ONLINE SHOPPING SECURITY

Survey Project Report submitted to

Department of Information Science and Engineering,

NIE Mysuru

In partial fulfilment of the requirement for the project in

Cybersecurity

BETCK205I

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ABSTRACT

This survey aims to assess individuals online shopping habits, security practices, and awareness of potential risks. The survey covers various aspects of online shopping, including demographic information, shopping preferences, password management, payment methods and security, product selection and customer service, and awareness of online fraud.

The demographic section examines the age groups of the respondents. The shopping preferences section explores the preferred mode of shopping, trust in different online platforms, and frequency of online purchases. The password management section delves into practices for creating and managing online shopping account passwords, as well as the use of password managers.

The payment methods and security section investigates the preferred payment options, verification of website security before making payments, precautions taken when using public Wi-Fi, and the review of credit card statements after online transactions. The product selection and customer service section looks at the factors considered when selecting an online product and the level of satisfaction with return, refund, and customer service policies.

Finally, the survey assesses the respondents' awareness of common online shopping-related crimes, confidence in the security of financial information on online stores, past experiences with scams or frauds, and suggestions for preventing and avoiding online shopping fraud.

The survey results will provide valuable insights into users' online shopping behavior, security awareness, and potential areas for improvement in online shopping safety and consumer education.

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ONLINE SHOPPING SECURITY SURVEY

01) Introduction

We, The Information Science Engineering students of C section from The National Institute of Engineering, Mysore (North Campus) have taken the initiative to explore the perspectives of common people regarding their knowledge on online shopping security through this survey project. We chose this specific topic because shopping is a universal activity and with the growth of technology, people tend to shift the process of shopping from offline to online. However, this growth in technology also poses risks, as some individuals use it to conduct illegal activities to steal customer's personal information. Online shopping security is a vital aspect of cybersecurity as it involves protecting customer's information from various cyber threats. Mainly ensuring secured transactions and preventing details of common people from reaching into the risk bringing hands are the functions of online shopping security.

Online shopping security is crucial to protect customer's information, prevent frauds and build customer trust. In the survey conducted, we have pinned down some of the common yet vital questions regarding online shopping using Google forms as a medium of communication. This is done to gain a better understanding on customer's perspective towards online shopping security. Our project tries to gather insights on their experiences, knowledge, thinking etc while shopping online. By gathering and analysing the responses, we try to highlight the critical role of cybersecurity in our daily life. We have taken responses from various age groups as online shopping is not restricted to a particular age group and as some particular age group people like the elderly aged group are more targeted than the rest in this scam, and so their security is more at risk. Not only pointing out potential vulnerabilities but also finding and correcting common misconceptions while shopping online.

02) Survey Questionnaire :

1. What age group do you belong to? (SCQ)
   a) 10-20
   b) 20-30
   c) 30-40
   d) 40-60
   e) 60+

2. What mode of shopping do you prefer? (SCQ)
   a) Online
   b) Offline

3. Which Online shopping site would you trust to use?
   a) The site you came across in TV Ads
   b) The site you received through emails or SMSs
   c) The site of the product's company
   d) The site you come across through social media ads

4. How often do you shop online?
   a) Weekly
   b) Monthly
   c) Occasionally (Once in a couple of months)
   d) Rarely

5. When creating an account on a new online shopping website, how do you choose a password?
   a) I reuse the same password I use for other websites.
   b) I choose a simple and easy-to-remember password.
   c) I create a strong password with a mix of uppercase and lowercase letters, numbers, and symbols.
   d) I don't create an account, I just checkout as a guest whenever possible.

6. What's the highest amount you would be ready to spend on a single cart while shopping online?

   _____

7. What kind of payment methods do you use ? (SCQ)
   a) Credit Card
   b) Debit Card
   c) UPI
   d) Cash on Delivery

8. Before buying any product from a site do you do a background check on the seller or retailer? (SCQ)
   a) Yes
   b) No

9. You receive an email offering a great discount on a popular product from a website you haven't heard of before. How likely are you to click on the link in the email and visit the website? (SCQ)
   a) Very likely, I love a good deal!
   b) Somewhat likely, I'll check the website address carefully first.
   c) Not very likely, I'll search for the product on a reputable website instead.
   d) Not likely at all, this sounds like a phishing scam.

10. How often do you verify the security of the website before entering your payment details? (SCQ)
    a) Always before paying
    b) Sometimes but I read it fully
    c) Sometimes a part of it
    d) Never because I'm lazy to read the whole text

11. Do you regularly update your passwords for online shopping accounts? (SCQ)
    a) Always
    b) Sometimes
    c) Very rarely
    d) Never

12. Do you utilize password managers to store and manage your online shopping passwords? (SCQ)
    a) Yes
    b) No
    c) Considering you have some knowledge about it
    d) Not sure what a password manager is

13. Do you use public Wi-Fi networks to make online purchases, and if so, do you take any precautions? (SCQ)
    a) Yes I take precautions while using public Wi-Fi connections
    b) No I don't take precautions while using it
    c) I don't trust public Wi-Fi at all so I don't use it

14. How often do you make it a point to read your credit card statements after making an online purchase/transaction? (SCQ)
    a) Always, right after every payment
    b) Only when in doubt or suspicion
    c) On a monthly basis
    d) Never really paid attention to it

15. Lets assume that you are planning to purchase a product online and you have most likely browsed all the sites that supply this product, would you prefer to buy the product from? (SCQ)
    a) A brand with reviews in range of 1 to 5 stars
    b) A brand with all 5 star reviews
    c) A brand with too good to be true offers and discounts
    d) An offline store

16. How satisfied are you with the return, refund, exchange and customer service policies offered by most online stores? (SCQ)
    a) Very satisfied
    b) Somewhat satisfied
    c) Somewhat dissatisfied

d) Very dissatisfied

17. What do you think is the most common crimes which occurs while shopping online? (SCQ)
    a) Phishing
    b) Credit Card Fraud
    c) Identity Theft
    d) Fake Websites
    e) Non Delivery of goods

18. Do you feel confident that the online stores you shop at keep your financial information secure? (SCQ)
    a) I have complete trust in the security measures of the online stores I use.
    b) I neither feel confident nor doubtful about the security of my financial information.
    c) I have significant concerns about the security measures in place at some online stores.
    d) I do not trust that my financial information is secure when shopping online.

19. Have you ever experienced any scams or frauds while shopping online? If yes, then elaborate.
    _____

20. What measures would you suggest to prevent and avoid frauds and scams being happening during Online Shopping?
    _____

21. Do you know how to report suspicious activity or fraud related to online shopping? (SCQ)
    a) Yes I know exactly
    b) No, I have no clue
    c) Vague knowledge

03) Preliminary Insights:

3.1) Summary of Initial Observations

These questions cover various aspects of online shopping, including preferences, security measures, and experiences with fraud. The insights that can be gathered from these questions include:

➢ In the first question, Around 34.3% of the people who took this survey are aged between 10-20, 32.4% of the people are aged between 40-60, 16.7% of the people are aged between 20-30, 12.7% of the people are aged between 30-40 and a very small percentage of them are above the age of 60. It is clear that 10-20 year olds are actively engaged in online shopping and demonstrate a significant reliance on digital platforms for purchases.

➢ For the second question, 35.3% of the respondents prefer offline and 64.7% of them prefer shopping online. People prefer shopping online because of price comparison, customer reviews, exclusive deals and no crowds, which offline shopping lacks.

➢ For the third question, 59.8% of them prefer shopping from the site of the product's company, 20.6% of them prefer shopping from the site they come across through social media, 15.7% of them prefer shopping from the site that they come across on TV ads and a very small percentage of them prefer shopping over sites that they come across through emails and SMS. The general audience believe in buying products from authentic sites which are more reliable and trustworthy.

➢ For the fourth question, 44.1% of them occasionally shop online, 26.5% of them shop monthly, 17.6% of them shop weekly and 11.8% rarely shop online. We can say that the people who occasionally shop online are mostly the ones who've been saving up to purchase something that they desire. The ones who shop on a monthly and weekly basis are usually getting groceries to refill. The rest mostly prefer offline.

➢ For the fifth question, 32.4% of them create a very strong password as mentioned in the question, 24.5% of them choose an easy to remember password, 22.5% of them don't even create an account and login/logout as guest user, 20.6% of the respondents reuse the same passwords that they use previously. Majority of them are aware about the importance of creating a strong password. If the rest of responses are considered, then most of them prefer something easy and something that they can reuse which will be useful in future.

➢ Going with the sixth question, we got all 102 responses ranging from ₹1.0 to ₹80,000. We can say that the general public prefers to spend money over various products coming from various websites. There are many factors affecting this such as ease of access, targeted advertisements, personalized recommendations, ease in digital payments, Offers and discounts which trigger people to purchase more via online websites.

- ➢ For the seventh question, 39.2% of respondents prefer making online payments using UPI, 25.5% prefer credit cards, 18.6% prefer cash on delivery, 9.8% prefer debit cards. UPI is most preferred due convenience, security, no transaction fees, easy to use and cash back offers.

- ➢ For the eighth question, a whopping 75.5% of the respondents do run a background check on the online seller and the rest do not. We can say that the majority of the respondents run background checks on online sellers to avoid scams and frauds, to check product authenticity & return and refund policies

- ➢ For the ninth question, around 40.2% and 39.2% of the respondents are most likely to not click the link and visit the website. From this we can say that, many of the respondents don't click on such links due to phishing attacks, malwares and viruses, spoofed websites and credential harvesting.

- ➢ For the tenth question, 45.1% of the respondents verify the security of the website before entering payment details, 23.5% of the respondents only view a part of it, 16.7% of the respondents read all the details and the rest are lazy to read the text. From this we can say that most of our respondents are aware about frauds, phishing sites, data privacy and identity theft.

- ➢ For the eleventh question, almost 39.2% of the respondents very rarely update their passwords for online shopping accounts, 28.4% of the respondents never update, 24.5% of the respondents update their passwords sometimes and the rest of them update their passwords always. From this, we can say that many people don't understand the importance of updating/changing their passwords. Updating passwords regularly mitigates data breaches, prevents credential stuffing, enhances security and combats keylogger threats.

- ➢ For the twelfth question, clearly 51% of the respondents never utilize password managers and 36.3% of the respondents do utilize password managers. Password managers help in creating strong & unique passwords. They provide encryption, protect against phishing attacks and provide secure sharing.

➢ For the thirteenth question, almost 65.1% of respondents do not trust public Wi-fi to make online purchases, 20.6% of respondents don't take precautions while using public Wi-fi and the rest take precautions while doing so. From this we can say that, majority of the respondents know the importance of not using public Wi-fi. Public Wi-fi lack usually consists of unsecured networks, account takeovers and evil twin attacks.

➢ For the fourteenth question, 42.2% of the respondents read their credit card statements right after every transaction, 23.5% of the respondents check it when in doubt or suspicion, 20.6% of the respondents check it on a monthly basis and the rest never pay attention to it. From this, we can say that many of the respondents are doing the right thing by checking their credit card statements immediately. This helps in fraud detection, tracks spending, monitors recurring payments and verifies refunds & credits.

➢ For the fifteenth question, 38.2% of the respondents prefer shopping from a brand having reviews in the range of 1 to 5 stars, 34.3% of the respondents prefer shopping from a brand having all 5 stars, 19.6% of the respondents prefer shopping from brands having too good to be true offers and discounts and the rest prefer shopping from an offline store. It may be tempting to shop from a brand having all 5 star reviews or too good to be true offers and discounts, but many of the customers ignore red flags such as review manipulations, lack of diversity in feedback, limited number of reviews and timing & similarity of reviews.

➢ For the sixteenth question, 58.8% of the respondents are somewhat satisfied with the return, refund, exchange and customer service policies offered by online stores and 31.4% of the respondents are very satisfied with the same. From this, we can say that many of the brands have failed to cater their customers as they lack customer trust, purchase confidence and brand reputation.

➢ For the seventeenth question, 41.2% of the respondents think that fake websites is the most common crime in online shopping, 21.6% of the respondents think it is non delivery of goods, 19.6% of the respondents think it is phishing and 12.7% of the respondents think it is credit fraud. The opinions may vary from everyone's point of view based on whether they've been an actual victim of such crimes. In a world where everything is evolving so rapidly with technology, one must be well aware of the common cyber crimes that occur while online shopping and must be well versed with the preventive measures as well.

➢ For the eighteenth question, 39.2% of the respondents neither feel confident nor doubtful with their financial information in online stores, 20.6% of the respondents do not trust it, 19.6% of the respondents have significant concerns.

- ➢ Upon reviewing all these, we can say that many of the online stores have failed to gain customer's trust with financial information. Many of the customers fear this due to high profile breaches, identity thefts, privacy concerns and data misuse.

- ➢ For the nineteenth question, we have received various responses over the question of having faced any scams or frauds during online shopping. Some of the responses include losing money worth 1 lakh, products being very different from what was shown on the website, placing an order and not receiving it, receiving fake products against what was ordered, paying for a new product and receiving a refurbished product and so many more. Either ways, many of the respondents have been a victim of online shopping cybercrime.

- ➢ For the twentieth question, we have received various responses over the question of suggesting preventive measures to avoid frauds and scams during online shopping. Some of the responses include not saving credit card information after transactions, to maximize the use of COD, to conduct a detailed research on the online store before making a purchase, to shop from trusted website which has public reviews, to not save passwords, to not click on random ads and links, enable 2FA and monitor accounts regularly. While some of them are unaware of the measures, we can say that many of the respondents are well versed with at least basic preventive measures.

- ➢ At Last, In the twenty first question, 40.2% of respondents have vague knowledge about steps taken to report suspicious activity or fraud related to online shopping, 39.2% of respondents exactly know what to do and 20.6% of the respondents have no clue regarding it. From this we can say that, it is important to report online fraud or scam during online shopping to protect oneself from and others from financial losses and ensuring that cybercriminals are held accountable. By knowing where and how to report fraud, one can contribute to efforts to combat cybercrime and create a safer online shopping experience.

3.2) Interesting trends and patterns noticed

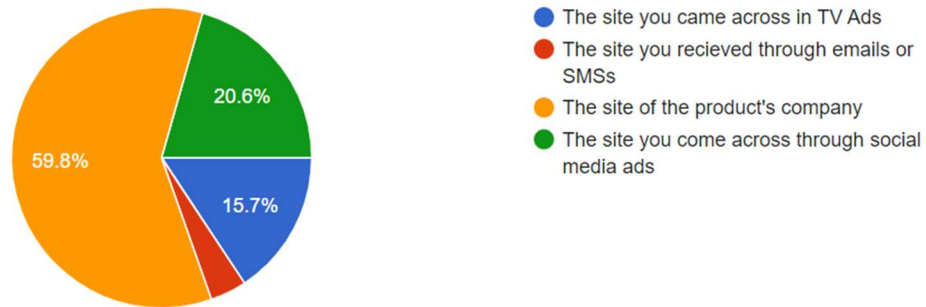**1. The surge in online shopping among different age groups**
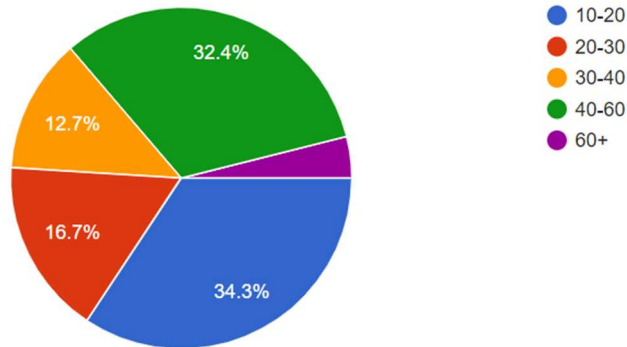
The above pie chart illustrates the distribution among different age groups and their involvement in online shopping. Except the senior citizens, all the other age groups are actively involved in online shopping. The ratio of younger citizens is very much higher than that of senior citizens. The term "Mobile Shopping" is very much relevant with the above observation, which enables anyone to shop online using a handheld device like smart phone or tablet.

**2. Preferring online shopping over offline shopping**
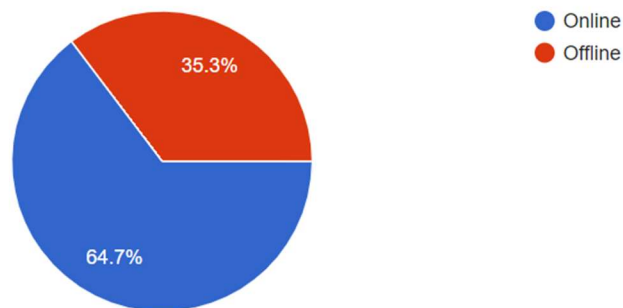
The above pie chart illustrates the distribution of people's preference between online shopping and offline shopping. Clearly, majority of the people prefer buying goods online compared to offline. The new generation is more tech savvy and are likely to buy more things online than offline. Accounting for the rest who prefer shopping offline, there are certain products which can be conveniently bought offline, like buying a car. Closely looking into one of the factors, the COVID-19 pandemic has definitely had an impact on shopping behavior, where people preferred the internet to buy groceries and clothes.

3. Customer's preferred mode of shopping

- The site you came across in TV Ads
- The site you recieved through emails or SMSs
- The site of the product's company
- The site you come across through social media ads

The above pie chart illustrates the distribution as to which online site they would trust. Clearly, the customers are aware that there is nothing better than buying products from the authentic product's site. The company's site usually provides authenticity and trust, wider selection, better customer service and confidence in payment security.

4. Frequency of Shopping

- Weekly
- Monthly
- Occasionally (Once in a couple of months)
- Rarely
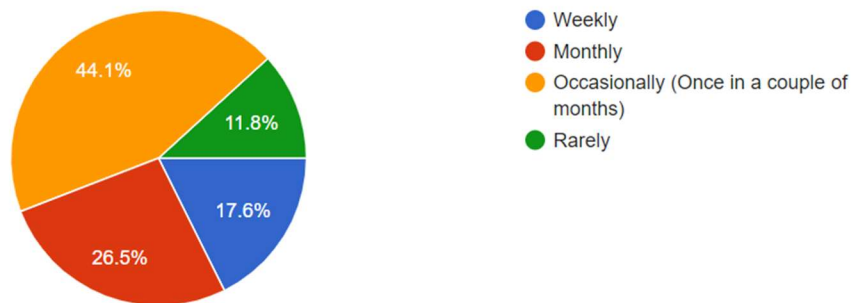
The above pie chart illustrates the distribution showing how often customers prefer shopping online. Clearly, many customers prefer shopping occasionally and many others do it on a weekly and monthly basis. Not only is the number of the shoppers increasing, but so is the frequency with which people shop online. One of the main factors has to be penetration of smart phones.

5. Creation of passwords

- I reuse the same password I use for other websites.
- I choose a simple and easy-to-remember password.
- I create a strong password with a mix of uppercase and lowercase letters, numbers, and symbols.
- I don't create an account, I just checkout as a guest whenever possible.

The above pie chart illustrates the distribution explaining how customers create passwords when shopping on a new website. Clearly, majority of the customers prefer creating a strong password.

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Creation of a strong password ensures security and privacy, protection against identity theft, safeguards multiple accounts and avoids financial losses.

6. Brand preferences
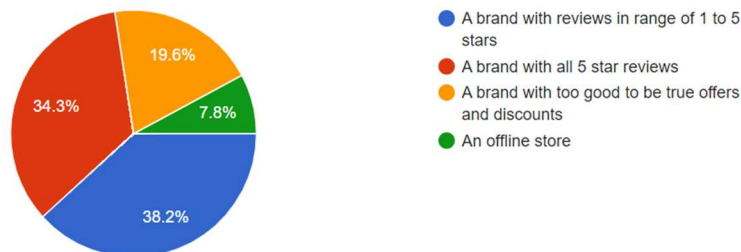
The above pie chart illustrates the distribution over people's preference to buy the one same product when given different online shopping brands. Clearly, the customers prefer shopping from a brand having reviews in the range of 1 to 5 stars. Initially, the options were framed as:

- A well-known and famous brand with reviews in range of 1 to 5 stars
- A shady and questionable brand with all 5 star reviews
- An intermediate brand with too good to be true offers
- An offline store

In the above scenario of options, people would have gone for the first option. But, looking at the pie chart there's only 0.4% difference between people buying from brands having reviews in the range to 1 to 5 stars and the brand having all 5 star reviews.

7. The temptation to click over links
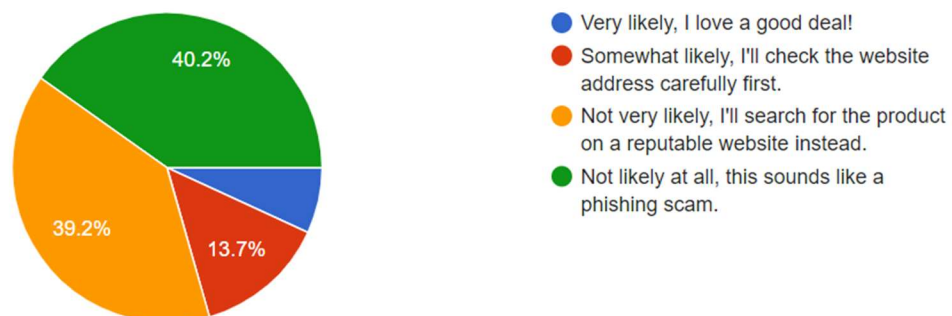
The above pie chart illustrates the distribution explaining how likely are customers to click the link sent in emails which has great discounts and offers. Clearly, there 1% difference between the people who will never click on the link & think it's a phishing scam and the people will search for the product on a reputable website. This indicates that the phishing scams are on a rise and how good they are at fooling and luring people into stealing valuable and confidential information. The temptation to click on links sent in emails might get very strong, but one must always approach such situations with great caution.

8. Verifying security of the website
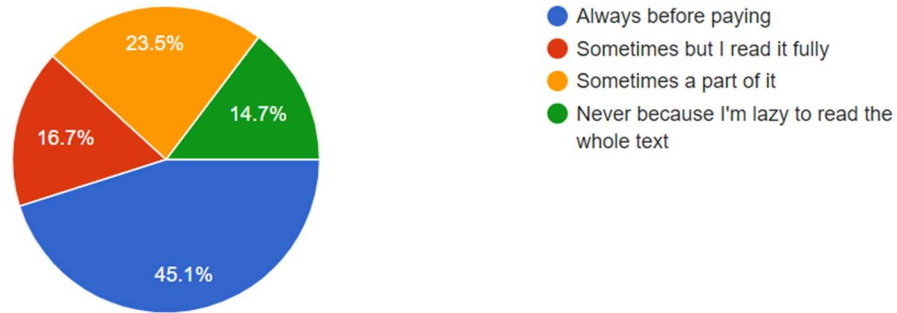
The above pie chart illustrates the distribution explaining how different people verify the security of the website before making online payment. Clearly, majority of the customers prefer verifying the security details. After all, it's the customer's money that is at stake. It is crucial for various reasons such as protection against fraud, encryption of sensitive information, safe checkout process and ensures trust & confidence.

9. Most common cyber crimes
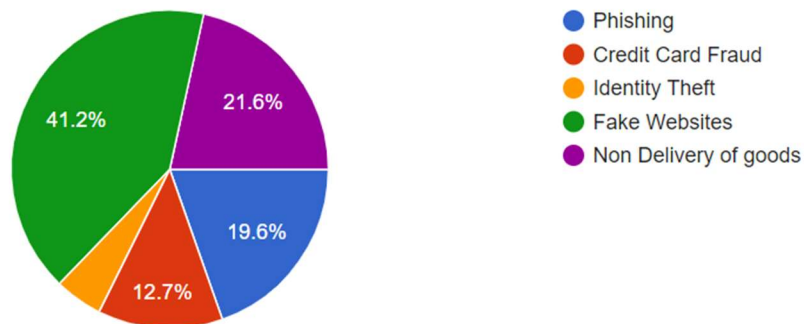
The above pie chart illustrates the distribution over customer's opinion on the most common online shopping cybercrime that has occurred. Nothing can be concluded from the above pie chart, as it comprises of varied responses amongst people in the age range of 10 to 60 years old. The majority of them think that fake websites are the most common cybercrime in online shopping, while phishing, credit card fraud, identity theft and non-delivery of goods are also relevant options. It all comes down to one's knowledge and understanding on cybercrime terminologies. Proper education and awareness regarding frequently occurring online cybercrimes is the need of the hour.

10. Reporting suspicious or fraud related activity online
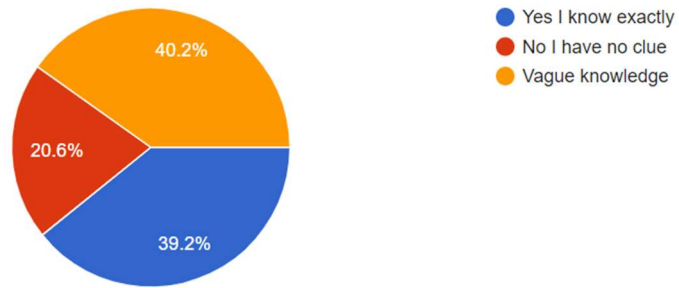
The above pie chart illustrates the distribution explaining if customers are aware as to how cybercrimes are reported. It is alarming to know that only very small ratio of people are aware of protocol. By reporting such crimes, one does not just protect themselves but others as well. It enables the law makers to take strict actions so as to prevent such acts in future. This will also help reduce the vulnerabilities in the online shopping mechanism and processes. Increasing awareness about such frauds and scams will prevent people from falling into such schemes. Overall, this will aim at creating a safer online eco system.

04) Potential Implications :

From the insights gathered from the Online Shopping survey we conducted, the following implications can be inferred-

There has been a surge in public interest and preference towards online shopping and if the current trend continues to grow at this rate then shopping as a whole will completely move towards the online environment, this can be characterized by the popularity of recent mobile applications like BlinkIt and Zepto which have brought online shopping to the public's fingertips for even the smallest purchases which are available in general stores.

Due to this shift towards Online Shopping, advertising and marketing teams are going to be crucial for the growth and survival of any business whether it be small or large. Like we have seen the shift from only using hard-cash for purchases to it being absolutely essential for shops, stores and even vendors to have digital payment methods and QR codes available in order to cater to customers, restaurants to have delivery services like Swiggy, Zomato etc for healthy sales, the same way general stores, Super markets, Fancy Shops etc will compulsorily have to adopt to the changing landscape and enable online services for shoppers. It is also to be noted that as we found out from the survey the product's official sites are the most trusted by the users, companies will be more motivated to release their own sites and applications for online shoppers

We will find more and more products being released within the mid budget range or existing products being tweaked to fall under the budget category which people find most comfortable to buy, which according to our survey was within five thousand rupees for it to accommodate itself for online shoppers. Companies might provide tracking for products which are shipped, more transparency would be something companies would look to improve on and gain customers.

Most of the users are very well aware of measures and healthy online shopping habits like regularly changing passwords, not using the public wifis, checking their transactions, doing background checks, knowing to identify legitimate websites and fraud sites which suggests that shoppers are ready for the next technological leap towards an online shopping environment. The previous generation is well aware and teenagers even more so. As we will be shifting to such kind of a society Education of Cyber crimes and security would and should be given more importance as for the future generations it will be an integral part of their lifestyle from an early age itself.

As the landscape evolves, so will the crimes and the criminals. Scams would probably not be as simple to detect as a suspicious link or a shady product or website, newer methods and techniques will be thought of and we might be subject to highly specialized crimes, which would require minimal conditions and parameters from the victim, after which it goes undetected. This is an ultimate outcome of the growth of digital shopping.

Though the public is well aware to avoid cyber crimes, through our survey we came to know that a vast majority do not know to report or handle the situation after a crime has occurred. This is

something which will have to be changed and more awareness should be shone in this direction. The Police and Government could implement advertisements, campaigns directing people on how to handle such situations and give them the assurance and confidence that they would be available and capable to handle it for them, which would be required for safe online shopping