



**PROJECT REPORT  
ON  
DATA ANALYSIS OF CUSTOMER  
RETENTION IN E-COMMERCE PLATFORM**

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## ACKNOWLEDGMENT

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A huge thanks to “Data trained” who are the reason behind my Internship at Fliprobo. Last but not least my parents who have been my backbone in every step of my life.

References use in this project:

1. SCIKIT Learn Library Documentation
2. Blogs from towards data science, Analytics Vidya,
3. Andrew Ng Notes on Machine Learning (GitHub)
4. Data Science Projects with Python Second Edition by Packt
5. Hands on Machine learning with scikit learn and tensor flow by Aurelien Geron
6. Medium.com

## Chap. 1 INTRODUCTION

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 or 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.

Customer retention strategies enable you to both provide and extract more value from your existing customer base. You want to ensure the customers you worked so hard to acquire stay with you, have a great customer experience, and continue to get value from your products. Therefore, knowing how to maximize the repurchase intention of Indians online consumers' is vital for an online retailer in India to achieve its business goals. This may further lead to develop a general reference model for successful online retail business. Success of an online retail website depends on its system quality and how much consumer motivator values are derived through shopping from it.

The research furthermore investigated the factors that influence the online customers repeat purchase intention. The combination of both utilitarian value and hedonistic values are needed to affect the repeat purchase intention (loyalty) positively. The data is collected from the Indian online shoppers. Results indicate the e-retail success factors, which are very much critical for customer satisfaction

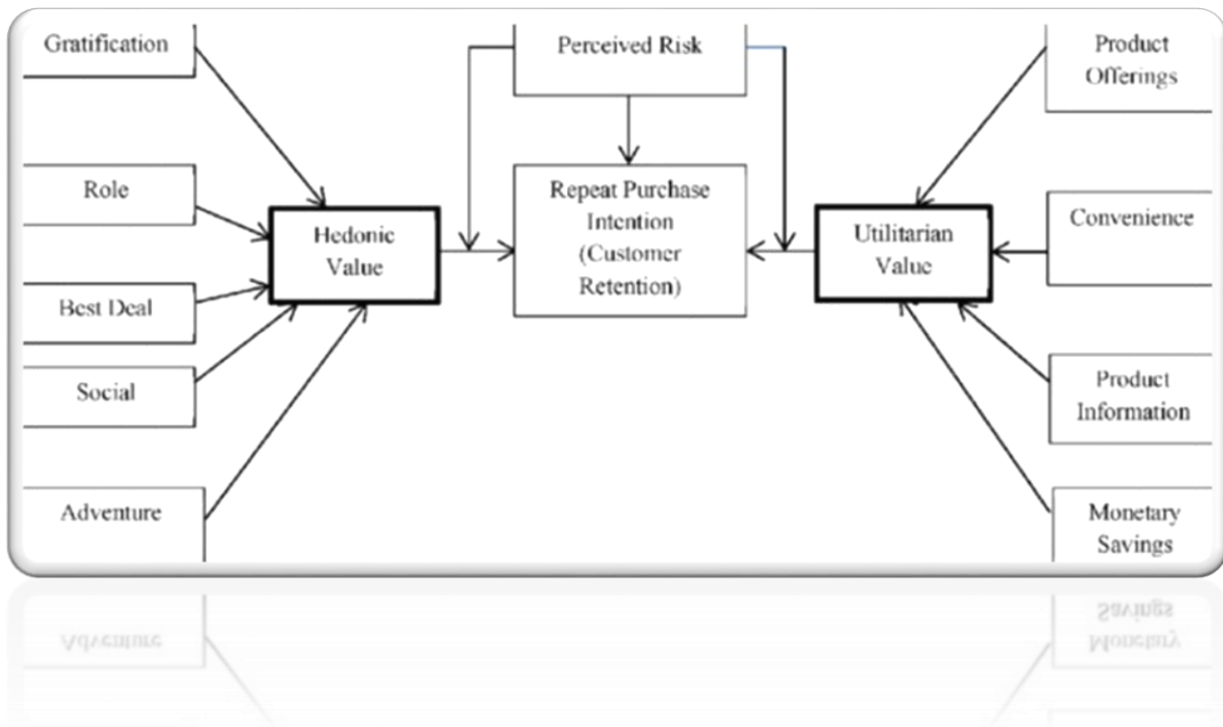
### ***BUSINESS PROBLEM FRAMING***

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***

A successful business strategy today is not only developing cost-effective and highly targeted ways to reach out the new customers, it is more about keeping the existing customers engaged in the company. It has been acknowledged that bringing in new customers is expensive. Investment in the acquisition of new customers is six times higher than investing in existing customers. Increased performance in customer retention practices, on the other hand, has been found to create five times more impact than a similar amount of discount or cost of the capital, leading into the more profitable customer relationship.

- Studies have suggested that past online shopping experience, perceived usefulness, and customer satisfaction are factors capable of influencing a customer's repurchase intention.
- Website quality (e-store) and the usability of the e-store have also been proposed as being very vital for e-retail success by studies.



The customer retention model illustrates that for a customer to become loyal to an online retail brand, there must be satisfaction, which arises when the e-retailer possesses a quality system backed-up by the proper mix of values.

## REVIEW OF LITERATURE

In today's challenging economy and competitive business world, retaining their customer base is critical to organization success. If the company doesn't give their customer some good reason to stay, organization's competitors will give the customer a reason to leave. Customer retention and customer satisfaction drive profits. It's far less expensive to cultivate organization existing customer base and sell more service to the customer than it to seek new, single-transaction customers. Most surveys across industries shows that keeping one existing customer is five to seven times more profitable than attracting one new customer. A customer-focused approach among its employees is still not present. In this era of intense competition, it is very important for any service company to understand that merely acquiring customer is not sufficient because there is a direct link between customer retention over time and profitability & growth. Customer retention to a great extent depends on service quality and customer satisfaction. Complaints are natural part of any service activity as mistakes are an unavoidable feature of

all human endeavored thus also of service recovery. Service recovery is the process of putting things right after something goes wrong in the service delivery. Customer retention is the maintenance of continuous trading relationships with customers over the long term.

Customer retention is the mirror image of customer defection. High retention is equivalent to low defection. In an industry where there are a multiple purchases over the years, organization's entire team should be very focused on retaining those customers:

- i. Delivering service that's consistent with your value proposition and brand
- ii. Cross-selling, up-selling and asking for referrals from existing customers
- iii. Developing programs to increase customer loyalty and decrease turnover
- iv. Prioritizing retention as a major focus in your annual marketing plan.
- v. Knowing the lifetime value for different segments and using that data to improve the marketing.

Studies say it costs ten times more to generate a new customer than to maintain an existing one. If organization has a small number of customers, losing a few could cripple company. Even if there are a large number of customers, a small increase in the rate should dramatically increase profits. The maintenance of the patronage of people who have purchased a company's goods or services once and the gaining of repeat purchases. Customer retention occurs when a customer is loyal to a company, brand, or to a specific product or service, expressing long-term commitment and refusing to purchase from competitors. Of critical importance to such strategies are the wider concepts of customer service, customer relations, and relationship marketing. Companies can build loyalty and retention through the use of a number of techniques, including database marketing, the issue of loyalty cards, redeemable against a variety of goods or service, preferential discounts, free gifts, special promotions, newsletters or magazines, members' clubs or customized products in limited editions. It has been argued that customer retention is linked to employee loyalty, since loyal employees build up long-term relationships with customers. Customer retention has always been an important topic for the marketing. For sure, the advantages of loyal clients are obvious. Often CRM is only implementing new systems for data mining and client segmentation or operational system like a complaint management. But the thing is: data mining system or client clubs are not the basis. They are the cherry of the cake called client retention. A key principle of relationship marketing is the retention of customers through varying means and practices to ensure repeated trade from pre-existing customers by satisfying requirements above those of competing companies through a mutually beneficial relationship. This techniques is now used as a means of counter balancing new customer and opportunities with Current and existing customers as a means of maximizing profit and counteracting the "leaky bucket theory of business" in which new customer gained in order direct marketing oriented businesses were at the expense of or coincided with the

loss of older customers. This process of "churning" is less economically viable than retaining all or the majority of customers using both direct and relationship management as lead generation via new customers requires more investment. Many companies in competing markets will redirect or allocate large amounts of resources or attention towards customer retention as in markets with increasing competition it may cost 5 times more to attract new customers than it would to retain current customers, as direct or "offensive" marketing requires much more extensive resources to cause defection from competitors. However, it is suggested that because of the extensive classic marketing theories centre on means of attracting customer and creating transactions rather than maintaining them, the majority usage of direct marketing used in the past is now gradually being used more alongside relationship marketing as its importance becomes more recognizable. According to Buchanan and Gilles the increased profitability associated with customer retention efforts occurs because of several factors that occur once a relationship has been established with a customer.

The cost of acquisition occurs only at the beginning of the relationship, so the longer the relationship, the lower the amortized cost.

- ii. Account maintenance costs decline as a percentage of total costs or as a percentage of revenue.
- iii. Long-term customers tend to be less inclined to switch, and also tend to be fewer prices sensitive. This can result in stable unit sales volume and increase in dollar-sales volume.
- iv. Long-term customer may initiate free word of mouth promotions and referrals.
- v. Long-term customers are more likely to purchase ancillary products and high margin supplemental products.
- vi. Customer that stay with company tend to be satisfied with the relationship and are less likely to switch to competitors, making it difficult for competitors to enter the market or gain market share.

### ***IMPORTANCE OF CUSTOMER RETENTION:***

There are a number of reasons for this. To begin with, to acquire a customer a company incurs promotional costs like advertising, sales promotion etc. It is said that it costs five times more to attract a new customer than retaining one. The operating cost decrease when a customer stays. Service being rich in experience and credence qualities, it takes some time for customers to get accustomed to it and once they are used to the service and are satisfied with the service provider, they tend to purchase more over a period of time. As they remain satisfied with a service provider, they spread a positive word of mouth,

which is very effective in case of service for attracting new customers. Longer the customer stays with an organization, more the organization knows about him, which enables it to offer a customized service which makes it difficult for the customer to defect. This may even provide opportunities to the organization to charge price premium by offering individualized service which may be difficult for the competitors to offer. Considering the importance of retaining customers in service business,

Reichheld & Sasser coined a term 'Zero Defection'. They highlighted that companies can boost profits by almost 100% by retaining just 5% more of their customers. Further, it is also very important to understand the life time value of a customer. Further, if by a positive word of mouth, he brings just one more customer to the organization, his value to the organization doubles. Therefore, it is important for all the employees in the organization to understand the life time value of their customer.

### ***ADVANTAGES OF CUSTOMER RETENTION POSSIBILITY OF REPEAT BUSINESS:***

This is probably the most obvious advantage of customer retention. Effective services that lead to customer satisfaction will make customer coming back to again, thus giving repeat business. Repeat business is a win-win proposition for the business or service and the customer. The business reduces the cost of customer acquisition, while the customer reduces the cost of finding a reliable vendor and thus also saves on costs associated with switching vendors.

### ***REDUCED COSTS FOR CUSTOMER ACQUISITION***

Acquiring a customer has certain associated costs. These include the costs associated with advertising, following up, sales demos, travel and meeting cost etc. having a repeat customer means that the customer means that the customer is already aware of your processes and can predict certain quality of output, thus minimizing the cost involved in new customer acquisition. Having a repeat customer also has the potential to open up another channel to advertise your business word of mouth. Word of mouth advertising recommendations are perhaps the most important outcome of having a satisfied customer.

### ***FOSTERING GREATER INTERACTION BETWEEN BUSINESS AND CUSTOMER***

Today's markets are increasingly moving away from mass produced standard products and service, towards a more customized market, where products and service are tailored to meet customers' specific requirements. Having a repeat customer is an opportunity for you to build a more focused relationship based on your customers' specific needs and requirements. Being ensured of

having a customer who comes back, you have more confidence to suggest improvements, provide an insight to better understand their needs and consequently design products and services that are relevant. Having a repeat business also provides an opportunity for the buyer and the seller to co-create products and services.

## ***HAVING MORE DELIGHTED CUSTOMERS***

Effective customer retention strategies allow you to move from the zone of customer satisfaction to customer delight. Studies have shown that customer delight is achieved only when there is a perfect synergy between the buyer needs and the buyer understands what the seller can deliver exactly what the customer need. If you are able to deliver your customers, you have better chance of them coming back to you, since they now know why you are different from the rest of competition.

## ***CUSTOMER RETENTION: STATISTICS***

- Acquiring new customer can cost five times more than satisfying and retaining current customers.
- 2% increase in customer retention has same effect on profits as cutting costs by 10%.
- The average company losses 10% of its customer each year.
- 5% reduction in the customer defection rate can increase profits by 25-125%, depending on the industries.
- The customer profitability rate tends to increase over the life of a retained customer.
- Companies can boost profits anywhere from 25 to 125% by retaining merely 5% more existing customers.

## ***MEASURING CUSTOMER RETENTION:***

Retention rate is normally calculated as the number of customers who have been lost over a period of time, usually calculated over a quarterly or annual period. The key is to calculate the percentage versus existing customers, and not underestimate the loss rate by tallying new customer acquisitions into the mix. The customer retention rate refers to the number of customer lost over a period of time. It is normally calculated by the percentage of lost customer versus existing customers over a quarterly or annual period, without tallying new customer acquisitions. While there are obvious benefits to keeping



customers loyal and maintaining retention rates, it can be extremely challenging for management to keep retention rates up. Some companies can measure retention rate using their CRM system, since any of the vendors with solid sales modules should offer this capability. Customer service expert Lori Bock lender commends that company's look for this functionality when evaluating CRM solutions, even though it is unlikely to be the differentiating factor. Companies like witness, Performix, AIM, and Merced offer these types of tools. To measure this, some companies combines data from the CRM system and data from other systems, such as your systems, such as your quality monitoring system, ACD or CTI solution handling contact routing and reporting. There are no hard and fast rules on calculating customer defection and customer retention, according to Lowenstein. It can depend on the industries or the type of business, since companies have long-term arrangements with customers. However, several consulting and database management companies have succeeded in creating them. However, the appropriate interval over which retention rate should be measured is not always one year. Rather, it depends on the customer repurchase cycle. Car insurance and magazine subscriptions are bought on an annual basis. Carpet tiles and hi-fis are not. If the normal hi-fire placement cycle is four years, then retention rate is more meaningful if it is measured over four years instead of twelve months. Additional complexity is added when companies a sell a range of products and services, each with different repurchase cycles. Automobile dealers might sell cars, parts, fuel and service to a single customer. These products have different repurchase cycles which make it very difficult for the dealer to have a whole of customer perspective on retention. Sometimes companies are not clear about whether an individual customer has defected. This is because of the location of customer related data, which might be retained in product silos, channel silos or functional silos.

## ***TYPE OF CUSTOMER RETENTION RATE***

### ***RAW CUSTOMER RETENTION RATE:***

This is the number of customer doing business with a firm at the end of a trading period, expressed as percentage of those who were active customer at the beginning of the period.

### ***SALES-ADJUSTED RETENTION RATE:***

This is the value of sales achieved from the retained customers, expressed as a percentage of the sales achieved from all customers who were active at the beginning of the period.

### ***PROFIT-ADJUSTED RETENTION RATE:***

This is the profit earned from the retained customers, expressed as a percentage of the profit earned from all customers who were active at the beginning of the period.

### ***MOTIVATION FOR THE PROBLEM UNDERTAKEN:***

The project was the first provided to me by Flip Robo Technologies as a part of the internship programme. The exposure to real world data and the opportunity to deploy my skillset in solving a real time problem has been the primary motivation.

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. How did they give feedbacks to these websites on the basis of several positive and negative factors and also the details of the users on basis of factors like age, gender, city etc.

## Chap 2. Analytical Problem Framing

### 1. Data Sources and their formats

The data is collected from the Indian online shoppers. Results indicate the e-retail success factors, which are very much critical for customer satisfaction. There are two sheets (one is detailed) and second is encoded in the excel file.

Now we will import the dataset using pandas Library

```
In [2]: df = pd.read_excel("customer_retention_dataset.xlsx")  
  
In [3]: pd.set_option("display.max_columns",None) # for viewing maximum number of columns  
  
In [4]: pd.set_option('display.max_rows',None) # for viewing maximum number of rows
```

Dataset contain 71 columns with 269 rows. Out of which 1 feature with int datatypes and rest are with object datatypes.

### 2. Data Pre-processing

Before pre-processing data, integrity of data is check for missing values, possible duplicates, to check.

```
df.isnull().sum().any()  
  
False
```

Data Pre-processing perform on data:

- There were few duplicate values in customer reviews. For example, Disagree and Agree. So made single value as both have the same meaning.
- Unnecessary spacing in columns name is removed.

### 3. Hardware & Software Requirements with Tool Used

#### Hardware Used –

1. Processor — Intel i7 processor with 2.4GHZ
2. RAM — 4 GB
3. GPU — 2GB N Series Graphics card

#### Software utilized –

1. Anaconda – Jupiter Notebook

#### Libraries Used –

Different libraries are used while building ML model and Visualization of data.

**Firstly we will import the required Liabaries**

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

## Chap. 3 Models Development & Evaluation

### 1. IDENTIFICATION OF POSSIBLE PROBLEM-SOLVING APPROACHES (METHODS)

There are lot of features in dataset. Our objective is to find key conclusions & finding related to data using analysis. The features are categorized into few sections so we can perform analysis data section wise focus on particular area.

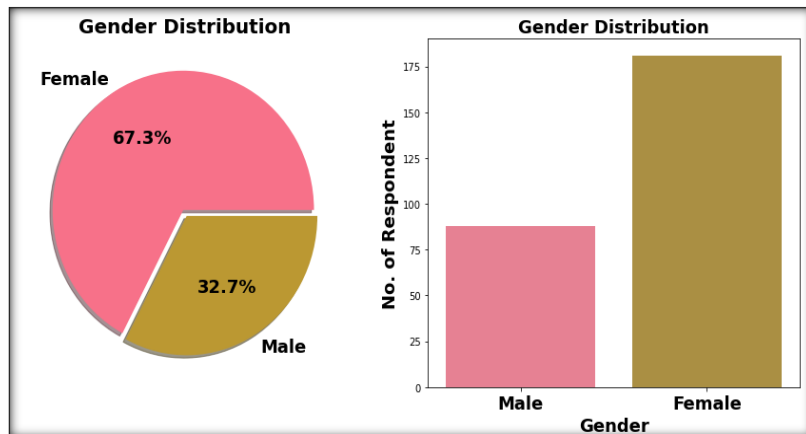
They are enlisted as below:

- General feature describing Population and online shopping feature
- Feature describing technological aspects related to internet services & device
- Purchase Decision & Payment related features
- Website Usability & performance related feature
- Online shopping store customer service requirement related features
- Feature related to Customer online shopping experiences
- Online Shopping Platform related question response by Customer

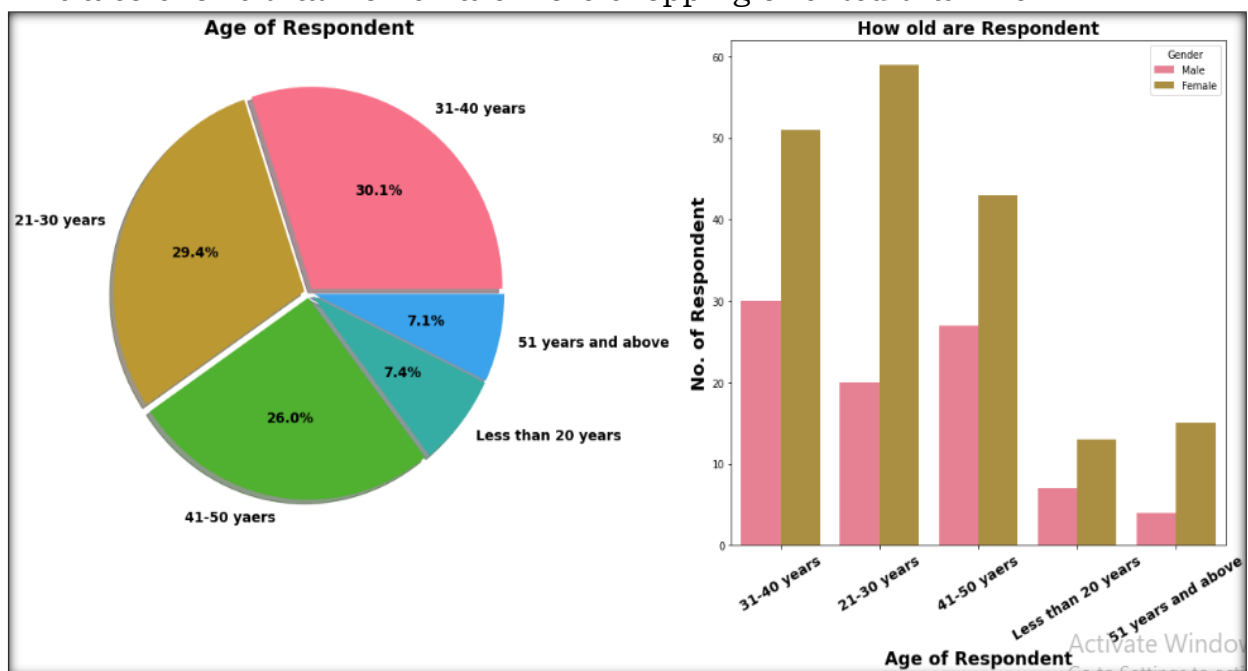
## VISUALIZATIONS

### 1. General feature describing Population and online shopping

- Let's start EDA with Gender distribution of respondent.

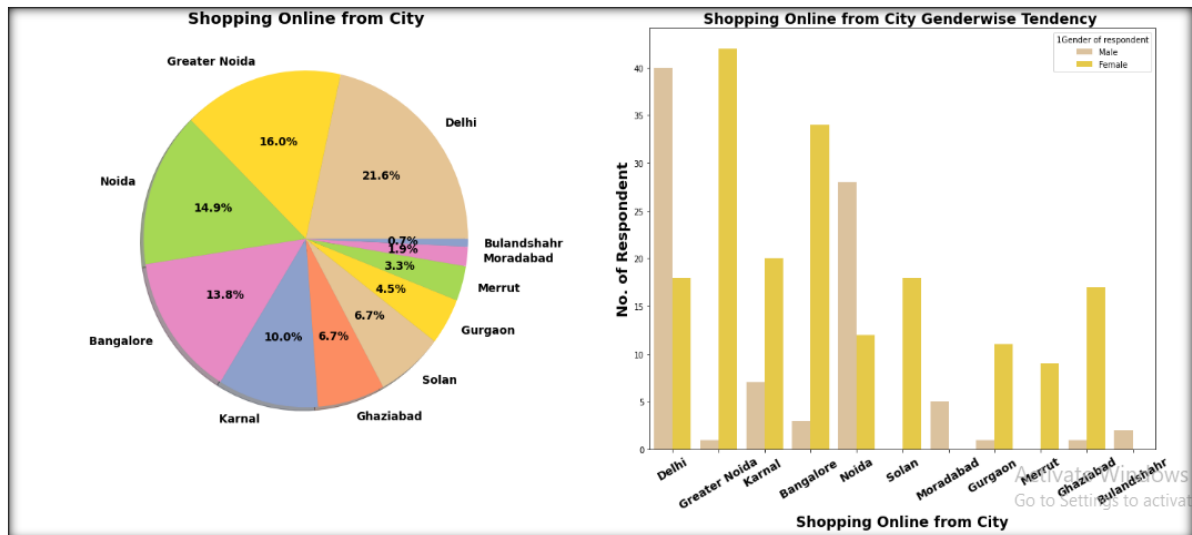


The Majority of Respondent are Female (67.3%) & rest are Male respondent. This also shows that women are more shopping oriented than men.



### Observation:

- Majority of female customers are between age group of 21-40 years.
- Within Male Customers Tendency of online shopping seen among age group of 31-50 years.
- For both gender tendency of shopping is less for age greater than 51 years old. This may be due to decrease in materialistic tendency with age or possible Less TECH-SAVY Generation.



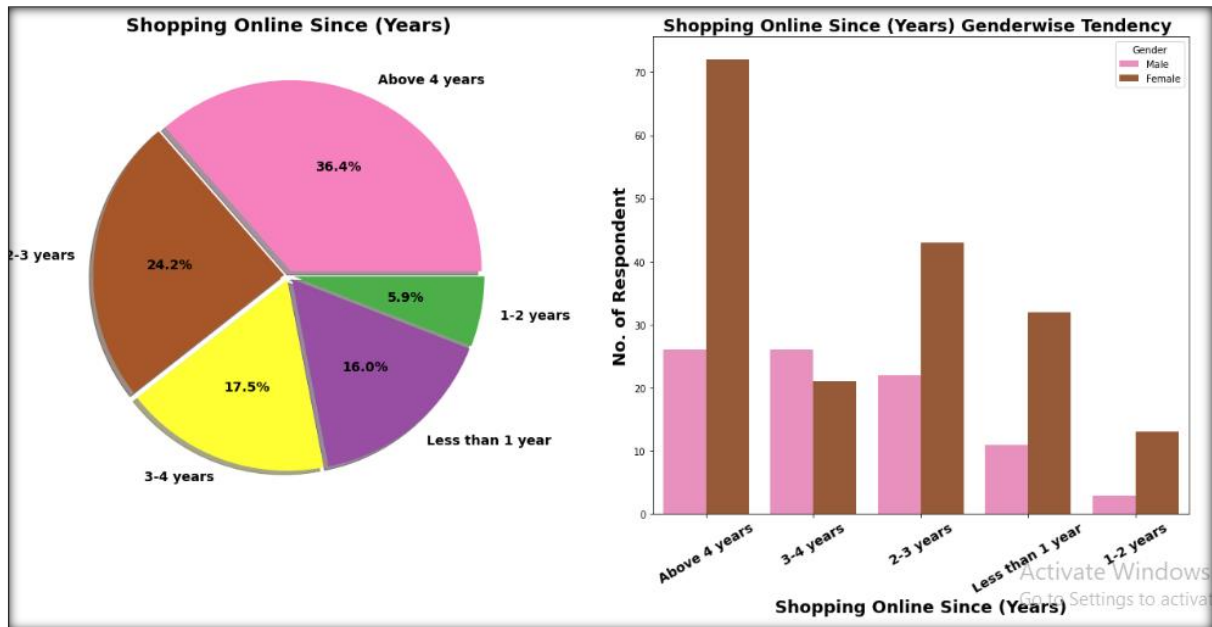
### Observation:

- Most Online Shopping Customer belong to Metro Cities. and most of them are Male customer
- We can conclude that in Metro city like Delhi, Male have more tendency of online shopping. So, shopping platform can target this population in marketing.
- In Tier 2 & 3 Cities Majority of online shopping customers are Females.

Shopping_City		Bangalore	Bulandshahr	Delhi	Ghaziabad	Greater Noida	Gurgaon	Karnal	Merrut	Moradabad	Noida	Solan	All
Age	Gender												
21-30 years	Female	18	0	7	0	14	0	8	5	0	1	6	59
	Male	3	0	5	1	0	0	7	0	0	4	0	20
31-40 years	Female	0	0	10	8	17	0	7	1	0	4	4	51
	Male	0	2	9	0	0	1	0	0	5	13	0	30
41-50 yaers	Female	12	0	1	5	11	0	4	3	0	7	0	43
	Male	0	0	22	0	1	0	0	0	0	4	0	27
51 years and above	Female	3	0	0	0	0	11	1	0	0	0	0	15
	Male	0	0	0	0	0	0	0	0	0	4	0	4
Less than 20 years	Female	1	0	0	4	0	0	0	0	0	0	8	13
	Male	0	0	4	0	0	0	0	0	0	3	0	7
All		37	2	58	18	43	12	27	9	5	40	18	269

### Observation:

We get interesting observation here in crosstab, as customer get older, they have less tendency for shopping in turn they have less tendency to spend money.

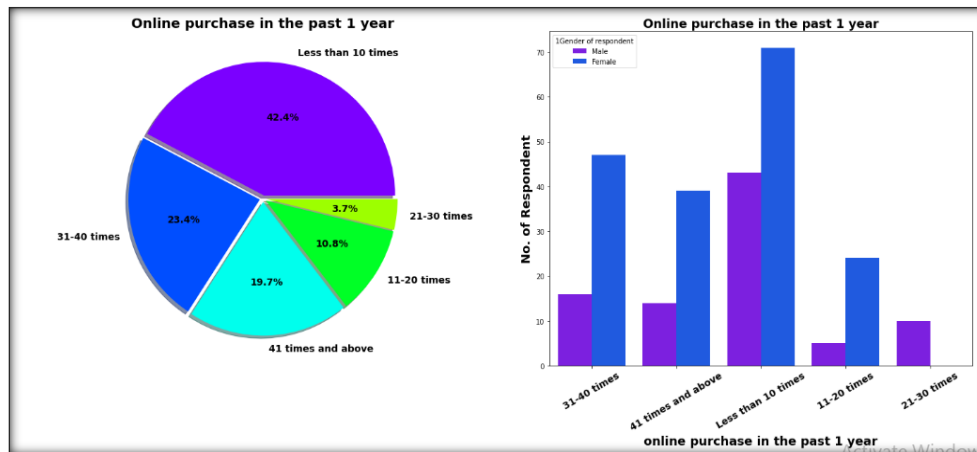


36.4% Respondent shopping online since 4 Yrs. Most of female shopping since **4 Yrs.**

Shopping_City	Bangalore	Bulandshahr	Delhi	Ghaziabad	Greater Noida	Gurgaon	Karnal	Merrut	Moradabad	Noida	Solan	All
Shopping_Since												
1-2 years	0	2	1	5	0	0	0	0	0	2	6	16
2-3 years	14	0	13	5	4	7	2	3	0	9	8	65
3-4 years	8	0	8	0	7	1	8	1	0	10	4	47
Above 4 years	12	0	20	3	22	0	13	5	5	18	0	98
Less than 1 year	3	0	16	5	10	4	4	0	0	1	0	43
All	37	2	58	18	43	12	27	9	5	40	18	269

Online shopping is less popular in tier 3 cities like Bulandshahr, Moradabad, Meerut



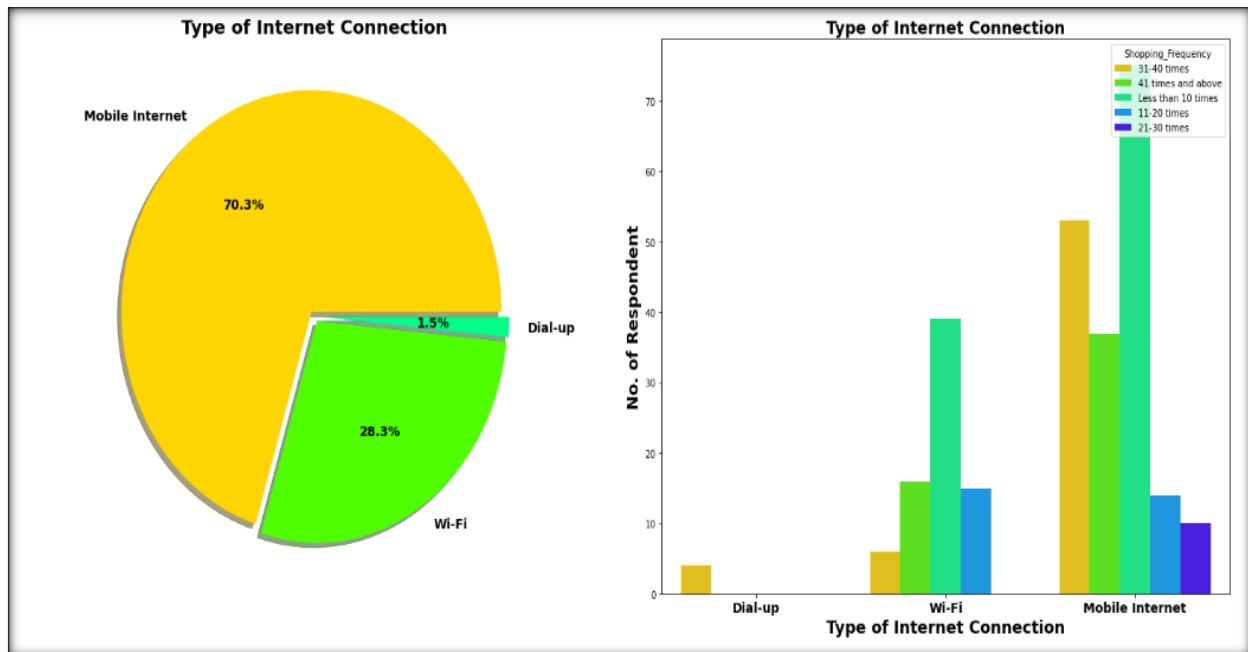


### Observations :

- 42.4% Customers in last 1 year made online purchase less than 10 times.
- Around 19.7% customers have made online shopping for 41 times & more in last 1 year. Out which Majority are females.
- Another interesting observation no female had made shopping in range of 21-30 times.

Shopping_City	Bangalore	Bulandshahr	Delhi	Ghaziabad	Greater Noida	Gurgaon	Karnal	Merrut	Moradabad	Noida	Solan	All
Shopping_Frequency												
11-20 times	12	0	1	1	10	0	0	1	0	3	1	29
21-30 times	0	0	1	0	0	0	0	0	5	4	0	10
31-40 times	11	0	12	10	11	1	10	6	0	2	0	63
41 times and above	2	0	16	3	16	0	5	1	0	10	0	53
Less than 10 times	12	2	28	4	6	11	12	1	0	21	17	114
All	37	2	58	18	43	12	27	9	5	40	18	269

- We can see that most of customer making purchase for 41 times & more comes from city Delhi, Greater Noida, Noida.



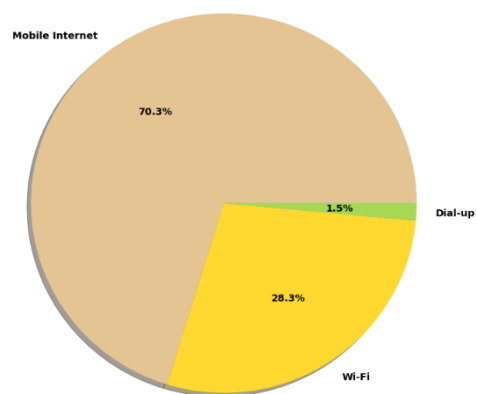
### Observation :

- 70.3% Customers are mobile internet user followed by WiFi User.
- We can see that all customers who made online shopping for 41 times & more are using Mobile internet.
- Only 4 user are using Dial up Connection and all of them made online shopping for less than 10 times.

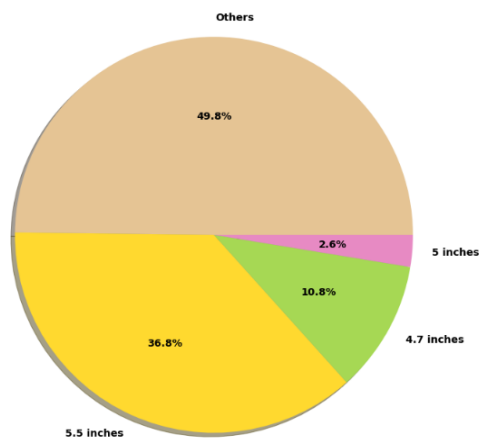
## 2. Exploring feature describing technological aspects related to internet services & device

```
Feature_1 = ['Internet_Access', 'Device_Used',
             'Screen_Size', 'Operating_System', 'Browser_Used',
             'Channel_FirstUsed', 'Login_Mode']
```

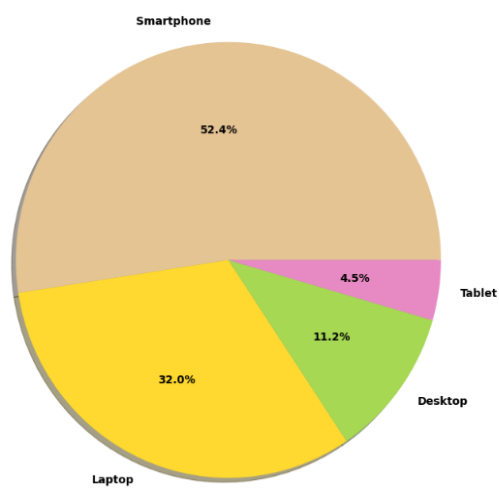
Internet\_Access



Screen\_Size



Device\_Used



### Observation:

- 70.3% Customer uses mobile internet for shopping.
- 52.4% Uses Smartphone followed by Laptop for online shopping. Company can make device-oriented marketing strategy for different customers as per use of device.
- Not all user uses smartphone for so we do not have screen size details of other user. Out of 52.4% Mobile users' majority have 5.5-inch mobile display screen.
- 45.4% customer have Windows operating system on their smartphone & laptop. Followed by it around 31.6% customer uses Android as OS which can come from both smartphone & Tablet.
- We can say that in terms of browser google chrome dominate market.
- We can see 85.5 % of Customer arrived on shopping platform through search engine. Ads & Marketing campaign are not bringing much lead. Most of customer who made online purchase because they want to buy product or due to discount on online shopping.
- After 1st Purchase 32% customer visit online store through mobile application and 32.3% by search engine.

Operating_System	Android	IOS/Mac	Window/windows Mobile	All
Device_Used				
Desktop	0	0	30	30
Laptop	0	2	84	86
Smartphone	73	60	8	141
Tablet	12	0	0	12
All	85	62	122	269

### Observation:

- No Tablet with IOS operating system.
- We already know 45.4% Customer uses Windows OS and here we can see that almost all them come from desktop & laptop user.
- Surprising only 2 Customer with Apple laptop and no customer with Apple desktop.
- 73 customers using android and 60 customers using Apple iPhone.

Device_Used	Desktop	Laptop	Smartphone	Tablet	All
Internet_Access					
Dial-up	4	0	0	0	4
Mobile Internet	26	53	104	6	189
Wi-Fi	0	33	37	6	76
All	30	86	141	12	269

### Observation:

- No desktop with Wi-Fi Connectivity. All 30 desktop users are using mobile internet or dialup connection.
- Out of 141 Smartphone users 104 using mobile internet while rest using Wi-Fi.
- We know that in first visit 85% Customer (230 Customer out of 269) came through search engine, here we are trying to figure after 1st visit how many of them reach by others channels like apps or email marketing.

Login_Mode	Direct URL	E-mail	Search Engine	Social Media	Via application	All
Channel_FirstUsed						
Content Marketing	0	0	5	0	15	20
Display Adverts	11	0	0	8	0	19
Search Engine	59	18	82	0	71	230
All	70	18	87	8	86	269

### Observation:

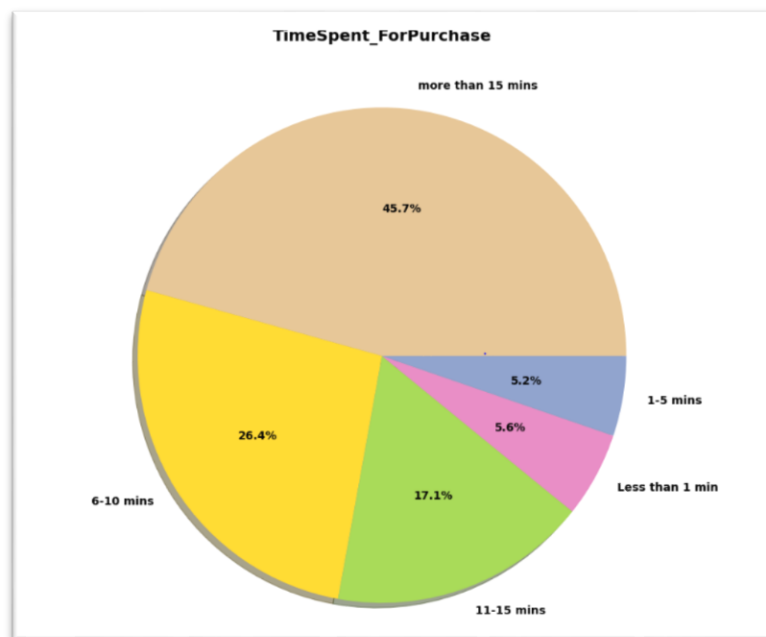
- For 2nd & afterward visit 71 customer arrived online store via application, followed by 59 via Direct URL & 18 Customer Via Promotional Email Marketing.
- Display adverts have very poor performance in landing customer on online store. Similar with Social Media marketing. For 2ed Purchase no one landed through display adverts on search engine.

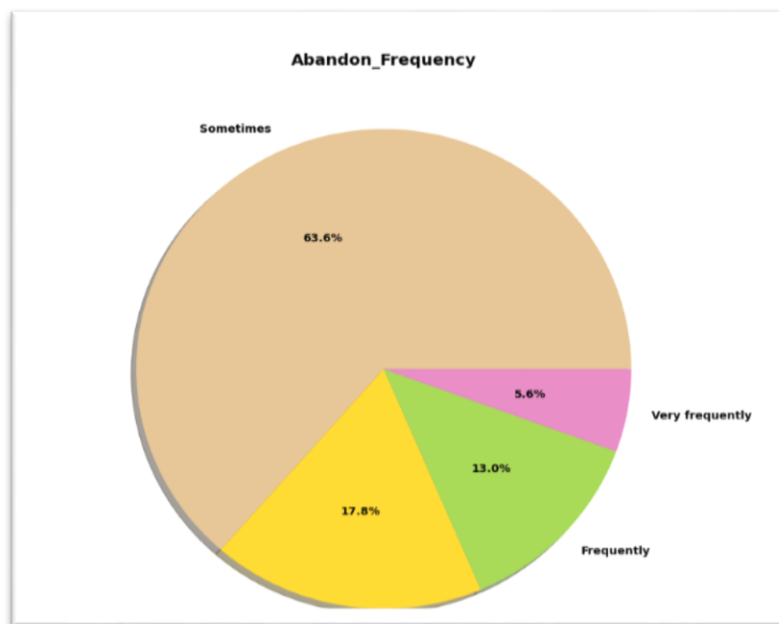
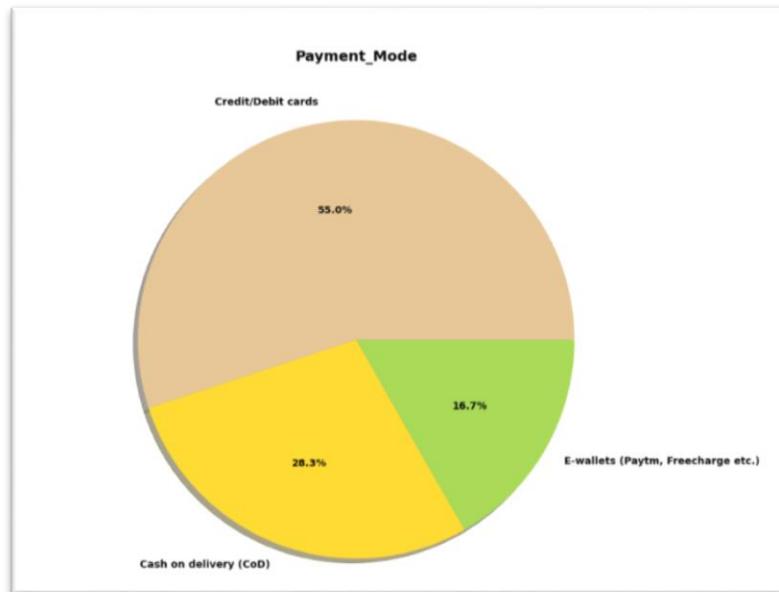
It is strong recommendation to companies that Do not spend more money over social media marketing & Display Adverts in their Digital Marketing campaign instead of that focus on Search engine Optimization & Email Marketing which will likely to be more effective to earlier.

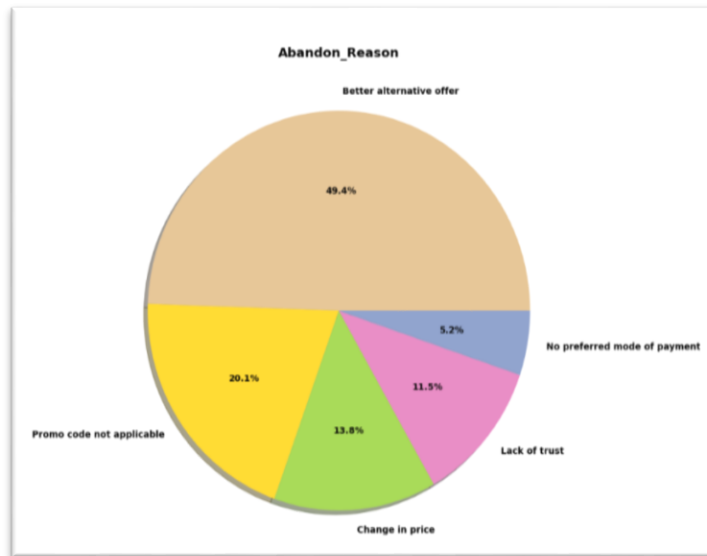
### 3. Exploring Purchase Decision & Payment related features

In this section we have categories feature related to purchase decision and payment method. Focus in this section is to gain understanding about

```
In [48]: Feature_2 = ['TimeSpent_ForPurchase',  
                    'Payment_Mode',  
                    'Abandon_Frequency',  
                    'Abandon_Reason']
```







### Observation:

- 45.7% of Customer spend more than 15 mins before making Purchase decision. Followed by the 17.1% customers with 11-15 mins before making purchase decision.
- We can see that 5.6% of customers purchase product less than 1 min. It will be interesting to find how many these customers made purchase in past 1 year.
- 55% of customer paid using credit/debit cards while 28.3% customers still prefer cash on delivery.
- We can see that 63.6% of customer add product in cart but later leave without making payment. Surprising there is category of 17.8% customer who never abandon product without making payment.
- In next pie chart depict reason why customer change buying decision. Around 50% customers abandon cart due to better alternative offer which is obvious reason. Another most common reason to abandon purchase decision is promo code not applicable on particular product. Followed by next most common reason is change in price.

Shopping_Frequency	11-20 times	21-30 times	31-40 times	41 times and above	Less than 10 times	All
TimeSpent_ForPurchase						
1-5 mins	0	0	2	3	9	14
11-15 mins	7	0	13	12	14	46
6-10 mins	2	5	17	13	34	71
Less than 1 min	0	3	5	0	7	15
more than 15 mins	20	2	26	25	50	123
All	29	10	63	53	114	269

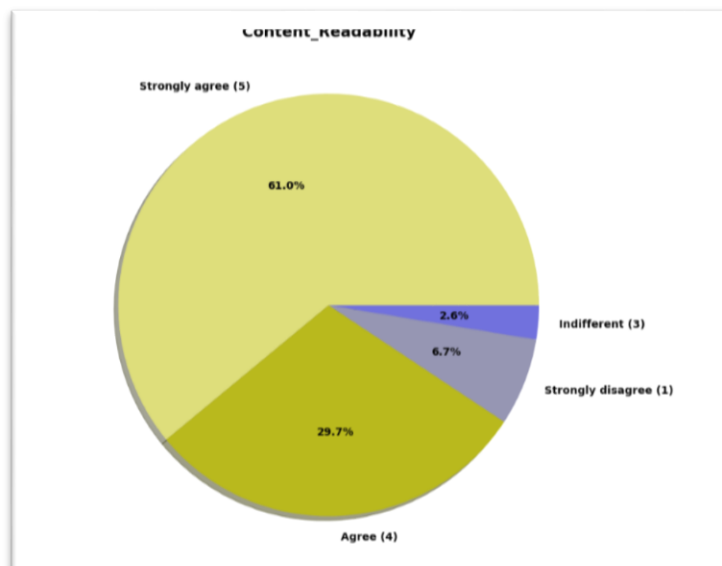


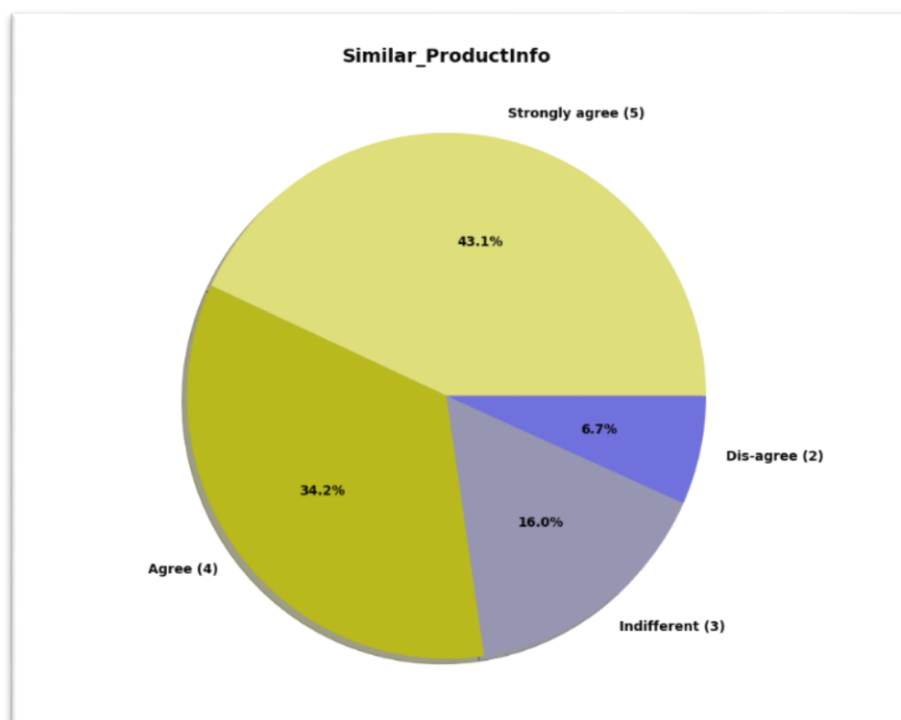
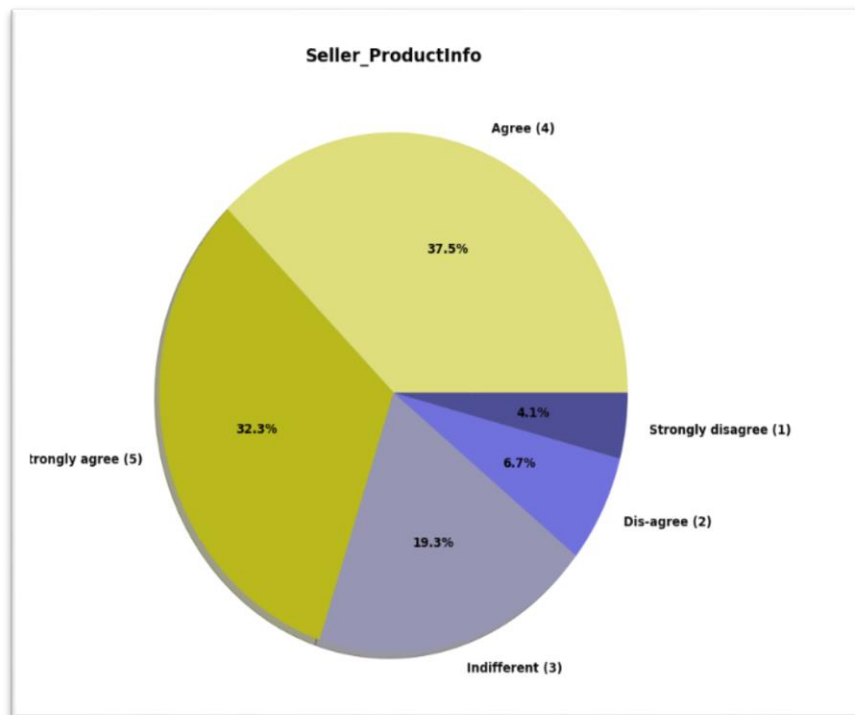
#### 4. Exploration Of Website Usability & Performance Related Feature

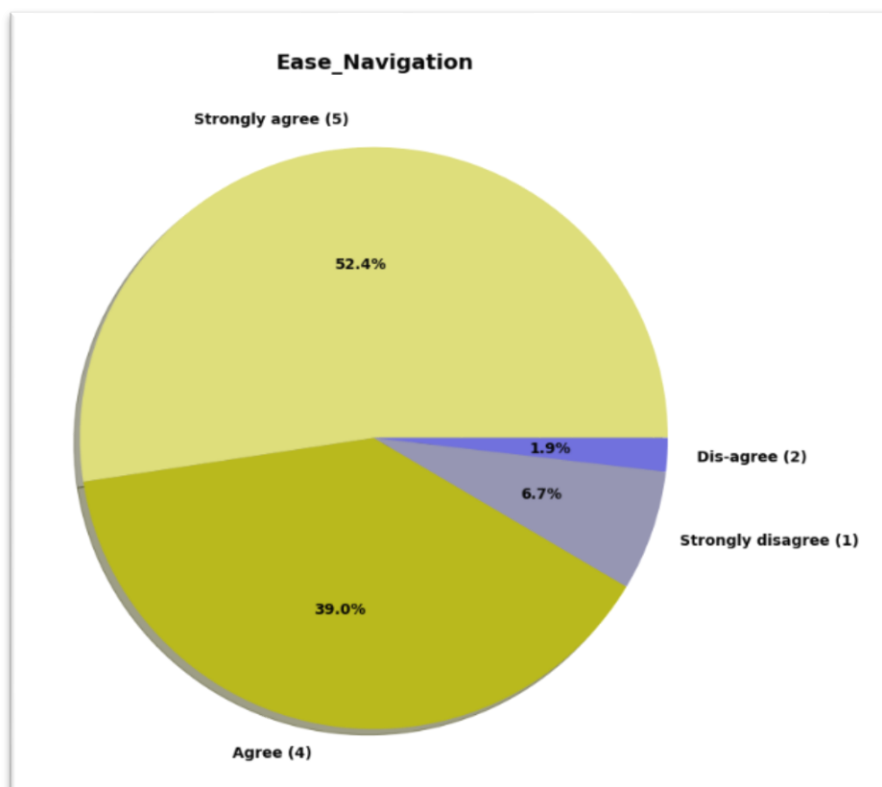
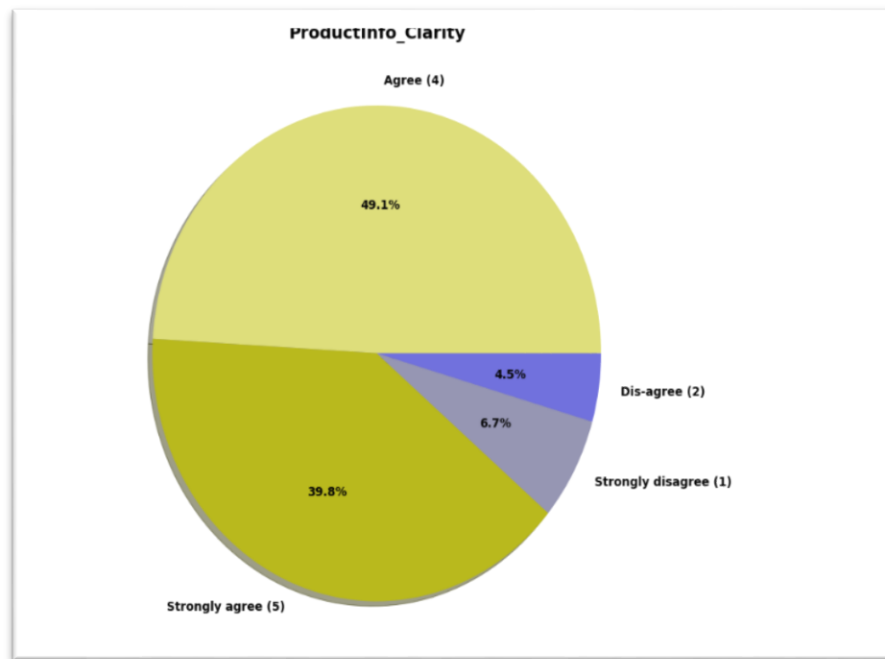
- In this section we are going to analyse feature describing website usability & performance. Following features, we have analysed in this section:

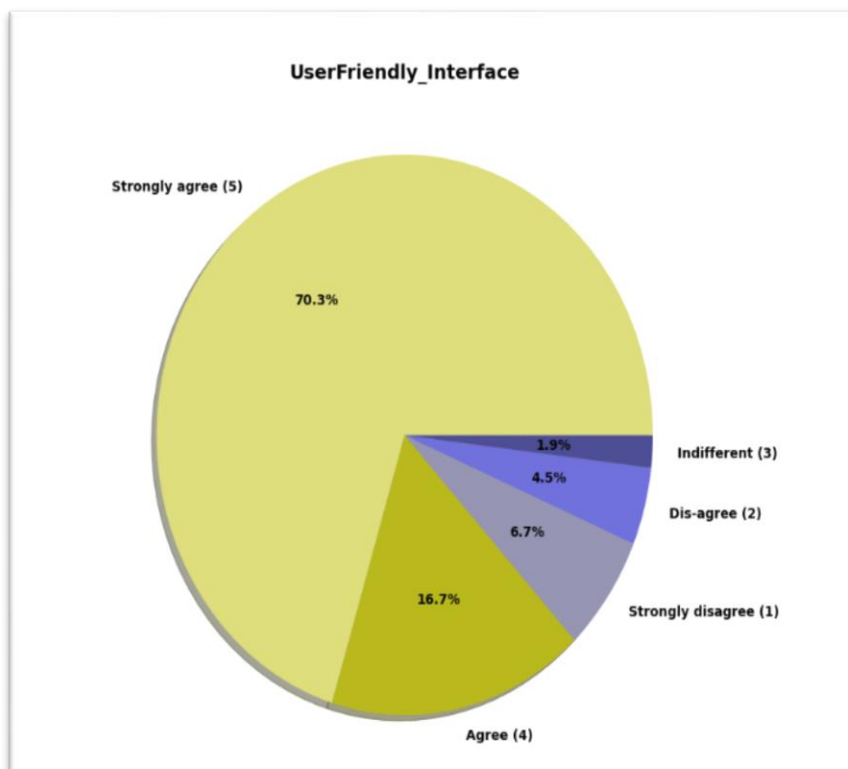
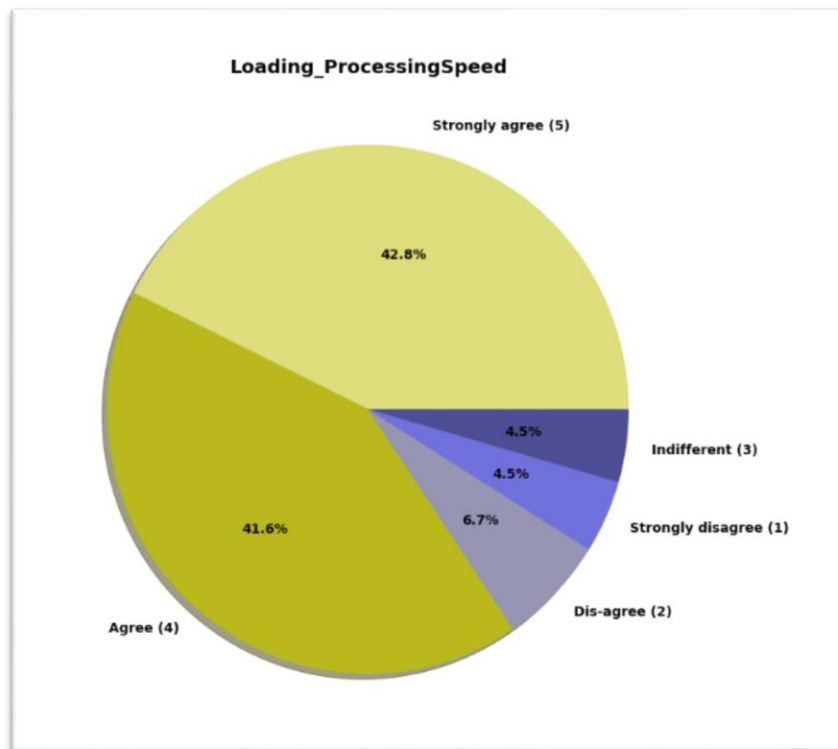
```
Feature_3 = ['Content_Readability', 'Similar_ProductInfo',  
            'Seller_ProductInfo', 'ProductInfo_Clarify',  
            'Ease_Navigation', 'Loading_ProcessingSpeed',  
            'UserFriendly_Interface', 'Convenient_PaymentMode', 'TimelyFulfilment_Trust']
```

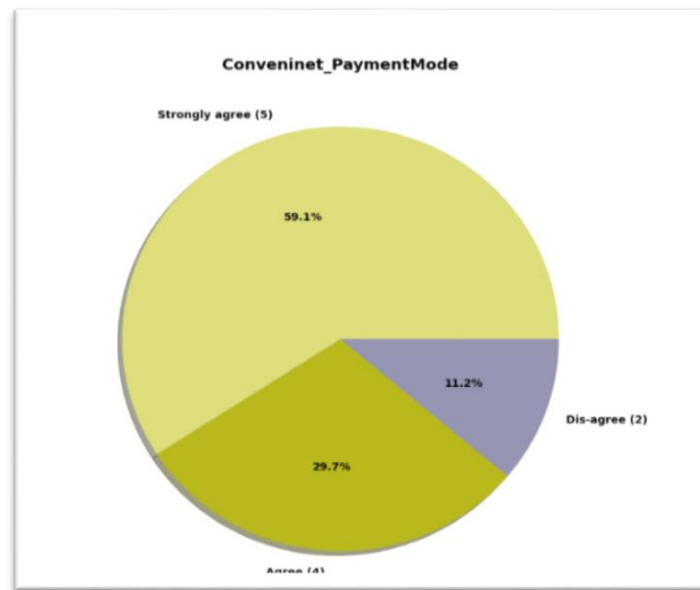
1. Content\_Readability,
2. Similar\_products
3. Seller\_ProductInfo,
4. ProductInfo\_clarity,
5. Ease\_Navigation
6. Loading\_processingspeed
7. UserFriedly\_interface
8. Conveinent\_paymentMode,
9. TimelyFulfilment\_Trust











### Observation:

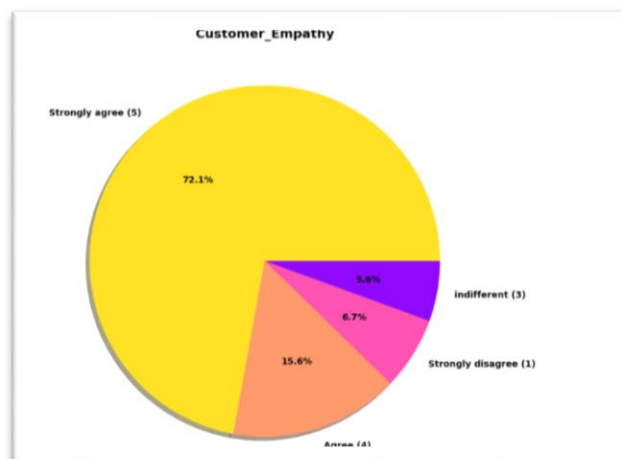
- 61 % customer strongly agree and 29.7% customer agree that content on website must be easy to read and understand.
- 43.1% customer strongly agree and 34.2% customer agree that information on similar product to highlighted on website for product comparison.
- More than 60% of customer agree or strongly agree that complete information on listed seller and product being offered is important for purchase decision.
- More than 90% of customer agree or strongly agree that all relevant information on listed products must be stated clearly.
- Around 93% of customer agree or strongly agree that website should be easy for navigation.
- 42.8 % customer strongly agree and 41.6 % customer agree over high loading & processing speed.
- 70.3 % customer strongly agree and 16.7 % customer agree that website should be user friendly.

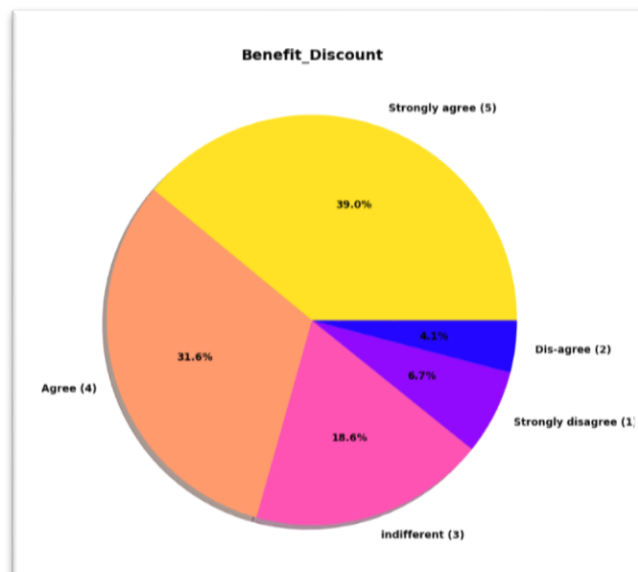
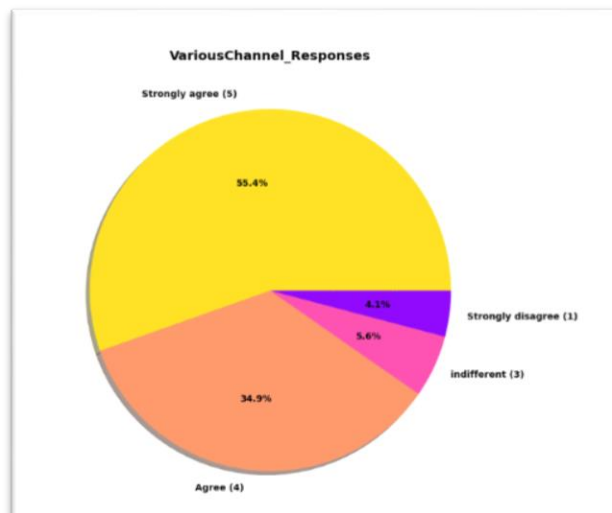
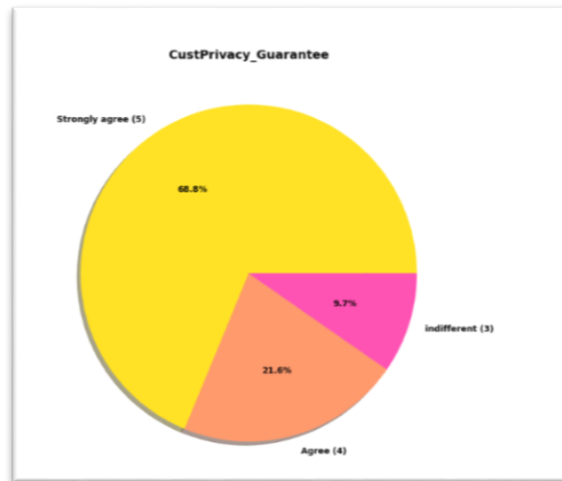
## 5. Exploration Of Online Shopping Store Customer Service Requirement Related Features

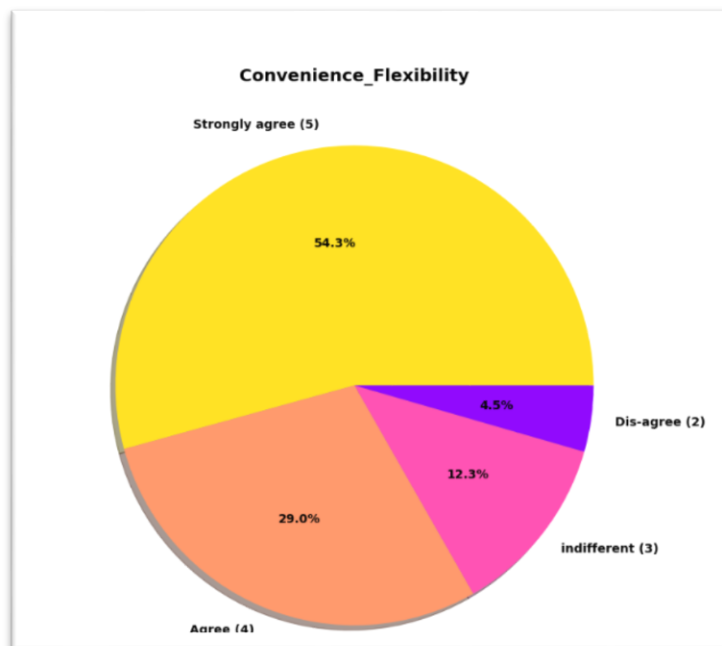
In this section we will analyze features related to customer service & add on by e-commerce Company like communication channel, readiness to resolve customer query. Following features, we have analyzed in this section:

1. Customer\_Empathy
2. CustPrivacy\_gaurantee
3. VariousChannel\_Responses
4. Benefit\_Discount
5. Convienence\_flexiblity
6. Enjoy\_Onlineshopping
7. Return\_ReplacementPolicy
8. Loyalty\_ProgramAccess,
9. QualityInfo\_satisfaction,
10. WebsiteQuality\_Satisfaction,
11. Netbenefit\_Satisfaction,
12. WebsiteQuality\_Satisfaction,
13. User\_Trust

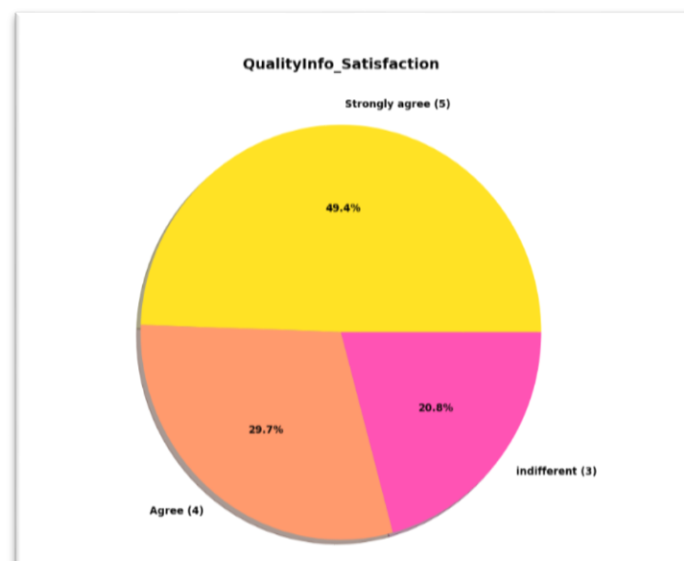
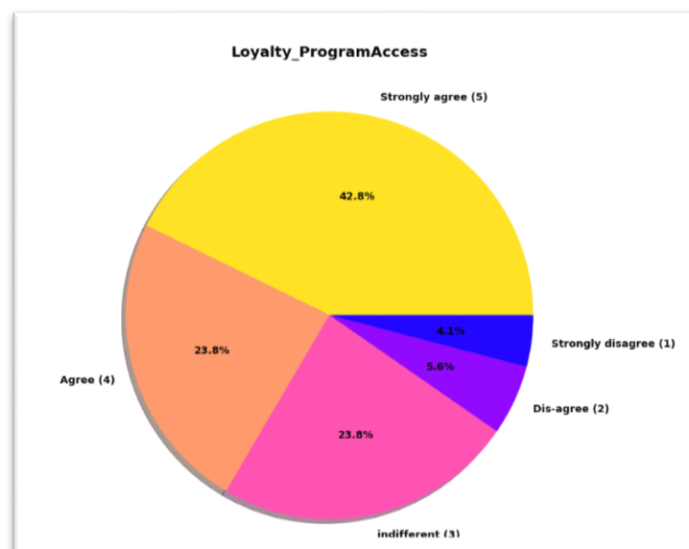
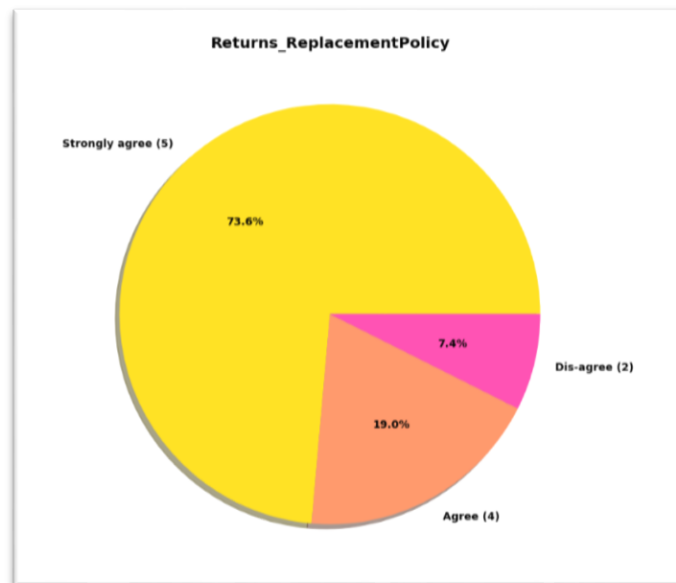
```
Feature_4 = ['Customer_Empathy', 'CustPrivacy_Guarantee',
             'VariousChannel_Responses', 'Benefit_Discount',
             'Convenience_Flexibility', 'Enjoy_OnlineShopping',
             'Returns_ReplacementPolicy', 'Loyalty_ProgramAccess',
             'QualityInfo_Satisfaction', 'WebsiteQuality_Satisfaction',
             'NetBenefit_Satisfaction', 'User_Trust']
```

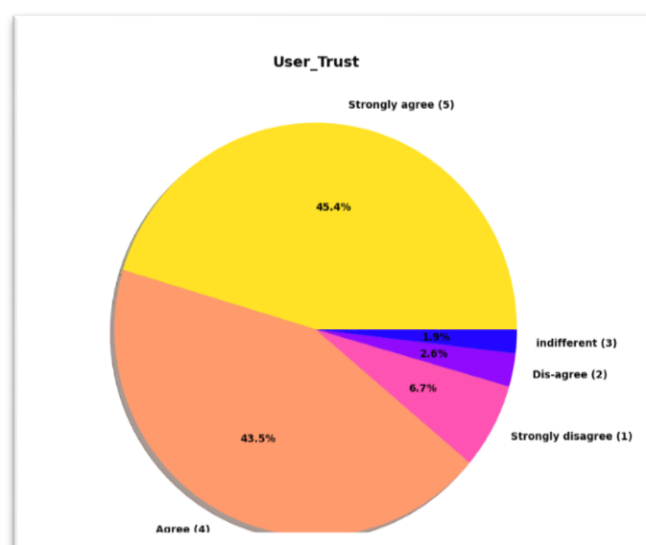
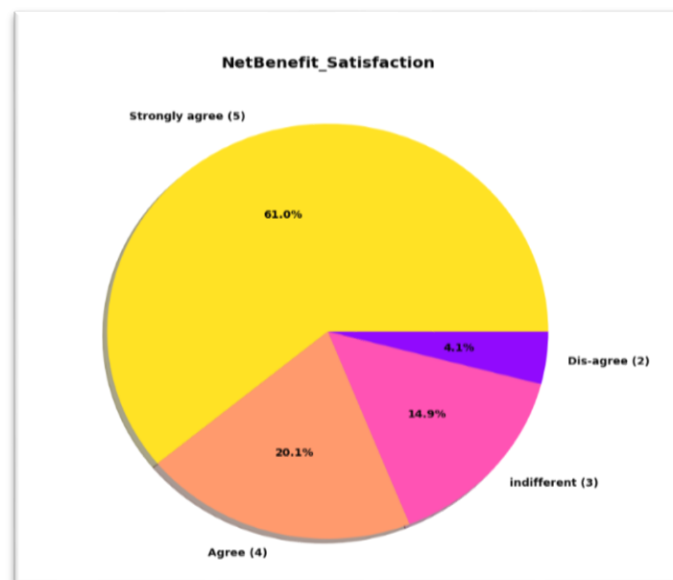
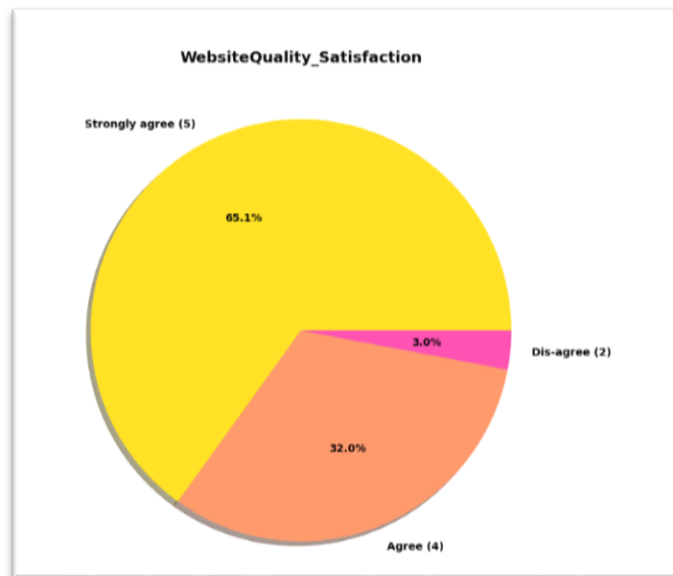












**Observation:**

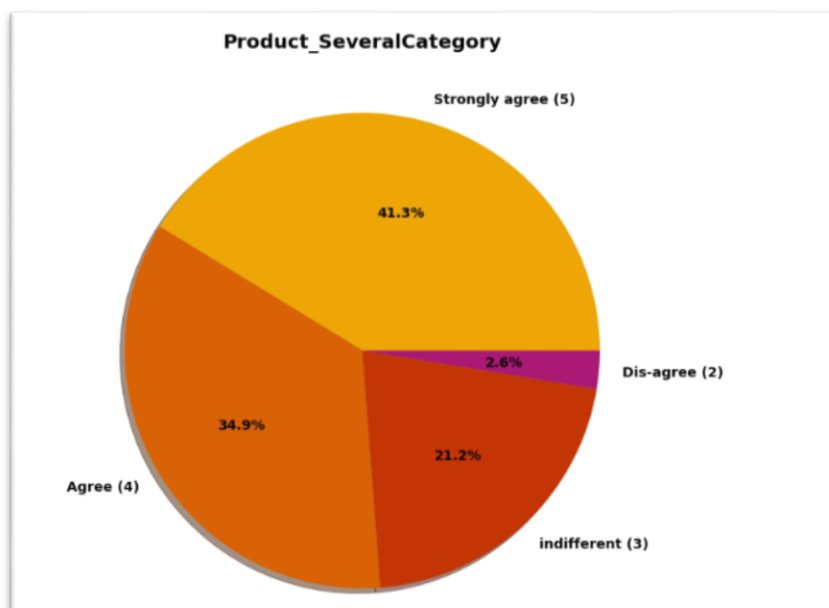
- 72.1% Customer strongly agree thinks that company's readiness to assist customer queries related to product is important factor in purchase decision.
- Pie plot also show that being able to guarantee the privacy of the customer is important silent feature for product selection.
- Another most important for product companies is availability of communication channels.
- Most of people enjoy physical shopping, we can see that for 32% customer enjoyment from online shopping strongly matter and for around 46% customer this online shopping enjoyment do not matter.
- Online shopping is 24/7 available with lot of varieties of product and with product return facility. This led to thinking among almost 85 % of customer thinks, online shopping is convenient & flexible than physical shopping.
- 73.6% customer thinks that return & replacement policy of e-seller is important factor for making purchase decision.
- 49.4% customer strongly agree and 29.7% customer agree that displaying quality information on website helps in decision making in turn improves customer satisfaction.
- 45.4% of customer strongly agree over fact that user satisfaction cannot exist without trust.

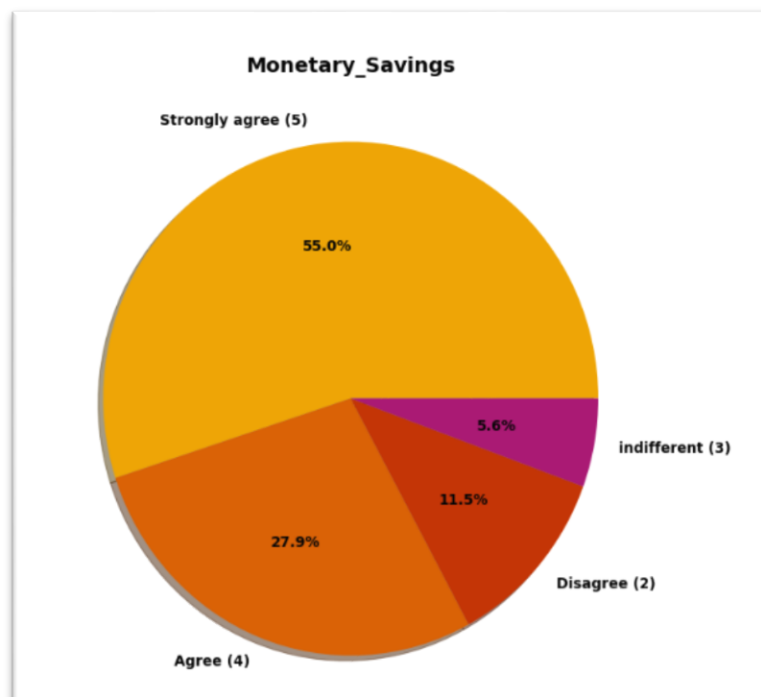
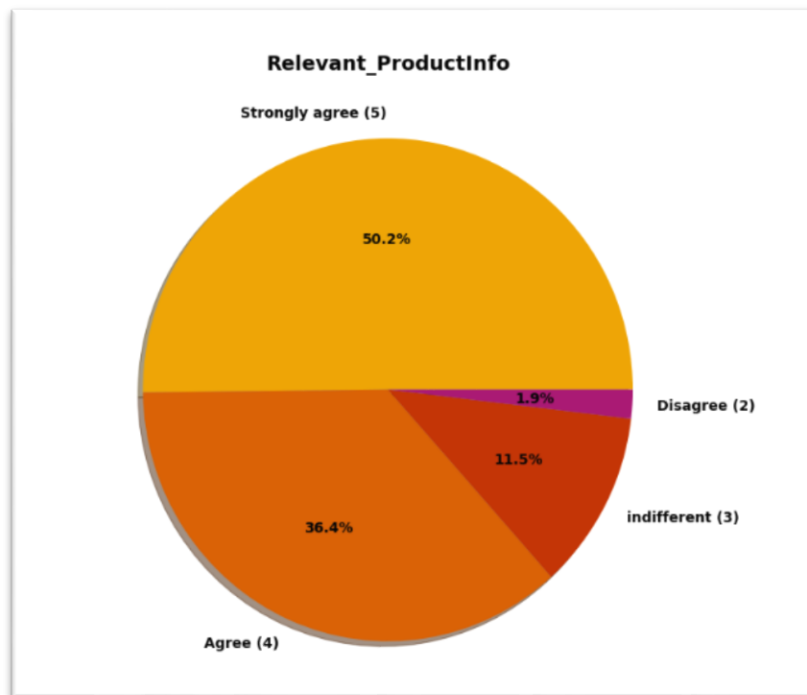
## 6. Exploring Feature Related to Customer Online Shopping Experiences

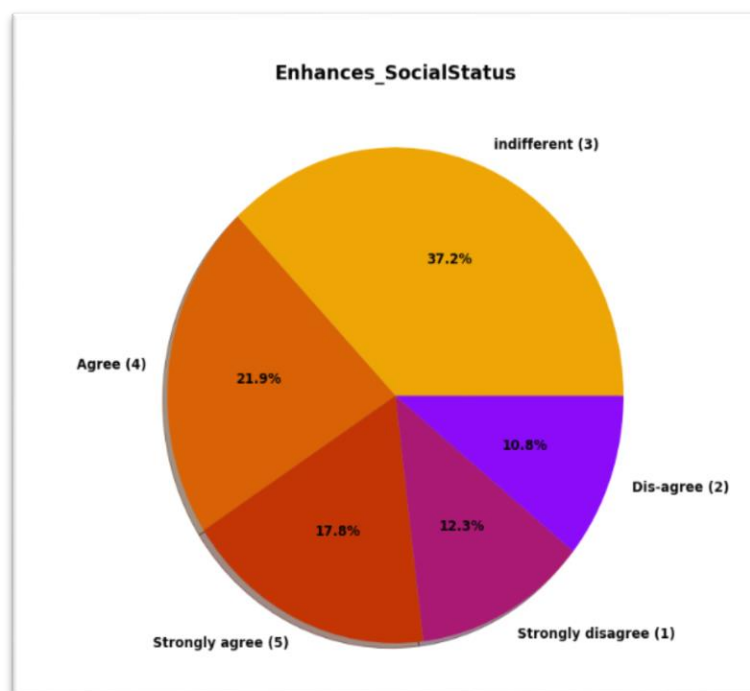
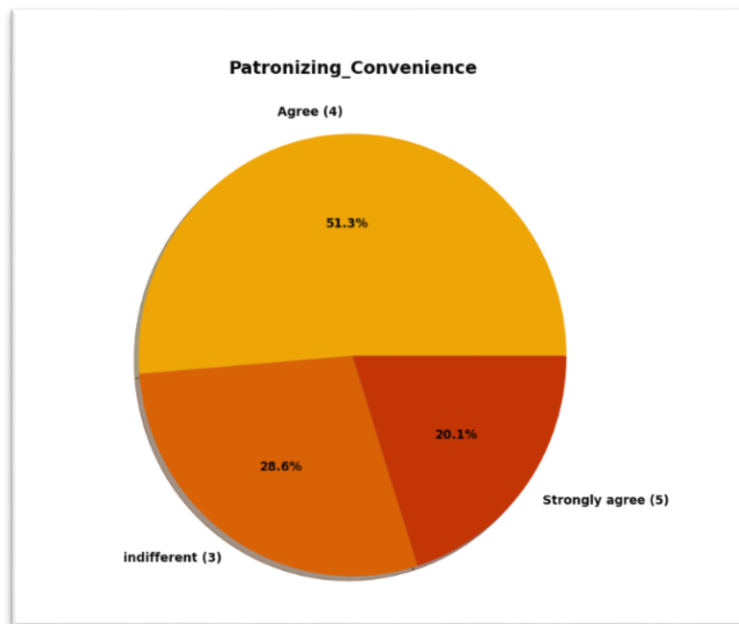
In this section we will analyse features related to Customer online shopping experiences like sense of adventure, monetary savings. Following features, we have analysed in this section:

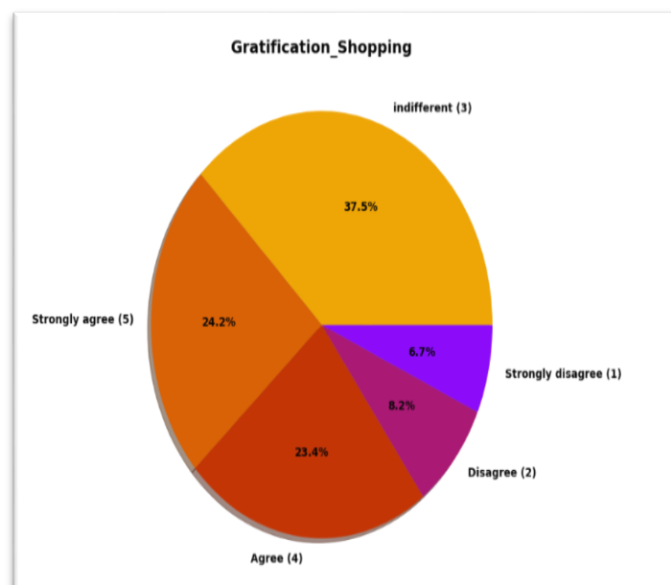
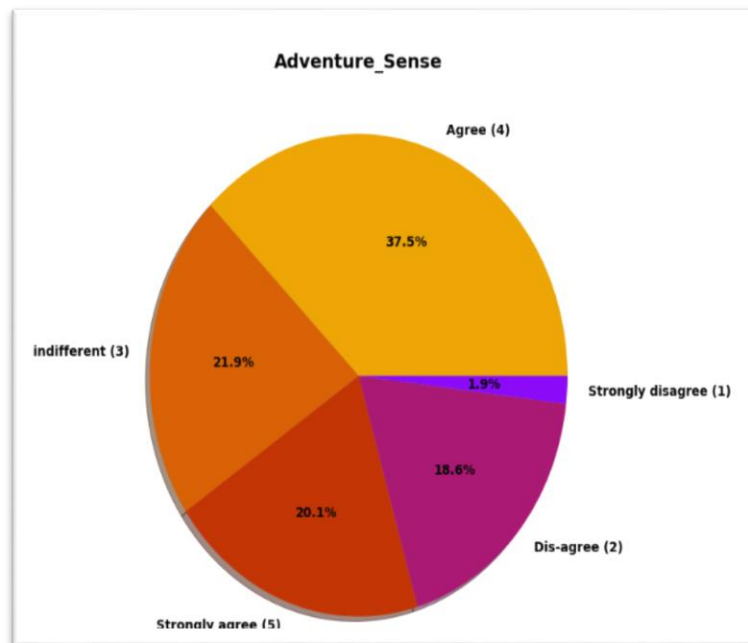
```
Feature_5 = ['Product_SeveralCategory', 'Relevant_ProductInfo',  
            'Monetary_Savings', 'Patronizing_Convenience', 'Enhances_SocialStatus',  
            'Adventure_Sense', 'Gratification_Shopping',  
            'Role_Fulfilment', 'Money_worthy']
```

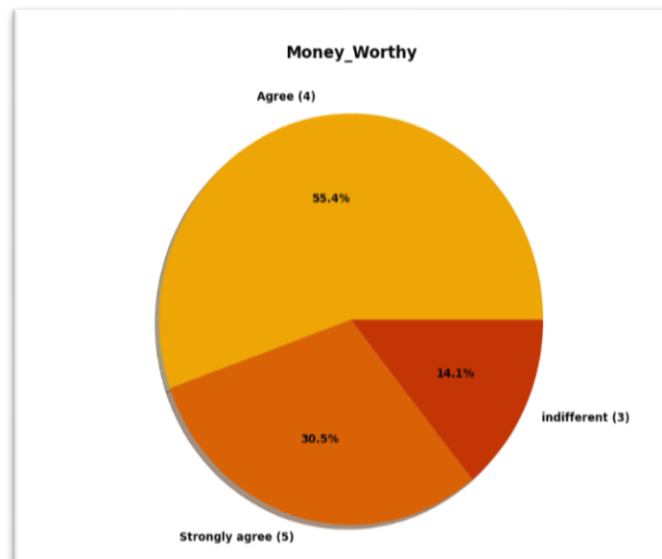
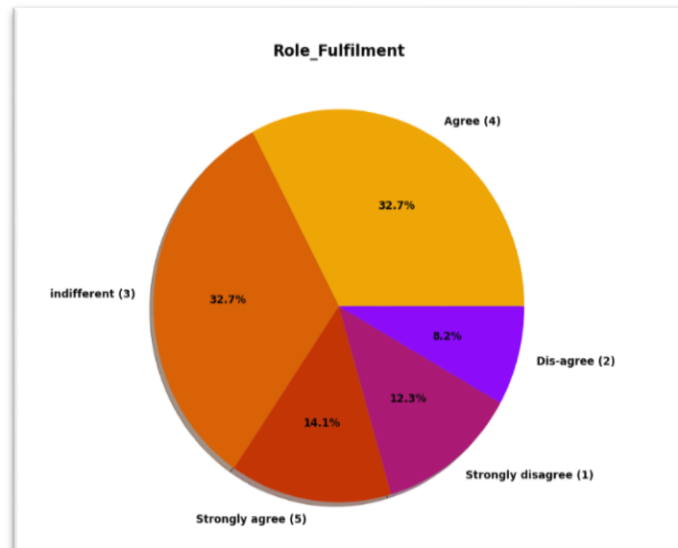
1. Product\_severalCategory,
2. Relevant\_ProductInfo
3. Monetary\_savings
4. Patroning\_Convenience
5. Enhance\_socialstatus
6. Adventure\_sense
7. Gratification\_shopping
8. Role\_Fulfilment
9. Money\_Worthy











### Observation:

- 50.2% Customer strongly agree & 36.4% customer agree that for good online shopping complete and relevant product information.
- Around 83% customer pursue online shopping for Monetary Savings.
- For 37.5 % customers Online shopping on website strongly gives the sense of adventure

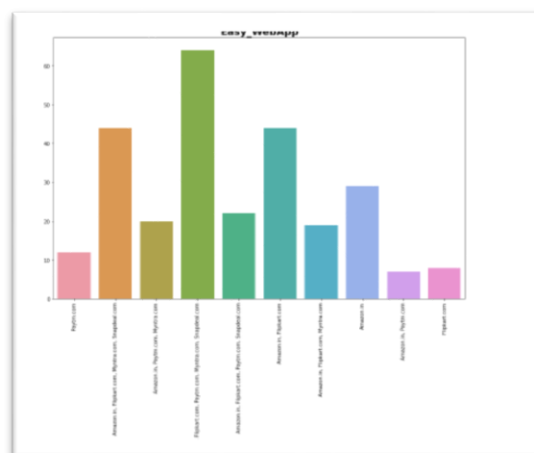


## 7. Exploring Opinion on Online Shopping Platform Websites by Customer

In this section we will analyse features related to website or application like performance, web layout. Following features, we have analysed in this section:

```
Feature_6 = [
    'Easy_WebApp',
    'Visually_AppealingWebApp', 'Product_Variety',
    'Complete_ProductInfo',
    'Fast_WebApp',
    'Reliable_WebApp',
    'Quick_Purchase',
    'PaymentOptions_Availability', 'Fast_Delivery',]
```

1. Easy\_webapp
2. Visually\_Appealingwebapp
3. Product\_variety
4. Complete\_productInfo
5. Fast+Webapp
6. Reliable\_webapp
7. Quick\_purchase
8. PaymentOptions\_Availability
9. Fast\_Delivery



by analysing above features followings are key findings:

### Observation:

- Majority, 64 customers agree that Amazon.in, Flipkart.com, Paytm.com, Myntra.com, Snapdeal.com are Easy to use website or application. But overall if we look at count plot of easy-to-use application & website Amazon.in got individually 1st Rank.
- 87 customers agree that Amazon.in, Flipkart.com have Visual appealing web-page layout than most of other market players.
- Around according to 125 people Amazon.in, Flipkart.com provides wide variety of offer on product.

- We already know 50.2% Strongly agree over providing complete relevant product information, and here we can see that 100 customer think that Amazon.in, Flipkart.com provides complete information compare to others.
- Previously we know that 42.8 % customer strongly agree and 41.6 % customer agree over high loading & processing speed of website. Here we can see Majority of people think that loading speed of Amazon.in is fastest while Flipkart.com slowest website to load.
- In terms of Reliability of website or application again Amazon top list.
- Majority of people also think that Amazon.in tops the chart in terms of quickness purchase process compare to others.
- Majority of customers think that Amazon.in, Flipkart.com provides several payment options compare to others.
- Safe & Speed delivery very much deciding factor in terms of purchase. In terms of speed of delivery Amazon.in is much better than other online shopping platform and Flipkart.com worst among all in terms of speed delivery of product.
- **We already Know more than 90% Customer thinks that guarantee on privacy of their information is important for them. Majority of customers trust Amazon.in more than other shopping platform for Privacy of customers' information**
- **Majority of customer trust Amazon.in followed by Flipkart.in over Security of their financial information. We also see very few peoples trust payment platform Paytm.**
- **Amazon.in, Flipkart.com, Myntra.com, Snapdeal.com provide assistance through different multi-channel.**
- **Longer time to get logged in can annoyed customer. Amazon.in take longer time to logged in while Flipkart.com take least time among all.**
- Majority of people agree that **Amazon.in, Flipkart.com** takes longer time in displaying and photos.
- Myntra.com followed by Paytm.com take longer page loading time.
- Most of people want **shorter delivery time frame**, majority customer agree that **Paytm.com takes longest time for delivery** compare to others.
- Amazon.in website is as efficient as earlier after upgradation.
- Majority 80 peoples recommended Amazon.in to their friends.

**Based on analyse we have following recommendation for E-commerce companies**

#### **1. Amazon.com**

**Areas for further improvement:**

- ✓ During promotions, try to give a disturbance free shopping experience to customers.
- ✓ Give more payment options to customers.
- ✓ Try to give price early during promotion.
- ✓ Reduce the delivery time of the products.

**Strong Area according to feedback by customer:**

- ✓ Convenient to use and also a good website for shopping.
- ✓ Fast delivery of products.
- ✓ Availability of complete information of the products.
- ✓ Presence of online assistance through multi-channels.
- ✓ Reliable website or app, perceived trustworthiness.

**2. Flipkart.com**

**Areas for further improvement:**

- ✓ During promotions, try to give a disturbance free shopping experience to customers.
- ✓ Give more payment options to customers.
- ✓ Try to give the price early during promotion.
- ✓ Reduce the delivery time of the products.
- ✓ Flipkart and Amazon almost share the same feedbacks with varying percentages as the only difference.

**Strong Area according to feedback by customer:**

- ✓ Convenient to use and also a good website for shopping.
- ✓ Fast delivery of products.
- ✓ Availability of complete information of the products.
- ✓ Presence of online assistance through multi-channels.
- ✓ Reliable website or app, perceived trustworthiness.
- ✓ Wild variety of products to offer.

**3. Myntra.com**

**Areas for further improvement:**

- ✓ During promotions, try to give a disturbance free shopping experience to customers.
- ✓ Try to give the price early during promotions.
- ✓ Reduce the delivery time of the products during promotions.

**Strong Area according to feedback by customer:**

- ✓ Convenient to use and also a good website.
- ✓ Availability of several payment options.
- ✓ Faster products delivery.
- ✓ Complete information of products available.
- ✓ Reliable website or app, perceived trustworthiness.
- ✓ Wild variety of product to offer

#### **4. Paytm.com**

##### **Areas for further improvement:**

- ✓ Reduce the delivery time of the products during promotions.
- ✓ Try to give the price early during promotion.
- ✓ During promotions, try to give a disturbance free shopping experience to customers.
- ✓ Late declaration of price and discounts.
- ✓ Frequent disturbance is occurring while moving from one page to another.

##### **Strong Area according to feedback by customer:**

- ✓ Convenient to use and a good website.
- ✓ Quickness to complete a purchase.
- ✓ About 64% of the customers feel that either web or app is reliable.
- ✓ Around 20% of the customers believe that Paytm has a wild variety of products on offer.

#### **5. Snapdeal.com**

##### **Areas for further improvement:**

- ✓ Reduce the delivery time of the products during promotions.
- ✓ Try to give the price early during promotion.
- ✓ During promotions, try to give a disturbance free shopping experience to customers.
- ✓ Late declaration of price and discounts.
- ✓ No one has expressed to recommend Snapdeal to a contact as it has the most negative feedbacks among all other websites.

##### **Strong Area according to feedback by customer:**

- ✓ Convenient to use.
- ✓ 54% of the customers are happy about the availability of financial information security.

## Chap 4. Conclusion

### 1. Key Findings and Conclusions of the Study

- It is strong recommendation to companies that Do not spend more money over social media marketing & Display Adverts in their Digital Marketing campaign instead of that focus on Search engine Optimization & Email Marketing which will likely to be more effective to earlier.
- Complete description product on website or app is essential from making purchase decision.
- For both gender tendency of shopping is less for age greater than 51 years old.
- Most of them agrees that the functioning of app efficiently is also a major factor which helps in enhance user experience while doing online shopping.
- Around 50% customers abandon cart due to better alternative offer which is obvious reason. Another most common reason is promo code not applicable on particular product.
- Paytm and Snapdeal has poor customer services and there is lot of scope for further improvement.
- Amazon and Flipkart are standing best out in the market competent business strategies and lot advantages over there competitor.
- Mostly because, it is convenient and flexible, people prefer online shopping.
- people who have been shopping for more then 3-4 years are the ones who frequently shops.
- We can observe that most of the people, abandoned them cart as they were having better alternative offers
- To conclude, having the right customer retention strategy will keep sellers company growing if they know how to take advantage of it. Then customers will find their way back and continue buying stuff from the best company.

## 2. Limitations of this work and Scope for Future Work

- This dataset has 269 rows which small. We can have more correct insight if more data is available.
- Machine Learning model can be built predict orientation of customer.
- Certain more feature around purchase details, price can able to much clearer picture which eventually help in advising solid recommendation.