

**PROJECT DONE ON**

**CUSTOMER RETENTION AND**  
**ACTIVATION CASE STUDY**

**SUBMITTED BY:**  
**JUHI MISHRA**

## **ACKNOWLEDGMENT**

I am doing project on customer retention and activation for online business based on rating and review surveyed using random online shoppers. Based on their view and rating will come to know what is the reason behind churn of customer , where and how to improve those loopholes, and how to make more activated customer. To complete this project lot many sites from where I got guidance and resources to have more information which helped me a lot. Few of them are : Google search, Stack overflow, Kaggle, Analytics Vidya , GeeksforGeeks, datatofish.com, also taken help from my SME Ms.Khoosbu Garg and Mr.Sajid from fliprobo guided me the way to do this project. Thankful to all of them from where I got help and able to finish this project on time.

# **INTRODUCTION**

## **BUSINESS PROBLEM FRAMING :**

In this modern era online business is in boom not only in urban areas but also become famous in rural areas. This we can say that now a days maximum population do have smartphone and have knowledge of how to use internet. But as we know with every positive there is a negative side too. Online business also do face few of the issues. In which one of the main factor is trust . Gaining trust in any of the business is the base to get success. Here gaining trust doesn't mean that someone has to convince customer to take product or purchase from them as this business is completely based on goodwill and their history of service and quality they provide. Because here customer do not know any of the retailer by their face or physically visiting to any outlet. Online retailer should focus on how to gain customer trust by giving them better service along with quality product. Also payment option should be more to attract customer for more purchase. Not only this information of customer should be kept private as these informations are vital and if it gets leaked it will not only create problem for buyers but also online retailer will loose their trust and may be possibility that customer attrition will take place. Online shopping become so famous that almost worldwide approx 68% of the population doing online shopping as per the google survey, among which men prefer more online shopping than female. So with the time customer

preference and way of shopping changed. In this if these retailer just keep in mind how to gain these customers trust and fulfil their need by giving them more and more varieties with better offer and promos definitely customer will get attracted and will have more willingness to purchase from that particular site.

## **CONCEPTUAL BACKGROUND OF THE DOMAIN PROBLEM :**

This project is all about customer retention i.e., if customer is trying to switch to some other site for whatever reason, present retailer should try to focus on why these customer being trying to alter, by having survey and should take their valuable opinion time to time so that they can understand the mindset of buyers and can work to improve themselves for those loopholes due to which they may loose their valuable customers. Here not only retention is the issue but also need to focus on activation of customer, means those who were purchasing prior had switched to some other retailer due to some or other reason. These are the important factor for any online business to have better customer base as online business now a days become more competitive because of many other new sites everyday being introduced in the market with more variety and offer not only that discount on few products which consumer say get in 1 site at higher rate with same quality may get in huge discount from some other site with same quality and brand . This is the big problem for any of the online retailers, so they should keep an eye on their competitors what they are providing, which force customer to

switch to them inspite of being permanent to the previous one . Now a days buyers research more and more before making their decision to purchase even sometime they make their mind to have that product but simultaneously getting better offer from other one and here abandon of product takes place which turns not only loss of sale but also loosing customer become one of the important concern. Online retailer should always have review from their customer for product they are being purchasing so that they can able to understand whether the customer was satisfied or not. As satisfied customer is the only key for any business to be successful in the market.

## **REVIEW OF LITERATURE :**

This project is about how online business grabbed the market and what are the pros and cons of the online shopping as per review and survey done by few of the selected random customers. Used matplotlib and seaborn to get visual insight of dataset. Gender wise seen that male are doing online shopping more than female this may be because of most of the women may not use smartphone or don't know how to operate online shopping. So here we can say either lack of information or knowledge may be the reason of this discrimination. Though the female user were less shown in gender wise shopping online still female customer are more consistent than male in doing shopping as number of years for online shopping survey shows that female are more in % doing shopping for more than 4 years . This means once female satisfied with what they require they try to stick and be

consistent customer for any of the online retailer. Mainly from 21 year to 40 year are more in number as online buyer as per the insight we gone through which means that from teenager to mid-age mainly do shopping online either to have new variety or use to prefer online instead of going outlet. One factor may be the time. As in online shopping no need to pre decide and have to travel to just have one shopping. Here not only time saves but also get variety of options which attract them to stick to online shopping. Which city do prefer more this service also matters a lot as this may decide what type of customer and which location or city to focus more , also this will help in finding the city where online shopping is not famous , what is the reason behind that? And how to resolve the same? Here got the insight from the dataset that buyers from NCR i.e., Delhi, Noida, Gurgaon and Bangalore prefer more to do shopping from online while semi-urban or Rural doesn't show much customer attracted towards this. One reason may be lack of trust, privacy and security concern, product description not so clear to them due to language barrier, or delivery issue , replacement and refund issue etc. Here by doing the survey and getting the review from customer may be helpful to expand their business and understand the taste and need of customer .

Now a days most of the population do have smartphone and if smartphone is in hand definitely mobile data being used most because of cheap and best . Anywhere can use internet facility. And the same insight got from survey that most of the population do use smartphone as a device followed by laptop which being used less but better than desktop or tablet. Going to any site become so easy using search engine for anyone, just by entering the name of retailer or a keyword for what we

want to search, will get the page where we want to visit. From the insight came across that search engine are more famous than any other source which are used to advertise generally in the market, likewise social media which shows really very less customer use this to go to any sight . So advertising through social media are waste even via email are not so helpful.

Even we seen that content marketing and display adverts are less effective for this type of marketing , as every business do have their own of marketing strategy and how to gather customer more and more. But online marketing are most famous via search engine or application, this is because of may be most of the consumer knows what to search and where to go. Making decision to have shopping online and what to purchase are tough job for any customer because of lot many options with various varieties and offers cum discount makes customer fickle mind, which means making up the mind to have online shopping from a particular website takes lot many time. With the help of review taken from online shoppers come across that generally buyer takes more than 15 min to come to ultimate decision . Which may result in churn of customer which is loss from a business point of view. Each and every customer is important as any business depends upon them only. Another issue is abandon of product without purchase , which takes place when customer try to have that product but simultaneously searching for better discount or promos which may help them in getting the same product in low price, as we know that there are various online sites where same products are available in different price and generally customer do search for every site and where they get the best deal end up their purchase there, this is one of the

reason why online retailers should always try to sell best quality with good discount and offers . As a business prospect and to run the business successfully in the market retailers should know why abandon took place with proper reason which may help them to curb this in future. Here with the help of review taken by random buyers we can see that most of them had given the reason to abandon the product, getting best alternative offer and same we discussed above that customer do search a lot and then makes their decision .

Retailer should have an eye what offer the other site is giving for the same product so that they can offer better than that and can give good competition to their competitor.

Website of any online business should be such that any of them can understand what exactly the site is and what type of business and product do they offer. That means content of any website should be crystal clear to make customer more understandable. As website are the face of any business specially online business. Here consumer generally not knowing any of the retailers by their face. So the information of that particular business should be such that customer do have trust and knowledge what that particular business is about and from whom they are purchasing are genuine or not. When we generally do shopping wants to have more varieties to have best in our bag, similarly happens in online shopping too, if we are searching for any of the product we want to have same product with different colour, different texture, different design etc for which similar product recommendation we can see below the product page for comparison. This not only helps customer to choose best for them but also makes more satisfied and a happy customer. This will be more helpful in getting good reviews from such



buyers which will help not only in retaining customer but also activation of existing customer may be possible , Review and star given by customer are one of the success factor for online retailers. Good the review, more the customer try to visit and purchase product from the site, similarly if the review not given positive this may turn negative for online retailers as customer will not be going to buy on the basis of poor review. Information about seller is must as said prior too, this is not face to face business and one purchase on the basis of trust what provided on site as online website is just the face of the brand through which actually retailers do the business . So this information is not only important for retailers but also for the goodwill of brand from where they do sell their product. Even product information should also be very clear. Because after reading all the descriptions of products buyers convince themselves to make purchase from that particular retailer and site. A site should always try to list those retailer who are genuine and have good reputation in market. So that no one can cheat their customer just to make profits. This will also affect that particular site as trust and reputation both will be on risk. Easy navigation should be there by website as address provided by customer is not known and if the navigation provided will not be easy then reaching on time to place will be affected which may result in delay of delivery and customer dissatisfaction may take place. Online sites now a days sometime face problem of loading page during peak hours or site issues. This should be taken care time to time so that this may not irritate customer. Once customer get irritated they may turn to some other site which may result in customer attrition which is loss for retailers. Website should be such that everyone can able to use it without any hurdle that means

should be user friendly. If not easy understandable user may loose interest and may not visit the site again. One of the important factor is payment method which should be convenient and more trustful as these are one of the important information which should not be leaked anyhow. Most of the customer do scare of this and not prefer online shopping. Payment options should be more so that customer will get choice of how they want to make payment. There should not be restriction on this otherwise retention may take place which may affect retailers business. As we know that online business do have lot many problems which buyer wants the solution on time. Sometime happens because of delay in delivery, product what seen online received different, payment issue, refund and replacement issue and lot many issues are there which customer may face. For this every online site do have customer care where they should try to handle every customer very softly and try to show that each and every customer are important and equally valuable for them , which in turn may able to gain their trust which will helpful in solving their issues on time. Every online site before having purchase ask for few personal information such as mail id, contact number, name , address etc these are such information which should not be leaked in any situation otherwise it may affect buyer personally .Online retailers should always try to keep the information private. That means only the user and from where they purchased be able to see. Security for privacy should be there. Online retailers should have various channels to communicate, if buyers not able to reach say via customer care there should be some alternative option through which they can solve their problem on time. With every negative there are few positive sides too. Till now

we were analysing what an online site should provide their customer to make them a satisfied and happy customer which will help them too be in the market as one of the leading online retailer. Now will go through how buyers being benefitted by online shopping. Very first they don't have to pre decide and plan to have shopping. Prior online business were in boom, mostly buyers had to plan for shopping that too with limited options. This was not only killing their time but also was becoming very hectic, as to select one or two had to visit lot many shops in the market. In this way we can say that online shopping is convenient and flexible. Even no need to do bargaining which generally happens in market. As offer and discount time to time being provided by most of the online retailers.

Which helps in saving money and have good quality product at reasonable price. Once customer is satisfied with quality and price of the product defiantly a happiness of shopping takes place in customer's mind . As shopping is such which everyone wants to have best.

Few of the service which every online site should have and try to fulfil those at it's best so that they can earn buyers. In which comes refund and return policy should be such which will be helpful for customer and without any hurdle they can process this . Quality description provided online should be crystal clear so that after buying a buyer should not feel to be cheated. Ultimately any business depends upon trust. If a customer do have more faith they will definitely come back and not only this even will bring new customers by recommending them. Which will help in growing a business in a more better way. Once a customer do satisfied with every aspect such as quality, offer, discount, service, information

provided, return and refund policy, payment option, getting wide variety of options, trust satisfaction, etc they will try to recommend that particular retailer to their family and friends. Now comes to which retailer being preferred more by buyers. From the insight of dataset provided come across that amazon is being preferred more by buyers followed by paytm and Flipkart. As we seen in previous discussions that what were the parameter on the basis of which customer do prefer a retailer, and here we can see that amazon is the one which is being preferred mostly compare to any other sites. How the site looks, what are the information provided, how much clear and easy to read decides one to be leading the competitive market. Most of the customer agree that amazon do have catchy visual appearance compare to others. While combining Flipkart and amazon being rated mostly. That means these sites are such who do have better visual appearance. How much variety do online site offers also matters a lot. Here we can see that amazon is the one who is offering wide variety of product to the customer , If customer gets more choice will more easier to decide what they want to have and as we know that now a days most of the buyers wants to have something unique so prefers to have more choice to select best. Variety of product offers lot many choice for customer to choose best among all. Coming to information provided by online retailers in detail and more clear, most of the customer again preferred amazon as an individual site the best. But again combination of Flipkart and amazon being rated highest. Almost in most of the preference Amazon being rated one of the leading site compare to others individually such as fast loading website speed, reliability of website, easy to read content, quickness to complete purchase, faster order delivery, privacy of customer

information, security of customer financial information, trustworthy, online assistance through multi-channel, time taken for log in, website as efficient as before. These are the factors which decide any of the online business to be one of the successful retailer in the market, here we can see that most of the customer do prefer amazon for recommendation which is obvious as in most of the parameters we come across through our insight that amazon is trying to fulfil most of the parameters, keeping in mind customer choice and preference.

Doing online shopping do have some cons . Let's see what are the cons and which retailer do have the most. From this will be able to understand why customer prefer one of the site and why not the other. Also how to improve those will be helpful from this analysis. One is Delay in declaring sales or promo offers where we observed that 31-40 times due to delay in announcing sales offer customer do turn to some other retailer, which turn to be loss for the site. Mostly consumer prefer online shopping because of getting best deal on the product and if that becomes constraint, customers switch to some other site. While going to the site if loading of page takes time that may also turn to be negative as consumer visit to some other site and will do purchase from there. Here Myntra and Flipkart seems to have such issues. These issues should be taken care of on time, so that will be able to serve customer services without any hurdle. Another issues which a customer may face is limited mode of payment for maximum product that means either COD is not available or some bank name are not mentioned in payment option or credit card option or semi options are less. These are the few issues where buyers get stuck and abandon purchase without making payment. This

issue we observed in snapdeal where most of the consumers agree to this that they have limited payment options. For this reason may be most of the buyers prefer amazon, Flipkart, paytm or Myntra . Placing order on time is one of the key for success of online business. If it takes longer period may be customer will get irritated and may abandon the product , even will try to have from some other site as per their convenient.

Sometimes online retailers try to introduce something new in their website or try to make more easy and more informative by adding few more informations. Even change the design of website to make it more presentable. This may be we can say in a positive way that accepting changes are difficult but if the changes are for more better and improvement done on the same, then it's really helpful for buyers only. So that in future they will be able to have almost all the services without any issue. Even will have knowledge from whom and where they are purchasing. And here we can see that amazon is such a website for whom most of the customer agree that they change their website design frequently.

Coming to technical part, moving from one page to another sometimes become a big task for customer, this happens mainly as online sites do have lot many information and that may stuck the site may be for technical issues which should be resolved on time . Also website which was working prior pretty good later on seen that website is not as efficient as before . This may happen because of not updating the website on Time. These all cons should be taken care of else it will turn to be negative for these retailers and may customer churn takes place.

## **Conclusion :**

Online business now a days are more popular and easy to use amongst buyers. But it solely depends upon customer satisfaction which emerged as one of the important factor for any of the online business to get key to success. A satisfied customer leads to purchase, repurchase, generate new customer via recommendation, intention and loyalty of customer. With the help of review taken from few of the online shoppers come across what loopholes do customer feel in online shopping and analysed on the basis of that, what best can be done to improve customer retention and activation to improve online business and curb customer attrition.

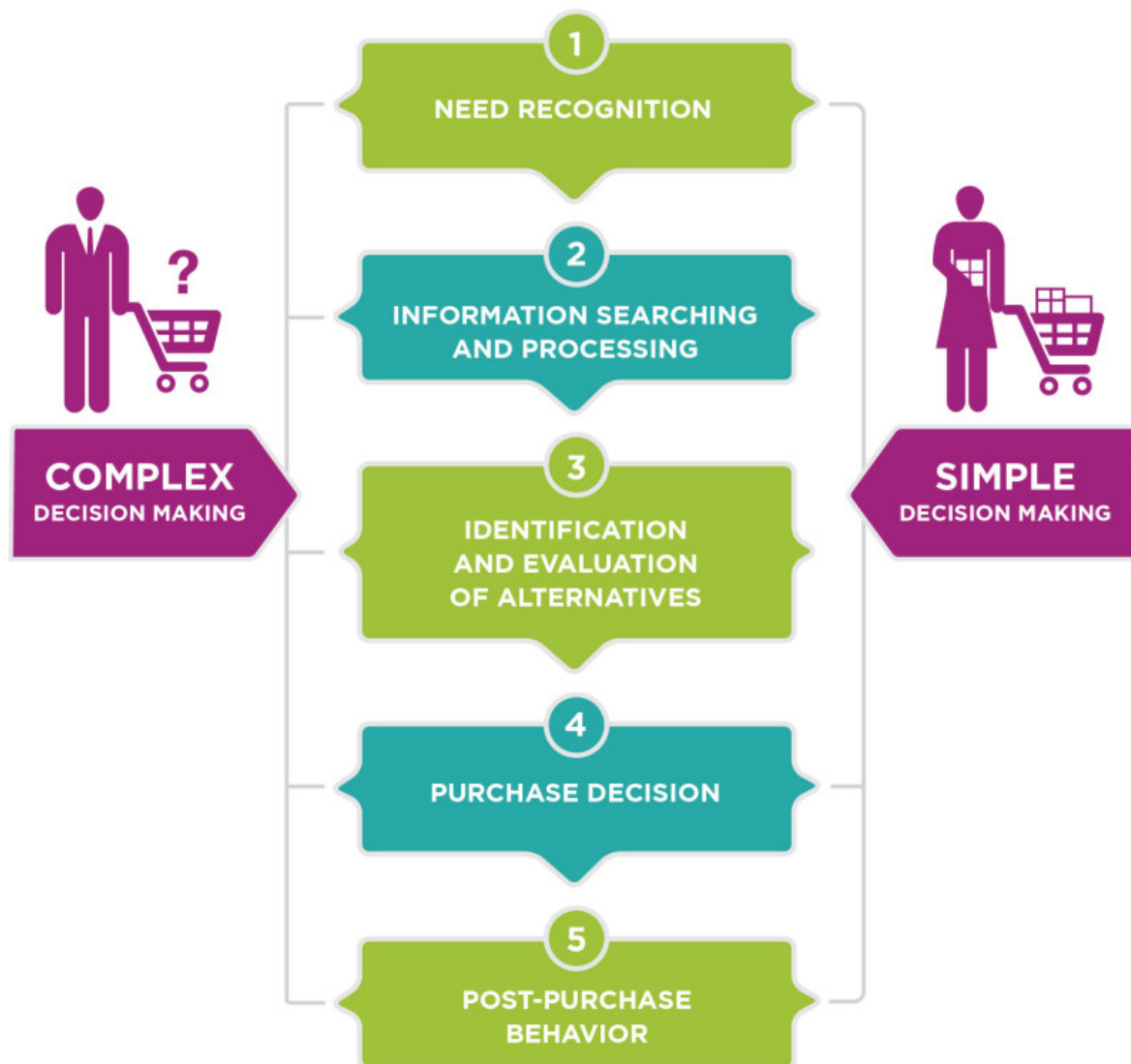
Observed few factors which is a concern for e-commerce business to be in competition in the market. These are : Providing better service, best quality, sales offer and discount announcement should not be delayed, best price, proper guidance via providing all necessary information required, detail of product should be clear and true, loyalty, offering more payment option , security for privacy of information, queries should be solved on time, delivery of order on time, refund and replacement policy, maximum information of listed seller.

The factors mentioned above are the key to get success in e-commerce business. A happy and satisfied customer will always be an asset for any of the business. So every online retailer should provide service such that a customer recommend new customer via reference. If once a customer visited to site for purchase and revisited then we can say that customer loyalty is there for that particular site and may become regular buyer for them. This not only be helpful in

curbing attrition but also be helpful in retaining those customer who become negative may be of one or other reason. As we know that review and ratings are the factor which decides whether the customer is satisfied or not. Once a customer is a happy customer will definitely give positive feedback which in turn will be a benefit for that retailer. As e-commerce market become one of the most competitive market because of everyday one new site being launched with some new offers and varieties, satisfying customer become one of the challenging situation for all online retailers. With the help of these reviews collected from few Indian online shoppers we come across what expectations do they have from online shopping. Every e-retailer should focus on these factors and try to reduce the hurdle which buyers feel is curbing them to purchase from that particular site. This will help them to retain their existing customer and activate new customer. Mainly focus of every online retailers should be how to make customers satisfied and happy by providing them better service and quality along with other factors.



## THE CONSUMER DECISION-MAKING PROCESS



### Motivation for the problem undertaken :

As a data scientist wanted to know the trend of e-commerce market and what are the factors restricting consumers to be

loyal to a particular site. Motivation to do this project was to know the Indian Online shoppers trend and how to retain customer to be with a particular website with all satisfaction and need they require. E-commerce business emerged as one of the leading and competitive business amongst all. From here will not only be able to understand why customer is preferring one and not the other but also will try to help online retailers to know the fact about what consumers think and why they are altering so much. With the analysis done above we can say that e-commerce business do have lot many factors to make their customer satisfied. Trust is also one of the main factor on which this business runs. Online retailers should focus mainly on how to satisfy customer so that they will repurchase and will be a maximum time buyer. Here I am able to understand both customer and retailer issues and how to overcome that. This project given me a clear view of e-commerce business and online shoppers intention and buying motive.

## **Data Sources and their formats :**

This data being collected via fliprobo company, excel sheet for preparing model being provided along with the word format to understand the case study of Indian online shoppers for e-commerce business.

## **Data processing done :**

Data cleaning not required here as there are no null or missing

values present in dataset. Column rename been done to make it short and summarised. Feature engineering being done using label encoder and replace method to transform all the string / object column to integer form for our machine algorithm to understand as machine language doesn't understand object data type. As no skewness and outliers to be checked because none of the column were continuous column . As this dataset was a classification based problem so further proceeded assuming it as a classification problem. And did algorithm based on the same.

## **Data-Inputs-Logic - Output - Relationship :**

Done this project assuming Recommendation of site as a target value and rest all other 70 columns as an independent variable ( feature) . Here I assumed that based on all other factor one will recommend that particular site to others. If consumers do agree to most of the factors in negative manner will not be going to recommend that site to their near ones, but if they are agreed to most of the factors in positive manner will definitely be going recommend to their friends and family. So impact here we can see either positive or negative will be on recommendation so I considered it as a dependent variable and all other columns as an independent variable.

## **Set of assumptions related to the problem under consideration :**

First I seen the gender wise difference who were using online

shopping where percentage of females were almost half of males who were using online shopping . Assumed here that may be lot many women in India still don't have smartphone and also not having much knowledge of how to use the functions properly. This may be one of the factor that less female we got as online shopper simultaneously observed that though % of female are less users but consistent of shopping being done by female only. That means no of females doesn't matter and as we know that females are shopping more than male definitely if female user increases no of shopping will also increase and customer buying consistency will be more. Recommendation to friends depends upon many factors which we seen during our analysis, so those factors to be taken care of by e-commerce business else will not be able to retain their customer even holding existing customer will also be tough task for them. Trust, loyalty and satisfaction of customer may lead an online retailer to be one of the successful e-commerce business and can sustain competition in the market.

## **Hardware and Software Requirements and Tools used :**

To complete this project and to run the model imported few important libraries listed below:

1. Numpy (for mathematical calculation)
2. Pandas (For dataframe)
3. Seaborn and matplotlib for visualisation
4. StandardScaler to bring all the units on one scale so that our machine algorithm can perform better
5. train\_test\_split to train and predict the model.

6. Label Encode to transform all object to integer form
7. Warnings to ignore warning while performing code.

## **Models development and evaluation :**

### ■ **Identification of possible problems - solving approaches :**

This dataset was based on classification problem and Recommendation to friends ( dependent Variable) considered as target or dependent variable ,rest all 70 columns were independent variable ( Features). This dataset consist of total 269 rows and 71 columns. Taken review from few Indian Online shoppers regarding e-commerce pros and cons they are experiencing, based on that analysis done using visualisation method by importing seaborn and matplotlib. Once the insight was clear what are the approach of customer and what label of improvement they are looking for more satisfaction and loyal to a particular site.

### ■ **Testing of identified approaches (Algorithms) :**

Here I used three algorithm to train and test my model . Listed below the name model being used :

1. Decision Tree classifier
2. Random Forest Classifier
3. SVC (Support Vector Classifier)

Here as a matrix I used accuracy score on best random state 4  
 Here after running all the model come across that Random  
 Forest classifier is the best model among all as Cv score  
 and Accuracy score both are 100%.

Below is the classification report for Random Forest  
 Classifier :

```
RFC = RandomForestClassifier()
RFC.fit(x_train,y_train)
pred =RFC.predict(x_test)
acc = classification_report(y_test,pred)
print(acc)
```

precision	recall	f1-score	support		
	0	1.00	1.00	1.00	22
	1	1.00	1.00	1.00	22
	2	1.00	1.00	1.00	6
	3	1.00	1.00	1.00	9
	4	1.00	1.00	1.00	3
	5	1.00	1.00	1.00	4
	6	1.00	1.00	1.00	11
	7	1.00	1.00	1.00	4
accuracy				1.00	81
macro avg	1.00	1.00	1.00	1.00	81
weighted avg	1.00	1.00	1.00	1.00	81

### **Cross Validation score of RFC :**

```
print(cross_val_score(RFC,x,y,cv=5).mean()):  
1.0
```

For Decision Tree classifier the classification report is :

```
DTC = DecisionTreeClassifier()
DTC.fit(x_train,y_train)
pred = DTC.predict(x_test)
acc = classification_report(y_test,pred)
print(acc)
```

precision	recall	f1-score	support		
	0	1.00	1.00	1.00	22
	1	1.00	1.00	1.00	22
	2	0.86	1.00	0.92	6
	3	1.00	0.89	0.94	9
	4	1.00	1.00	1.00	3
	5	1.00	1.00	1.00	4
	6	1.00	1.00	1.00	11
	7	1.00	1.00	1.00	4
accuracy				0.99	81
macro avg		0.98	0.99	0.98	81
weighted avg		0.99	0.99	0.99	81

### **Cross Validation score of DTC :**

```
print(cross_val_score(DTC,x,y,cv=5).mean())
0.9925
```

For SVC the classification report is:

```
SV = SVC()
SV.fit(x_train,y_train)
pred = SV.predict(x_test)
acc = classification_report(y_test,pred)
```

```
print(acc)
```

precision	recall	f1-score	support		
	0	1.00	1.00	1.00	22
	1	1.00	1.00	1.00	22
	2	1.00	1.00	1.00	6
	3	1.00	1.00	1.00	9
	4	1.00	1.00	1.00	3
	5	1.00	1.00	1.00	4
	6	1.00	1.00	1.00	11
	7	1.00	1.00	1.00	4
accuracy				1.00	81
macro avg	1.00	1.00	1.00		81
weighted avg	1.00	1.00	1.00		81

### **Cross Validation score of SVC**

```
print(cross_val_score(SV,x,y,cv=5).mean())
```

```
0.3085
```

Considered RFC as best model because difference between accuracy score and CV score of RFC is less almost nil.

## **CONCLUSIONS :**

- **Key Findings and Conclusion of the Case Study :**

Overall we can say that each and every information of customer and their privacy should be maintained in a proper manner. Also by giving them quality service and attractive



discount may curb the attrition and retain customer to stick to their site. Not only this, gaining trust by solving their issues on time and making them feel that they are one of the valuable customer for them will really be helpful. An online business now a days really become more competitive market as there are lot many sites which offers not only variety but also offers attractive discount along with mostly same service which all other sites are giving. So every online business should have eyes on each other what they are offering and how the customers are shifting to them. This will help them to retain their customer and will be helpful in improving business. Not only this they should also be careful that there should not be any problem in their site as, if that become an issue, mean to say that while purchasing, if site becomes slow or while doing payment site doesn't work then it may be a problem for customer they may face. There should be clarity of information they are providing online regarding themselves or their product along with graphics or photos, This will not only help them to attract customer towards them but also can activate new and retain existing customer. Online business are not so easy as customer do have trust on information what they provide and product what they try to show them, here we have to understand that this is not a face to face or going outlet and can have shopping by knowing the retailer personally, here customer know them just by their goodwill and rating provided online for their service and quality. So to lead online shopping a retailer should always keep in mind that a happy customer always be an asset for any business and the key for happiness of customer are quality service, on time delivery, good discount, sales and promo offer, less website issues, return and replacement policy, maintaining privacy

and many other factors are there which if online retailers can maintain they can retain their customer easily and can have new customer too by reference of existing customer and review given by them online for any product or service.

- **Learning Outcomes of the Study in respect of Data Science :**

While doing project when I gone through the dataset realised that this dataset is a classification based problem and as there are 71 columns so need to analyse each and every column to understand the prospect of data and how to deal with the same. Here data cleaning were not used as there were no null values which I came through by using isna and info method. Columns name were too big which I was facing difficulty while doing pie chart so short it down by renaming the same. Label encoder used to transform object data type to integer form for machine algorithm performance. After transforming scaled all the features to bring it to same unit. Once scaling done found best random state on which will train the data. For training distributed 70% and testing 30% of data. Next used 3 classification algorithm . They were : Decision Tree Classifier , Random Forest Classifier, SVC . Among which Random Forest classifier emerged as best model performance as difference between CV score and accuracy score were less in this almost 100% for both. The main challenge I faced was analysing each and every column and tried to note down what exactly customer having thought for e-commerce business and what are the issues they do feel for which churn takes place. And how to get rid of them? Moreover as in this data I think

could have done more as my model is giving 100% accuracy but this accuracy generally we get when our model is overfitting, here unable to get that information. As a data scientist could have done more visualisation by comparing one to the other feature.

## • **Limitations of this Work and Scope for Future Work :**

This dataset is all about theoretical part because mostly rating being provided by customer from 1 - 5 (in which 1 = Strongly disagree, 2 = disagree, 3 = indifferent, 4 = agree, 5 = strongly agree). But what I felt instead of rating if there views were more clear may be able to know more about what they exactly wants to improve and how it can be improved, by taking there suggestion. If suggestion column would have been added that might helped me to get more clear about how can we curb churn of customer and in which parameter a retailer would work more to have consistent buyer. E-commerce is one the booming industry and almost all the product available here so customer base will definitely be larger compare to any other business. Moreover day by day consumer prefer more to have online shopping rather going outside as this not only saves their travel time but also get the product just by one click with home delivery facility. Here we can say that e-commerce will be enlarged with the time as people are getting more interested and awareness even trust also increased by

time. Not only this population from rural area too started using online shopping so we can say that it reached almost wide area which gives more prospect in future, not only shopping wise but also job been increased because of this even in rural area. Here as I said that we mostly used ratings to know there prospect and view , along with that suggestion should also be added to know buyers mindset more, which will help us to improve those areas where we find are having loophole.