indifferent.
- Both men and women agree or strongly agree in majority that a good website or application leads to user satisfaction
- Both men and women agree or strongly agree in majority that a good website or application leads to user satisfaction

❖ Checking How many times you have made an online purchase in the past 1 year? Vs other feature

```
df2=df.iloc[:, [0,1,2,4,5,13,14,16,26,31,32,34,41,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70]]
for i in df2.columns:
    print(i, 'vs How many times you have made an online purchase in the past 1 year?')
    plt.subplots(figsize=(12,5))
    sns.countplot(x='6 How many times you have made an online purchase in the past 1 year?', hue=i, data=df2)
    plt.xticks(rotation=90)
    plt.show()
```

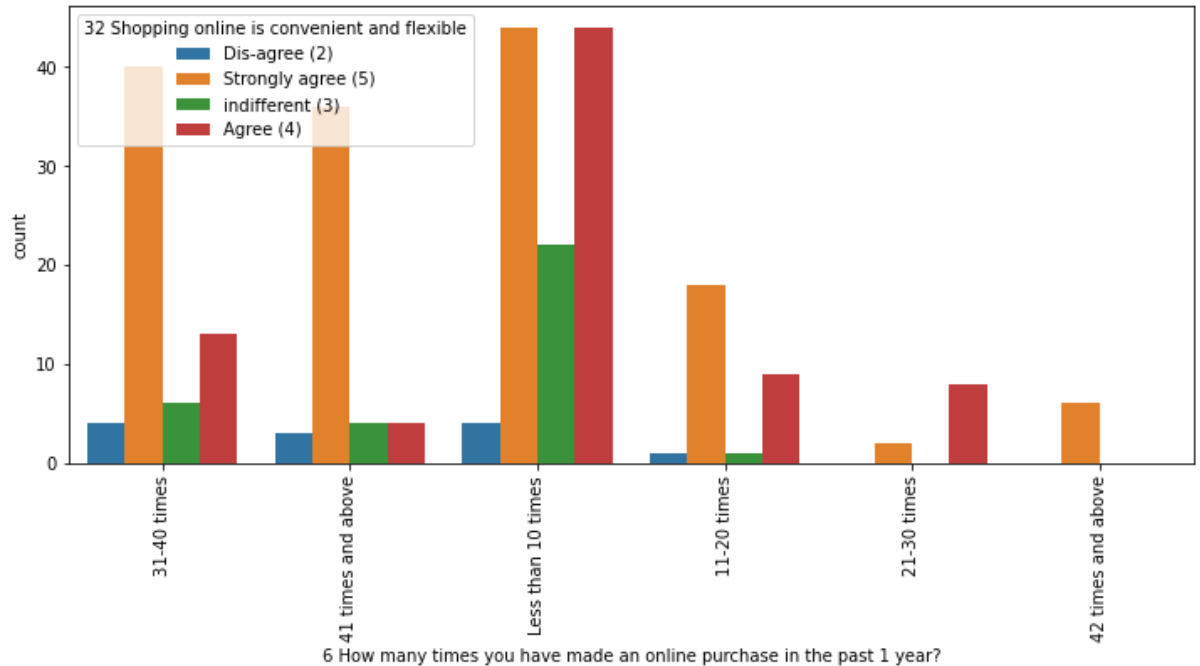


- Displaying quality Information on the website improves satisfaction of customers: Most of the customers strongly agreed to this. Shoppers expect online retailers to provide all relevant and accurate information about the product. Providing appropriate information can help online retailers to dispel concerns and fears of consumers towards a particular product or online shopping

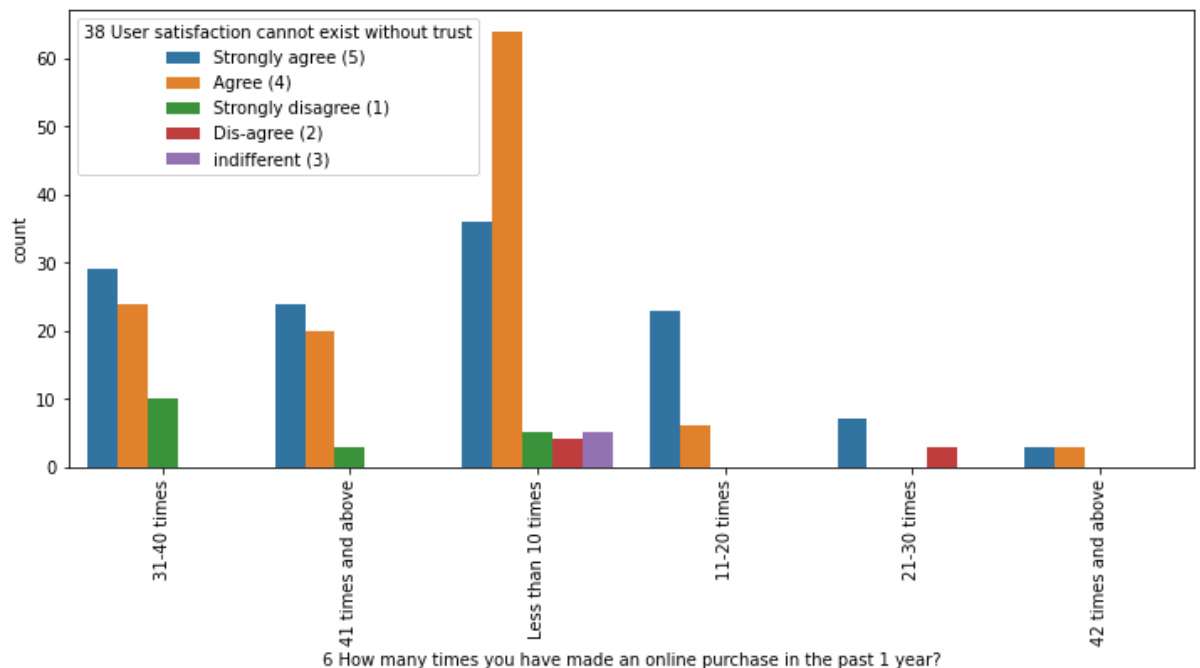


- It can be seen clearly that all customers irrespective of the purchase count strongly agree with the empathy which means empathy is very important for customer satisfaction and hence retention. The reason is insecurity amongst the customers. If they have a provision of a helpline number associated with the website, that sense of insecurity vanishes

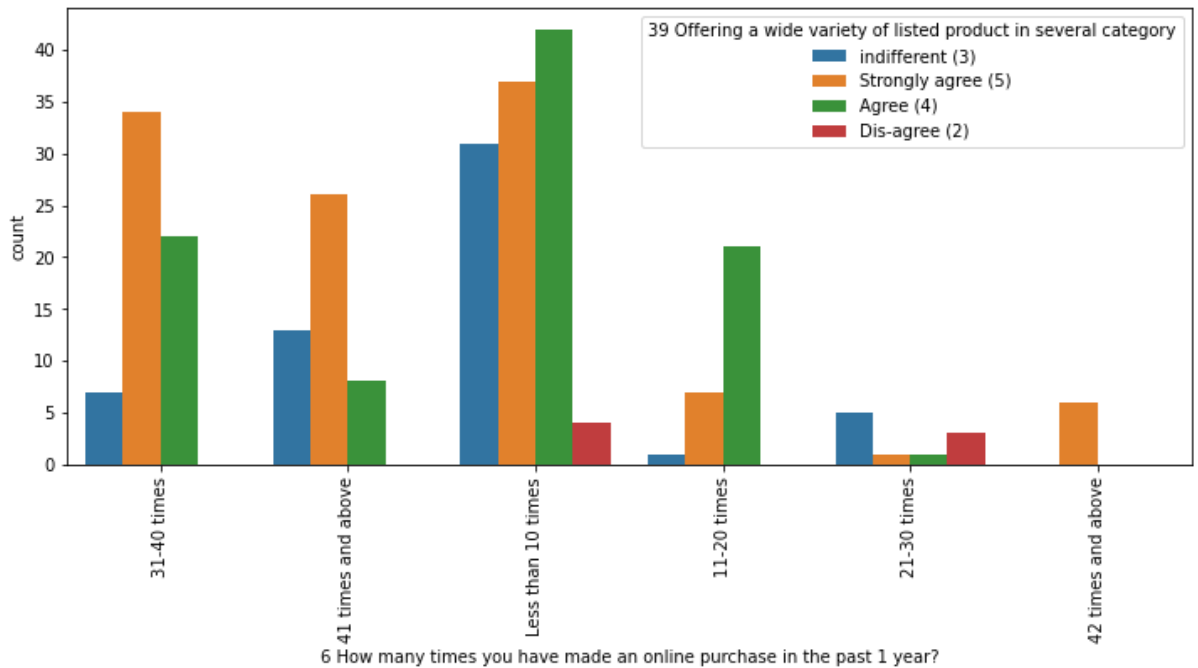
and the customer can trust the website more. A 24X7 support is a must for these online retail stores.



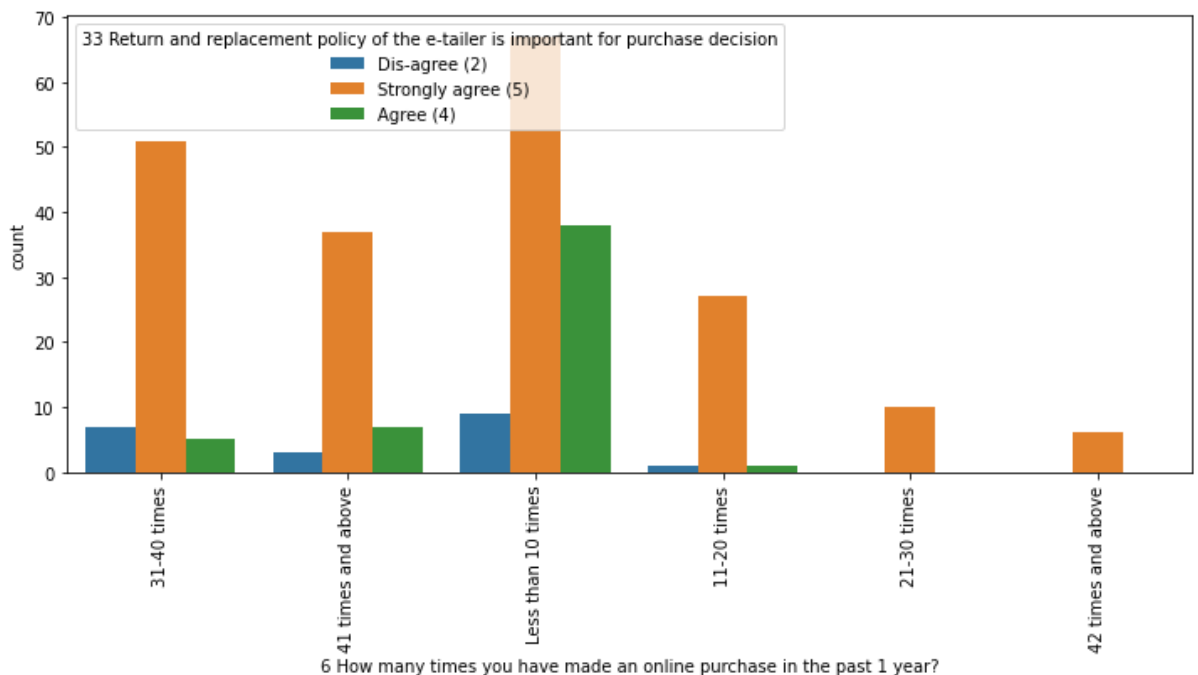
- Maximum customers agree with online shopping being flexible, irrespective of purchase count as it provides freedom to shop without the influence or pressure from sales staff often encountered in offline stores.



- User satisfaction cannot exist without trust: We see that, user with lack of trust have shopped less number of times. It means, trust is an area where online shopping still lags as several instances have been reported of customers being duped on receiving products that did not match the description claimed or turned out to be knock-offs. So, it is important for companies to learn how to manage consumers' trust



- Offering a wide variety of listed product in several category: Customers having purchase frequency of more than 30 times strongly agree to it. It means product variety increases consumers' likelihood of finding a good match with their preferences



Other observations:

- Most of the individuals that do online shopping are from the age group 21-30 yrs. and, 31-40 yrs. People below 20 years, & people over 50 years of age do not do much online shopping.
- Customers from Delhi, Noida & Bangalore region have shopped most number of times.

- Most customers who purchased less than 10 times abandoned the cart due to better alternative offer. customers purchasing more than 41 times abandoned due to promo code not applied Or better alternative offer
- We can clearly see that return and replacement policy plays an important role in customer satisfaction.
- Customers who have shopped more than 30 times strongly agree that net benefit from online purchase leads to user satisfaction Hence net benefit derived is an important factor for customer retention
- Customers with high purchase agree to get monetary savings
- Highest number of customers have shopped from amazon, paytm and myntra
- Highest number of customers like amazon, paytm and myntra web page layout
- Highest number of customers like amazon and flipkart in terms of variety of product offered
- Highest number of customers like amazon and flipkart in terms of relevant and complete description of products
- Highest number of customers like Amazon in terms of quickness to complete purchase
- In terms of payment option Amazon, flipkart and myntra are liked most by the high purchase frequency customers
- Amazon stands apart in terms of speed of order delivery and privacy of customers information
- Highest number of customers like amazon, flipkart in terms of security of customer private information
- Amazon perceived highest trustworthiness of high purchase frequency customers
- Most user claims flipkart to take maximum login time during sales/promotion
- Highest customer claims myntra to take maximum time in displaying graphics and photos

➤ **In, short ,amazon & flipkart are liked by most number of people ,in terms of online shopping**

CONCLUSION

Customer retention doesn't improve overnight. Customer retention is fickle when customer service is lacking. Few ways to improve customer retention can be as follows:

➤ **Easily navigable :**

90% customers agreed that the website should be easily navigable. Website navigation is a key to the success of any e-commerce website. It should be clean, clear and user-friendly. Online store should create easy-to-use navigation on website to make sure that customers don't get confused while surfing the site.

➤ **User-friendly websites:**

87% customers agree with user friendly website interface. The online stores should invest heavily in creating user friendly apps and websites, so that the customers do not have to work around much and the overall shopping experience is smooth, & shoppers get what they want faster and without running into unnecessary complexity that can clog up the path to purchase. It should focus on the user experience by providing shopping categories, filters, and comparison capabilities. User-friendliness requires that your website works on all browsers and devices

➤ **Improve return & refund policy:**

Return policies are an essential feature of any ecommerce website. 90% customers agree that return and replacement policy helps them making purchase decision. It is evident from the fact that people cannot actually try & touch the products, they are purchasing before it reaches home and they would want to return or replace in case of dissatisfaction. Online shopping websites should make strategies around easy return and replacement policy if they want to retain their customers. This is another trust-building feature of online selling, which reassures buyers that if they are unhappy or just need a different size, the brand is there for them.

➤ **Privacy Policy:**

Being able to guarantee the privacy of the customer: 92% Customer agreed to this. Customers are concerned about the unauthorized access to their data. Building trust with the customers is crucial for any e-commerce website. An e-commerce privacy policy statement makes business more transparent

and trustworthy. Through this, online store can ease customer concerns regarding how you collect, manage, and use data from site visitors.

➤ **Displaying quality Information on the website :**

90% customers agrees all relevant information on listed products must be stated clearly. Content is one of the crucial challenges for any e-commerce website. it's simply not enough to just list a product name and image on a product page and expect the orders to roll in. Compiling a compelling array of product data, whether that's dimensions, MPNs or spec sheets can all help to convert customers better.

➤ **Responsiveness, availability of several communication channels (email, online rep, twitter, phone etc.):**

90% customers agreed to it. In case one channel is not available, customers can reach out to multiple channels which again is an important factor. Being able to communicate easily can make the difference in both their shopping experience as well as fulfill business goals of online store.

✚ when customers are satisfied with a company or service, there is a high possibility that they will share their experience with other people
Therefore it is crucial for E-commerce to take into account their customer satisfaction because this will retain customer loyalty as well as attract potential customers.

❖ **Limitations of this work and Scope for Future Work**

Since the given dataset is very small. The analysis will be limited in scope .More data of such customers will definitely help increasing the probability of findings drawn above