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SECURITY CONCERNS OF ONLINE USERS IN INDIA

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ABSTRACT

E-Commerce in India has been growing at an explosive growth rate. This growth has led to the rise of security concerns among the online users. Online users worry regarding the safety of their transactions and theft of personal and financial information while transacting online. Therefore the present study makes an attempt to examine the level of concern of online users towards negative events; types of bad experiences encountered online and actions taken to ensure information safety. A questionnaire survey was undertaken to examine these issues. The survey findings indicated that the greatest concern of online users is the fear of credit card information being stolen. Moreover payment issues appeared to be the most common bad experience encountered online. Merely half of the online transaction users read terms and conditions before conducting an online transaction. The conclusion drawn indicates that though security of personal/financial information is a major concern for the users, but they fail to take sufficient steps to ensure the same.

JEL CLASSIFICATION CODES

C12, C14, C83, L81.

KEYWORDS

online transactions, security concerns, survey.

INTRODUCTION

India's internet users' base of about 120 million is currently the third-largest in the world and is likely to become the second-largest user base, the largest in terms of incremental growth, with 330 million to 370 million Internet users in 2015 (McKinsey & Company, Online and upcoming: The Internet's impact on India, 2012). Further the number of users making online transactions has seen a rapid growth, expected to grow from 11 million in 2011 to 38 million in 2015 (Ernst & Young, Rebirth of e-Commerce in India, 2013). With the growing number of online transaction users in India, their concerns vis-à-vis security and privacy of these transactions are also on the rise.

Moreover the Ernst & Young Study (2013) on e-commerce in India reports that the success rate of credit or debit cards is low at around 74% and that of net banking transactions at around 68%, pointing this as an area of concern for e-commerce in India. These figures raise questions over the security of online transactions in India. Hence it becomes essential to investigate into the security concerns of online transaction users; their bad experiences with respect to online transactions and the actions taken by them to ensure safety. The present study therefore makes a modest attempt to study these issues among the Indian users engaged in online transactions.

REVIEW OF LITERATURE

A number of studies have examined the risk perceptions of users of online transactions. Following is the brief description of these studies.

Miyazaki and Fernandez (2001) evaluated the risk perceptions of U.S. online consumers using questionnaire survey. The findings indicated that higher internet experience and the use of other remote purchasing methods (such as telephone and mail-order shopping) are related to lower levels of perceived online shopping risk.

Godwin (2001) investigated the privacy and security concerns of IT users in USA using a survey study. The study indicated the order of importance of various security concerns (arranged in a descending order) - privacy, security and threats, impersonation and forged identity, children protection, e-mail safety and censorship. Privacy and security concerns were revealed to be the main impediments to shopping on internet.

Sheehan (2002) conducted an e-mail survey of perceived privacy concerns of online users under 15 different situations. The results revealed that majority of the online users were pragmatic in their approach (i.e. their concerns about privacy depended on the situation) and that younger people were more pragmatic and those with higher levels of education were more concerned about their privacy.

Mukherjee and Nath (2003) conducted a survey to study the sample of various online banking users in India. The findings indicated that shared value is the most critical to develop trust and customer commitment in online banking transaction and within shared value perceived privacy and security are the most significant factors.

Park and Kim (2003) investigated the relationship between various characteristics of online shopping and consumer purchase behaviour using an online survey in Korea. The findings indicated that information quality; user interface quality and also the security perceptions strongly influence consumer's site commitment and actual purchase behaviour.

Constantinides (2004) studied the factors affecting the online consumer's behaviour and revealed functionality of the website, content elements and psychological elements as the three main constituents of an online experience. The psychological elements comprised of trust and credibility of the online vendor and web site including transaction security and customer data safety.

Flavian and Guinaliu (2006) studied the impact of privacy and perceived security on the level of consumer trust in internet. The study revealed that consumer's loyalty to a web site is closely linked to the levels of trust in internet and further trust is influenced by the consumer perceived security.

Thaw, Mahmood and Dominic (2009) examined the role of security, privacy and risk perceptions among the online shopping consumers in Malaysia. The study concluded that consumers' trust in online transactions is significantly related with the trustworthiness of web vendors and negatively with perceived risks in online transactions.

Velmurugan (2009) discusses the problems and prospects of trust and security in e-business, specifically analyzing the points a business could follow in building customer trust.

These studies have examined the role of security and the risk perceptions of online users across various countries. However there is a dearth of studies examining the risk perceptions of Indian users of online transactions. Therefore the present study aims to investigate the risk perceptions and security concerns of online users in India.

NEED/IMPORTANCE OF THE STUDY

Business to Consumer E-Commerce has registered a strong growth over the recent years. The number of users making online transactions in India is on a rapid rise. But the question arises that whether the users are still very much concerned about the security when transacting online. Moreover a low success rate of credit/debit card and net banking transactions in India as pointed out in various previous researches (Ernst & Young 2013) makes it essential to look deeper into

the security concerns of online users. Also there are very few studies examining the risk perceptions of online users in India. Therefore the present is an attempt to examine the risk perceptions and concerns of Indian online users.

OBJECTIVES

The following are the objectives of the study:

- 1) To examine the level of agreement of users towards security of online transactions.
- 2) To examine the level of concern of the online users for the various negative events.
- 3) To identify the percentage of users who read terms and conditions before doing an online transaction.
- 4) To examine the various types of bad experiences encountered online by the users.
- 5) To study the actions taken by the users to reduce theft of their personal/financial information.
- 6) To examine the relationship between the level of concern of the users regarding various negative events and their actions to reduce the same.

HYPOTHESES

The present study attempts to test the following hypotheses:

- 1) There is no significant difference in the degree of agreement to the security of online transactions.
- 2) There is no significant difference in the level of concern of the online users for the various negative events.
- 3) 70% of online users read the terms and conditions before conducting an online transaction.
- 4) There is no significant difference between the bad experiences encountered by the online users.
- 5) There is no association between the respondents who are very much concerned about their credit card information being stolen and the respondents who use low limit credit cards while transacting online.
- 6) There is no association between the respondents who are very much concerned about their credit card information being stolen and respondents who go for transactions with cash on delivery option.
- 7) There is no association between the respondents who are very much concerned about their username and password being stolen and the respondents who regularly change their passwords.
- 8) There is no association between the respondents who are very much concerned about receiving emails that contain links sending the user to the wrong site and the respondents who always check URL of links before clicking on them.
- 9) There is no association between the respondents who are very much concerned for their personal and financial information being revealed by their banker and respondents who never use a payment method that allows access to their bank account.
- 10) There is no association between the respondents who are very much concerned for their personal and financial information being revealed by their banker and the respondents who go for cash on delivery option.

RESEARCH METHODOLOGY

A questionnaire survey was administered to 110 users of online transactions. However completed responses were received from 85 respondents. Hence the sample size for the study is 85. The survey data was analyzed using frequency tables, crosstabulations and various non parametric tests using the Statistical Package for Social Science software.

RESULTS & DISCUSSION

As the first step, the demographic characteristics of the study sample were examined. The Gender Profile; the Age Profile and the Education Profile of the respondents are depicted in Table 1; Table2 and Table 3 respectively.

TABLE 1: GENDER PROFILE

Gender	No. of Respondents
Male	46
Female	39
Total	85

TABLE 2: AGE PROFILE

Age Category	No. of Respondents
Below 20	8
20 & below 30	60
30 & below 40	7
40 & below 50	5
Above 50	5
Total	85

TABLE 3: EDUCATION PROFILE

Highest Educational Qualification	No. of Respondents
XIIth Pass	8
Graduation	28
Post Graduation	29
Professional Qualification	18
Others	2
Total	85

These show that the study sample is composed of 46 male and 39 female respondents. Nearly 71% of the study sample is aged between 20 to below 30 years of age and majority of the respondents hold the highest qualification as post graduation.

Further to examine the user perception of security of online transactions the respondents were asked about their level of agreement to the statement that 'online transactions are secured transactions'. The null hypothesis assumed no significant difference in the degree of agreement to the security of online transactions and was tested using One- sample Kolmogorov- Smirnov Test at 5% level of significance. The test results (Test value= 8.026, P-value= 0.000) revealed that there is a significant difference in the degree of agreement to the security of online transactions. Table 4 depicts the number and the percentage of users and their level of agreement to the statement.

TABLE 4: LEVEL OF AGREEMENT TO THE SECURITY OF ONLINE TRANSACTIONS

Level of Agreement	Number of Users	Percentage of Users (%)
Strongly agree	10	11.8
Agree	64	75.2
No Opinion	8	9.4
Disagree	2	2.4
Strongly Disagree	1	1.2
Total	85	100

These findings signify that majority of the respondents (around 75%) agreed that online transactions are secure transactions. 12% strongly agreed and only 2.5% of the total respondents disagreed to consider online transactions as secure. This further indicates that most of the respondents in the study (around 87%) feel that conducting an online transaction is safe.

The study also investigated the level of concern of the online users about various negative events related to online transactions. The null hypothesis assumed no significant difference in the level of concern of users for various events. One- sample Kolmogorov- Smirnov Test (5% level of significance) was applied to test the same. The results indicated significant difference in the level of concern of users for all these events (as shown by Table 5). Table 6 illustrates the users' level of concern for various negative events where the events are arranged in an order of maximum to minimum level of concern.

TABLE 5: ONE SAMPLE K-S TEST RESULTS

Negative Events	Kolmogorov- Smirnov Z value	P-value
My credit card information being stolen	5.532	0.000
Having my Username and Password stolen	5.098	0.000
Receiving emails that contain links that send me to the wrong (phishing) site	3.796	0.000
Receiving emails from sources I do not know	2.820	0.000
Having Banker reveal my personal and financial information to a third party	5.315	0.000

TABLE 6: USERS' LEVEL OF CONCERN FOR THE VARIOUS NEGATIVE EVENTS

Negative Events	Number of users very much concerned	Number of users somewhat concerned	Number of users not very concerned	Total
My credit card information being stolen	51 (60%)	25 (29.4%)	9 (10.6%)	85
Having Banker reveal my personal and financial information to a third party	49 (57.6%)	19 (22.4%)	17 (20%)	85
Having my Username and Password stolen	47 (55.3%)	31 (36.5%)	7 (8.2%)	85
Receiving emails that contain links that send me to the wrong (phishing) site	35 (41.2%)	31 (36.5%)	19 (22.3%)	85
Receiving emails from sources I do not know	26 (30.6%)	36 (42.3%)	23 (27.1%)	85

Note – Percentage given in parentheses

The order of importance of various negative events for which the respondents are very much concerned (descending order) is as follows – credit card information being stolen; banker revealing their personal and financial information; username and password being stolen; receiving emails that contain links that send user to the wrong (phishing) site and lastly receiving emails from sources unknown to the user. Hence it is clearly evident that the maximum number of online users is very much concerned about their credit card information being stolen.

The next hypothesis assumed that 70% of the users read terms and conditions before doing an online transaction. Binomial test applied at 5% level of significance, confirmed that only 51% of the respondents read the terms and conditions while doing online transactions.

Further to examine if there is a significant difference between the bad experiences encountered online by the users, Cochran's Q test was applied at 5% level of significance. The results provided evidence that there is a significant difference in the types of bad experiences encountered online. Table 7 depicts the results of Cochran's Q test and Table 8 illustrates the number and the percentage of users for each of the bad experience encountered online.

TABLE 7: COCHRAN'S Q TEST RESULTS

N	85
Cochran's Q	50.292
Df	3
P-value	0.000

TABLE 8: NUMBER AND PERCENTAGE OF USERS FOR EACH BAD EXPERIENCE CATEGORY

Bad Experiences encountered online	Number of Users	Percentage of Users
Payment issues	37	43.5
No bad experience	33	38.8
Delay in delivery	21	24.7
Faulty product	11	12.9
Information theft	2	2.4

Hence the most common bad experience encountered online emerges as the payment issues faced by the users when transacting online. Next the majority users claim to have faced delay in the delivery of the products/services ordered online. However it must be noted that almost 39% of the users did not encounter any bad experience online.

Given the significance of information theft in online transactions, the study explores the various ways in which online users deal with the problem of information theft. The users were asked about the actions they regularly take to reduce the chances of their personal and financial information being stolen. Table 9 depicts the percentage of users taking regular actions to reduce information theft.

TABLE 9: ACTIONS TAKEN BY THE USERS TO REDUCE THEFT OF INFORMATION

Actions Taken to reduce theft of information	Percentage of Users
I regularly change my passwords	48.4
I always check the URL of links I receive in emails before clicking on them	45.3
I go for transactions with cash on delivery option only	27.4
I use low limit credit cards when transacting on the Internet	24.2
I never use a payment method that allows access to my bank account	15.8
I use a service that makes my identity anonymous when transacting online	9.5
I use a service that provides replacement credit cards I am not liable for	3.2

These results indicate that majority of the users change their passwords regularly to reduce the chances of information theft. Approximately 45% of the users always check the URL of links they receive in emails before clicking on them and 27% go for transactions which have the option of cash on delivery. The above results signify that not even half of the online users undertake various actions to reduce theft of information. Hence it can be said that most of the online users fail to take regular actions to reduce the likelihood of their personal and financial information being stolen. This is quite surprising because most of the users are very much concerned about their personal and financial information being stolen but they fail to take necessary steps to reduce the same.

Further the association between the level of concern of the users towards various negative events and actions taken by them to reduce the chances of information theft was examined. For this purpose six different hypothesis were formulated. The first hypothesis of no association between the respondents who are very much concerned about their credit card information being stolen and the ones who use low limit credit cards is tested using Chi Square test at 5% level of significance. The test results [$\chi^2 (2, N = 85) = 0.405, p = 0.817$] indicate no association. These results are re-affirmed using cross tabulation. Table 10 depicts the cross tabulation results.

TABLE 10: CROSS TABULATION RESULTS

My credit card information being stolen	I use low limit credit cards when transacting on the internet		Total
	Yes	No	
Very much concerned	12	39	51
Somewhat concerned	6	19	25
Not very concerned	3	6	9
Total	21	64	85

It is evident from above that only 24% of the respondents (12 out of 51 respondents) who are very much concerned about their credit card information being stolen use low limit credit cards. Secondly chi square test shows no association between people who are very much concerned about their credit card information being stolen and people who go for transactions with cash on delivery option [$\chi^2 (2, N = 85) = 0.955, p = 0.620$]. Table 11 depicts the cross tabulation results for the same indicating that only 17 out of 51 respondents (one-third respondents) who are very much concerned about their credit card information being stolen go for transactions with cash on delivery.

TABLE 11: CROSS TABULATION RESULTS

My credit card information being stolen	I go for transactions with cash on delivery option only		Total
	Yes	No	
Very much concerned	17	34	51
Somewhat concerned	6	19	25
Not very concerned	2	7	9
Total	25	60	85

The third hypothesis examined the association between the respondents who are very much concerned about their username and password stolen and the respondents who regularly change their passwords. The chi square test results [$\chi^2 (2, N = 85) = 2.755, p = 0.252$] do not show any association. Cross tabulation results (Table 12) signify that approximately 58% of the respondents who are very much concerned about their username and password being stolen, regularly change their passwords.

TABLE 12: CROSS TABULATION RESULTS

Having my username and password stolen	I regularly change my passwords		Total
	Yes	No	
Very much concerned	27	20	47
Somewhat concerned	12	19	31
Not very concerned	4	3	7
Total	43	42	85

Similarly the chi square test revealed no association between the respondents who are very much concerned about receiving emails that contain links sending them to wrong site and the respondents who always check the URL of links before clicking on them [$\chi^2 (2, N = 85) = 2.638, p = 0.267$]. Further chi square test revealed no association between the respondents who are very much concerned for their personal and financial information being revealed by their banker to a third party and the respondents who never use a payment method that allows access to their bank account [$\chi^2 (2, N = 85) = 23.861, p = 0.145$]. Lastly the chi square test provides evidence of no association between the respondents who are very much concerned for their personal and financial information being revealed by their banker and people who go those who for cash on delivery option [$\chi^2 (2, N = 85) = 0.701, p = 0.704$].

Thus the above findings confirm no association between the level of concern of the users towards various negative events and actions taken by them to reduce the chances of information theft. This signifies that the users of online transactions are very much concerned about their personal and financial information being stolen; however they do not take necessary steps to reduce the risk of information theft.

FINDINGS

The findings of the study revealed that nearly 87% of the respondents think that online transactions are secure transactions. Nevertheless majority of the online users were found to be very much concerned about their credit card information being stolen when transacting online. The findings revealed that only 51% of the respondents read the terms and conditions before conducting an online transaction. Payment issues appeared to be the most common bad experience encountered online by the users followed by the delay in the delivery of product/service ordered. However more than one-third of the respondents said that they did not encounter any bad experience online. With regards to the various actions taken by the users to reduce theft of information, majority of the users indicated that they change their passwords regularly. Moreover the findings revealed no association between the level of concern of the users towards negative events and the actions taken by them to reduce the chances of information theft.

CONCLUSIONS

The present study has been undertaken to examine the security concerns and bad experiences of Indian users engaged in online transactions. The results reveal that majority of the Indian users consider online transactions to be secure. However 61% of the users claimed to have encountered bad experience online in some form or other. Indian users appear to be extremely concerned about two types of online risks i.e. the risk of credit card information being stolen and risk of banker revealing users' personal and financial information to a third party. Thus information theft is perceived to be the most important threat by the online users. This further has implications for both the online shopping sites and online banking sites as they need to assure their customers of personal/financial information safety.

Also the Indian users were found to be reluctant in taking actions required to reduce the risk of their personal/financial information being stolen. The survey results indicated that nearly half of the respondents read the terms and conditions before conducting an online transaction. However not even half of the online users either change their passwords regularly nor check the URL of links they receive in emails before clicking on them. Therefore it may be said that online users are very much concerned about their personal/financial information being stolen or revealed to the third party; however they do not take required actions to avoid the same. These findings suggest that Indian users must be alert and proactive in taking actions to ensure safety of their online transactions.

SCOPE FOR FURTHER RESEARCH

The present study is limited to studying the security concerns of the Indian users of online transactions. It could be further extended to examine and compare the security concerns of online users of other world countries. A larger sample size could be used to provide more generalized results. The study could be extended to examine whether these bad experiences encountered by the users had been resolved by their respective online vendor. This is important to ensure a quality online experience to the users.

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APPENDIX/ANNEXURE**QUESTIONNAIRE ON SECURITY CONCERNS OF ONLINE TRANSACTIONS:****Dear Participant**

The Questionnaire is designed to examine the security concerns of the users of online transactions. The objective of this study is purely educational in nature, your personal identity and preferences will be kept confidential.

Thank you for considering participating in this study. We appreciate your time and effort.

1. Name _____
2. Email id : _____
3. Gender :
 - a. Male
 - b. Female
4. Age :
 - a. Below 20
 - b. 20 and below 30
 - c. 30 and below 40
 - d. 40 and below 50
 - e. Above 50
5. Highest Educational Qualification :
 - a. Below 12th
 - b. 12th Pass
 - c. Graduation
 - d. Post Graduation
 - e. Professional qualification(Please specify) _____
 - f. Others(Please specify) _____
6. To what extent do you agree that online transactions are secured transactions?
 - a. Strongly agree
 - b. Agree
 - c. No Opinion
 - d. Disagree
 - e. Strongly Disagree
7. Please tick the appropriate option that best describes your level of concern about each of the negative events described below while conducting an online transaction:

	Very much concerned	Somewhat concerned	Not very concerned
My credit card information being stolen			
Having my Username and Password stolen			
Receiving emails that contain links that send me to the wrong (phishing) site			
Receiving emails from sources I do not know			
Having Banker reveal my personal and financial information to a third party			
8. Do you read the Terms and Conditions of online shopping / transaction before you proceed?
 - a. Yes
 - b. No
9. Which of the following bad experiences you have encountered while transacting online?
 - a. Faulty product
 - b. Delay in delivery
 - c. Payment issues
 - d. Identity theft

- e. No bad experience
10. Which of the following describes actions you regularly take to reduce the chances of your personal and financial information being stolen? (Please tick all that applies)
- a. I always check the URL of links I receive in emails before clicking on them
 - b. I regularly change my passwords
 - c. I use low limit credit cards when transacting on the Internet
 - d. I never use a payment method that allows access to my bank account
 - e. I use a service that makes my identity anonymous when transacting online
 - f. I use a service that provides replacement credit cards I am not liable for
 - g. I go for transactions with cash on delivery option only
 - h. Others (Please specify) _____



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