

# TOWARDS UNDERSTANDING THE ROLE OF PERCEIVED SECURITY AND PRIVACY IN INFLUENCING INTERNET BANKING ADOPTION IN INDIA

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## ABSTRACT

*Banking industry has become the inseparable part of the world's financial system. As internet banking is now a vital element of the banking sector then it can be rightly said that it is an inseparable part of the banks. But still users of internet banking are still worried about security and privacy related issues. Due to these perceived issues the growth of internet banking is hindering. This research paper has been written from the point of view of users of internet banking services. The main objective of this paper is to study the perceptions concerned with security and privacy issues of users of internet banking services and to study the impact of these perception on the adoption and growth of internet banking. For this purpose database of both primary and secondary sources has been used. The data for users' perception towards internet banking is collected using well-structured and pretested questionnaire. The questionnaire is prepared on the basis of 3 point Likert scale. For the primary data collection the sample size of respondents is 100 for this study. The analysis was done using statistical techniques like descriptive statistics and t-test. The study concludes that that for maximum number of items (14 items) under study there is significant differences in perceptions towards security and privacy of internet banking regarding internet banking adoption. But for the rest of 9 items there is no significant difference in perceptions towards security and privacy of internet banking regarding internet banking adoption. But a good investment in security and privacy related tools and by increasing customer awareness about how to safeguard their information and secure their log in etc. by banks the adoption rate of internet banking can be increased. This research provides both theoretical explanations and empirical validation on the impact of perceived security and privacy issues on the adoption of internet banking.*

**Keywords:** Internet Banking, Security and Privacy Issues, Users' Perceptions, Internet Banking Adoption.

**INTRODUCTION:**

Banking with the help of internet is popular now days as it offers various advantages to the internet banking users in terms of less cost, time saving, ease of use etc. No wonder that internet banking is accepted by the customers of the bank but unfortunately security and privacy related issues puts impact on its adoption. Various researchers in their research prove that security and privacy issues have an adverse effect on the internet banking adoption. Perceived security and privacy both are important factors for building consumer confidence and trust towards use of internet banking. Perceived security is defined as the customers' perception of the degree of protection against the threats involved in online banking. Perceived privacy is regarded as customers' perception regarding the ability of internet banking service provider to monitor and control the collection, use, disclosure, and subsequent access of the information provided by them to the bank during making transaction through internet banking (Yousafzai and et al., 2009). Perceived security was ranked to be most important by users of online banking systems (Liao and et al., 2002).

**LITERATURE REVIEW:**

	<b>Author</b>	<b>Name of the study</b>	<b>Outcomes of the Study</b>
1.	Law, K., (2007)	Impact of Perceived Security on Consumer Trust in Online Banking	Perceived security did not have a significant impact on trust.
2.	Yousafzai, S., and et al., (2009)	Multi-Dimensional Role of Trust in Internet Banking Adoption	Superior security and privacy are the most determinant factors motivating customers to use internet banking services.
3.	Arora, J. S., (2010)	Perception Towards E-Banking: A Comparative Study of India and Kenya	Security concerns were perceived to be most obstructing factor from adopting e-banking in India and Kenya by customers but Privacy was perceived as less affecting the internet adoption process in Kenya.
4.	Alnsour, M.S. and et al., (2011)	Internet Banking and Jordanian Corporate Customers: Issues of Security and Trust	Perceptions of security directly affects trust and perceived usefulness and also affects perceived ease of use and higher levels of security may also make online banking more useful.
5.	Subsorn, P. and et al., (2011)	A Comparative Analysis of Internet Banking Security in Thailand: A Customer Perspective	Internet banking security information available on websites of Thai Banks and other security measures adopted by Thai bank are poor as compared to Australian Banks.
6.	Singh, T., (2013)	Security and Privacy Issues in E-banking: An Empirical Study of Customers' Perception	The internet banking users are highly concerned about the security and privacy issues which involves internet fraud; password hacking; sharing of online behavior with third party and non-refund of money.
7.	Zanoon, N., and et al., (2013)	The Impact of Customer Knowledge on the Security of E-Banking	The increased degree of safety generates confidence among customers who use banking applications through the Internet.
8.	Jalil, A., and et al., (2014)	Factors Affecting Customer's	Security, trust, and the website had a significant relationship with the

	<b>Author</b>	<b>Name of the study</b>	<b>Outcomes of the Study</b>
		Perceptions Towards Online Banking Transactions in Malaysia	consumer's perception towards online banking in Malaysia and played a key role in the decision to use online banking.
9.	Musaev, E. and et al., (2015)	A Review on Internet Banking Security and Privacy Issues in Oman	Safe and secure website encourages customers to use internet banking services.
10.	Gupta, P. and et al., (2016)	E-Commerce- Study of Privacy, Trust and Security from Consumer's Perspective	Trust in the internet is mostly influenced by the security perceived by consumers about the handling of their private data.

**OBJECTIVE OF THE STUDY:**

The study is undertaken with the following objectives:

- To study the perceptions concerned with security and privacy issues of users of internet banking services.

**HYPOTHESIS OF THE STUDY:**

HO: There is no significant difference in the internet banking user's perception towards security and privacy regarding internet banking adoption.

**LIMITATIONS OF THE STUDY:**

The present study is based upon the results of survey conducted on only 100 respondents. The results of the study are subject to the limitations of sample size, regional territory, psychological, financial and emotional characteristics of surveyed population. Due to such limitations the study cannot be generalized.

**RESEARCH METHODOLOGY:**

**Data Collection:**

This research is based upon the primary as well as secondary study. In order to arrive at the sample size, non-probability method and convenience method has been used. For the primary data collection the structured pre tested questionnaire is used to record the response of various respondents. Data is collected from 100 respondents to record the responses of bankers to study their perception towards internet banking in Punjab. All items were measured by responses on a Three Point Scale in agreement/relevance with statements, ranging from 3=Agree/Completely relevant, 2=Neutral and 1=Disagree/Completely irrelevant. The sources used for secondary data collection includes research papers, articles, websites of banks, data published by RBI.

**Data Analysis:**

The reliability of data has been tested through Cronbach Alpha, It has further been analyzed through various techniques like descriptive statistics and t-test. The analysis of primary data was carried out using Statistical Package for the Social Sciences (SPSS) 21.

**ANALYSIS OF DATA:**

**Table 1: Sex of Respondent**

	<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
1.	Male	50	50
2.	Female	50	50
	<b>Total</b>	<b>100</b>	<b>100</b>

**Source:** Questionnaire

This research is done on total of 100 respondents and these respondents include 50 male respondents and 50 female respondents.

**Table 2: Educational Qualification**

	<b>Education Level</b>	<b>Frequency</b>	<b>Percent</b>
1.	Up to Higher Secondary (12th)	2	2.0
2.	Graduate	11	11.0
3.	Post Graduate	87	87.0
4.	Total	100	100.0

**Source:** Questionnaire

Table 2 depicts the educational background of respondents. 2% of respondents have passed just high school, 11% are graduates and remaining 87% of respondents are such who are having a degree of post-graduation. This research has maximum post-graduation qualified respondents.

**Table 3: Age Wise Classification of Respondents**

	<b>Age</b>	<b>Frequency</b>	<b>Percent</b>
1.	18-25 Years	17	17.0
2.	26-35 Years	40	40.0
3.	36-45 Years	30	30.0
4.	46 Years and above	13	13.0
	<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source:** Questionnaire

The table shows the age wise classification of the respondents. It is found that 17 respondents (17 per cent) belong to the age group 18-25 years; 40 respondents (40 per cent) belong to 26-35 years; 30 respondents belong to 36-45 years; 13 respondents belong to 46 years and above. The study found that majority of the respondents belongs to the age group of 26-35 years.

**Table 4: Occupation Wise Classification**

	<b>Occupation</b>	<b>Frequency</b>	<b>Percent</b>
1.	Service	58	58.0
2.	Business	7	7.0
3.	Professional	35	35.0
	<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source:** Questionnaire

The table provides the occupation wise classification of the respondents. It is evident from the table that out of 100 respondents, 58 respondents are in service; 7 are doing business and 35 are professional. It is proved from the observation that majority of the respondents are doing service.

**Table 5: Income Wise Classification**

	<b>Income</b>	<b>Frequency</b>	<b>Percent</b>
1.	Less than 30,000	37	37.0
2.	30,001-60,000	35	35.0
3.	60,001-90,000	16	16.0
4.	90,001 above	12	12.0
	<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source:** Questionnaire

The table shows income details of the respondents. It is clear from the table that below 30,000 is earned by 37 respondents, 35 respondents have reported that their income falls between 30,001-

60,000; 16 respondents have reported that their income is between 60,001-90,000; 12 respondents have reported that their income is above 90,001.

**Table 6: Residential Area**

	<b>Residential Area</b>	<b>Frequency</b>	<b>Percent</b>
1.	Urban Area	68	68.0
2.	Semi Urban Area	22	22.0
3.	Rural Area	10	10.0
	<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source:** Questionnaire

The table specifies that maximum number of internet banking users belong to urban area i.e. 68% followed by semi urban area and rural area which are 22% and 10% respectively.

**Table 7: Type of Bank**

	<b>Bank Type</b>	<b>Frequency</b>	<b>Percent</b>
1.	Private Sector Bank	24	24.0
2.	Public Sector Bank	76	76.0
	<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source:** Questionnaire

The table 7 shows that majority of respondents are having bank accounts in public sector banks. 76% respondents are from public sector banks and remaining 24% are from private sector banks.

**Table 8: Account Type**

	<b>Account Type</b>	<b>Frequency</b>	<b>Percent</b>
1.	Saving	91	91.0
2.	Current	8	8.0
3.	Fixed Deposit	1	1.0
	<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source:** Questionnaire

91% of total respondents reported that they have opened saving bank account in their banks; 8% have current account and only 1% have fixed deposit account.

**Table 9: Internet Banking Usage Period**

	<b>Period of Usage</b>	<b>Frequency</b>	<b>Percent</b>
1.	Less than 1 year	14	14.0
2.	1-2 years	17	17.0
3.	2-3 years	20	20.0
4.	3-5 years	22	22.0
5.	More than 5 years	27	27.0
	<b>Total</b>	<b>100</b>	<b>100.0</b>

**Source:** Questionnaire

Table 9 demonstrates that 27% of total respondents are using internet banking for a period more than 5 years; 22% from 3-5 years; 20% from 2-3 years; 17% from 1-2 years and only 14% are using internet banking for the period less than 1 year only.

**Table 10: List of Banking Services Used by Respondents**

	<b>Name of Service</b>	<b>Frequency of Users</b>	<b>Frequency of Non- Users</b>
1.	Basic account information	78	22
2.	Checking account balance	82	18
3.	Fund transfer	79	21
4.	Applying for cheque books/Pass book/ATM cards/Credit Cards etc.	41	59
5.	Seeking product and rate information	20	80
6.	Making online bill payments	68	32
7.	Stock trading	11	89
8.	Calculate loan payment information	11	89
9.	Download loan applications	06	94
10.	Download personal bank transaction activities	20	80
11.	Apply for consumer loans or credit cards online	09	91
12.	Statement Enquiry	51	49
13.	Change PIN number	37	63
14.	Activate Debit/Credit cards	27	73
15.	Mobile recharging	47	53
16.	Pay taxes	20	80
17.	Booking for Train/Bus/Flight or Movie Tickets	52	48
18.	Collect information related to new services from your bank's website	14	86
19.	Request for Demand Draft/Pay Order	13	87

**Source:** Questionnaire

The table 10 describes that the services which are greatly use by internet banking users are checking account balance; fund transfer; basic account information; making online bill payment; Booking for train/bus/flight or movie tickets; Statement enquiry; Mobile recharging; Applying for cheque books/Pass book/ATM cards/Credit Cards etc and change pin number. But the services named Seeking product and rate information; Stock trading; Calculate loan payment information; Download loan applications; Download personal bank transaction activities; Apply for consumer loans or credit cards online; Activate Debit/Credit cards; payment of taxes; Collect information related to new services from your bank's website and Request for demand draft/pay order are used at a lower rate by the internet banking users as per table 10.

**Table 11: Problems Encountered while Using Internet Banking**

<b>Sr. No.</b>	<b>Particulars</b>	<b>Frequency of Respondents Reported Problem</b>
1.	Cannot log in	36

2.	Complicated websites	41
3.	Fake websites	12
4.	Transaction fraud	9
5.	Constant breakdown	48

**Source:** Questionnaire

Table 11 illustrates that the most common problem encountered by the internet banking users are constant breakdown followed by complicated websites; problem in log in; fake websites and transaction fraud.

**Table 12: Location to Access Internet**

Sr. No.	Particulars	Number of users using the location
1.	Home	67
2.	Work place/Office	33
3.	Internet café	0
4.	Friend's place	0

**Source:** Questionnaire

The table 12 shows that maximum number of respondents i.e. 67% of total respondents are using internet to avail internet banking services from home and remaining 33% are using internet from their work place or office.

**Table 13: Reason to Choose a Particular Bank for Internet Banking Usage**

Sr. No.	Particulars	Number of users reported particular reason
1.	I have a traditional bank account with the same bank	38
2.	The brand name of the bank	11
3.	The excellent service offered by the bank	40
4.	Others	11

**Source:** Questionnaire

Table 13 specifies that 40% of total respondents reported that the excellent service offered by their bank is the most important reason of their choosing a particular bank for availing internet banking services while 38% of total respondents reported the reason that they have traditional bank account with the same bank. 11% of total respondents explained the reason of the brand name of their bank and remaining 11% have reported other reasons except all the other reported reasons.

**Table 14: Frequency of using Internet Banking**

Sr. No.	Particulars	Frequency of Users
1.	Daily	20
2.	Weekly	44
3.	Monthly	29
4.	Less than a month	7

**Source:** Questionnaire

44% of total respondents are using internet banking services on weekly basis while 29% are using monthly; 20% are using on daily basis and remaining 7% are using internet banking service less than a month as described in table 14.

**Table 15: Comfort Level Connected with Internet Banking Usage**

Sr. No.	Particulars	Frequency
1.	Very Uncomfortable	17

2.	Somewhat Uncomfortable	13
3.	Neither Comfortable nor Uncomfortable	3
4.	Somewhat Comfortable	18
5.	Comfortable	49

Source: Questionnaire

The table 15 shows that the maximum number of respondent i.e. 49% of total are feeling comfortable while using internet banking and 18% are somewhat comfortable; 17% are feeling very uncomfortable; 13% are feeling somewhat uncomfortable and 3% are feeling neither comfortable nor uncomfortable while using internet banking.

**RELIABILITY ANALYSIS:**

**Table 16: Reliability Analysis**

Cronbach's Alpha	N of Items
.913	23

Source: Questionnaire

Reliability was examined on all items in this study and as test of reliability Cronbach’s Alpha was adopted to represent internal consistency. Table 16 shows the positive reliability test with value .913 as it is greater than the value of 0.7. Hence it can be concluded that the items reliably measure the defined constructs.

**Perceptions towards Security and Privacy of Internet Banking Users:**

**Table 17: Descriptive of Perceptions of Security and Privacy of Internet Banking Users**

Item Code	Statement	N	Mean	Std. Deviation	Std. Error Mean
PSP1	My personal information is secured and protected in my bank’s site.	100	2.69	.563	.056
PSP2	Printable receipt of the internet banking service is a proof for payment.	100	2.69	.563	.056
PSP3	The current security measures taken by banks to protect Internet banking are sufficient.	100	2.57	.607	.061
PSP4	I am confident with the security aspects of internet banking.	100	2.62	.582	.058
PSP5	The bank provides secure communication to ensure all payment transactions between the clients and the banks.	100	2.64	.560	.056
PSP6	The bank provides the latest encryption technology to prevent unauthorized access.	100	2.49	.595	.059
PSP7	The bank updates its antivirus software periodically to safeguard my data.	100	2.43	.573	.057
PSP8	In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money.	100	2.35	.687	.069
PSP9	After hearing or reading about news regarding Internet banking security, such as fake websites and banking frauds, my	100	2.34	.670	.067

Item Code	Statement	N	Mean	Std. Deviation	Std. Error Mean
	confidence in Internet banking has not been affected negatively.				
PSP10	Other people cannot tamper with information concerning my Internet banking transactions.	100	2.51	.643	.064
PSP11	Other people have no way in knowing about my internet banking activities.	100	2.50	.644	.064
PSP12	Bank cannot provide my personal information to other people without my consent.	100	2.67	.551	.055
PSP13	I am confident over the privacy aspects of internet banking.	100	2.63	.562	.056
PSP14	Banking institutions keep customers information private and confidential.	100	2.70	.503	.050
PSP15	Customer's financial details are never passed on to other banks.	100	2.66	.536	.054
PSP16	My credit card/ debit card number is secure.	100	2.61	.665	.067
PSP17	My personal information cannot be sold to advertisers.	100	2.52	.717	.072
PSP18	I do not worry about giving my ATM number or log in to banking website.	100	2.25	.809	.081
PSP19	There is a great risk of error in paying by internet banking than paying by cash.	100	2.05	.796	.080
PSP20	There is automatic log out facility after specified time if account is not used more by the customer.	100	2.61	.650	.065
PSP21	Your bank gives you warning time to time to secure your internet banking account user name and password.	100	2.66	.572	.057
PSP22	Your bank gives you warning if somebody tries to hack your internet banking account.	100	2.64	.578	.058
PSP23	Your account gets sealed after specified number of continuous efforts of hacking.	100	2.56	.656	.066

**Source:** Questionnaire

Table 17 shows the statement wise analysis of perceptions of security and privacy of internet banking users. Table depicts that respondent's perception towards security and privacy regarding 'Banking institutions keep customers information private and confidential' (PSP 14, 2.70 ±.503) was 'very high' and it was highest among all the given statements. It was followed by 'My personal information is secured and protected in my bank's site' and 'Printable receipt of the internet banking service is a proof for payment' (PSP1 and 2, 2.69±.563); 'Bank cannot provide my personal information to other people without my consent' (PSP 12, 2.67±.551); 'Customer's financial details are never passed on to other banks' and 'Your bank gives you warning time to time to secure your internet banking account user name and password' (PSP 15 and PSP 21, 2.66±.536 and 2.66±.572); 'The bank provides secure communication to ensure all payment transactions between the clients and the banks' and 'Your bank gives you warning if

somebody tries to hack your internet banking account’ (PSP 5 and PSP 22, 2.64±.56 and 2.64±.578); ‘I am confident over the privacy aspects of internet banking’ (PSP 13, 2.63±.562); ‘I am confident with the security aspects of internet banking’ (PSP4, 2.62±.582); ‘My credit card/ debit card number is secure’ and ‘There is automatic log out facility after specified time if account is not used more by the customer’ (PSP16 and PSP20, 2.61±.665 and 2.61±.65); ‘The current security measures taken by banks to protect Internet banking are sufficient’ (PSP3, 2.57±.607); ‘Your account gets sealed after specified number of continuous efforts of hacking’ (PSP23, 2.56±.656); ‘My personal information cannot be sold to advertisers’ (PSP17, 2.52±.717); ‘Other people cannot tamper with information concerning my Internet banking transactions’ (PSP10, 2.51±.643); ‘Other people have no way in knowing about my internet banking activities’ (PSP11, 2.5±.644); ‘The bank provides the latest encryption technology to prevent unauthorized access’ (PSP6, 2.49±.595); ‘The bank updates its antivirus software periodically to safeguard my data’ (PSP7, 2.43±.573); ‘In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money’ (PSP8, 2.35±.687); ‘After hearing or reading about news regarding Internet banking security, such as fake websites and banking frauds, my confidence in Internet banking has not been affected negatively’ (PSP9, 2.34±.67); ‘I do not worry about giving my ATM number or log in to banking website’ (PSP18, 2.25±.809); ‘There is a great risk of error in paying by internet banking than paying by cash’ (PSP19, 2.05±.796).

**ONE SAMPLE T-TEST:**

**Table 18: One Sample t-test**

Item Code	Statement	t value	P value	Decision
PSP1	My personal information is secured and protected in my bank’s site.	3.374	.001	Reject the null hypothesis
PSP2	Printable receipt of the internet banking service is a proof for payment.	3.374	.001	Reject the null hypothesis
PSP3	The current security measures taken by banks to protect Internet banking are sufficient.	1.153	.252*	Retain the null hypothesis
PSP4	I am confident with the security aspects of internet banking.	2.061	.042	Reject the null hypothesis
PSP5	The bank provides secure communication to ensure all payment transactions between the clients and the banks.	2.500	.014	Reject the null hypothesis
PSP6	The bank provides the latest encryption technology to prevent unauthorized access.	-.168	.867*	Retain the null hypothesis
PSP7	The bank updates its antivirus software periodically to safeguard my data.	-1.222	.225*	Retain the null hypothesis
PSP8	In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money.	-2.183	.031	Reject the null hypothesis
PSP9	After hearing or reading about news regarding Internet banking security, such as fake websites and banking frauds, my confidence in Internet banking has not been affected negatively.	-2.388	.019	Reject the null hypothesis
PSP10	Other people cannot tamper with information concerning my Internet	.155	.877*	Retain the null hypothesis

Item Code	Statement	t value	P value	Decision
	banking transactions.			
PSP11	Other people have no way in knowing about my internet banking activities.	.000	1.00*	Retain the null hypothesis
PSP12	Bank cannot provide my personal information to other people without my consent.	3.083	.003	Reject the null hypothesis
PSP13	I am confident over the privacy aspects of internet banking.	2.312	.023	Reject the null hypothesis
PSP14	Banking institutions keep customers information private and confidential.	3.980	.000	Reject the null hypothesis
PSP15	Customer's financial details are never passed on to other banks.	2.985	.004	Reject the null hypothesis
PSP16	My credit card/ debit card number is secure.	1.654	.101*	Retain the null hypothesis
PSP17	My personal information cannot be sold to advertisers.	.279	.781*	Retain the null hypothesis
PSP18	I do not worry about giving my ATM number or log in to banking website.	-3.091	.003	Reject the null hypothesis
PSP19	There is a great risk of error in paying by internet banking than paying by cash.	-5.652	.000	Reject the null hypothesis
PSP20	There is automatic log out facility after specified time if account is not used more by the customer.	1.693	.094*	Retain the null hypothesis
PSP21	Your bank gives you warning time to time to secure your internet banking account user name and password.	2.795	.006	Reject the null hypothesis
PSP22	Your bank gives you warning if somebody tries to hack your internet banking account.	2.423	.017	Reject the null hypothesis
PSP23	Your account gets sealed after specified number of continuous efforts of hacking.	.914	.363*	Retain the null hypothesis

**Source:** Questionnaire

\* Significant at 95% level of significance (p value < 0.05)

The above table 18 analyses that the value of significance level (p-values) obtained by t-test are smaller than 0.05 items for items PSP1; PSP2; PSP4; PSP5; PSP8; PSP9; PSP12; PSP13; PSP14; PSP15; PSP18; PSP19; PSP21 and PSP22. Therefore, null hypothesis for these is rejected i.e. the results shows that there is significant difference in the internet banking user's perception towards security and privacy regarding internet banking adoption. But the value of significance level (p-values) obtained by t-test are greater than 0.05 items for items PSP3; PSP6; PSP7; PSP10; PSP11; PSP16; PSP17; PSP20 and PSP23. It means the perceptions of users of internet banking towards security and privacy are not significantly different and these perceptions have not significant influence on the adoption of internet banking.

### **FINDINGS OF THE STUDY:**

Findings emerged from the study have been presents as under:

1. Male and female respondents are equal in number i.e. 50 males and 50 females are the part of the study.

2. 87% of the respondents under study are post graduate.
3. Majority of the respondents (40%) belongs to the age group of 26-35 years.
4. The occupation of 58% of the respondents is service followed by professional (35%) and businessman (7%).
5. The income of maximum respondents i.e. 37% of respondents is less than 30,000 followed by 36% who are earning more than 30,001 but less than 60,000. Only 12% respondents are earning more than 90,000.
6. 68% of respondents belong to urban area; 22% belong to semi urban area and rest of the 10% is living in rural area.
7. 76% of the respondents are having accounts in public sector banks and 24% of the respondents are having accounts in private sector banks.
8. 91% of the respondents having saving bank account; 8% have current account and 1% have fixed deposit account.
9. 27% of total respondents are using internet banking for a period more than 5 years; 22% from 3-5 years; 20% from 2-3 years; 17% from 1-2 years and only 14% are using internet banking for the period less than 1 year only.
10. The services which are greatly used by internet banking users are 'Checking account balance' (using 82% of the respondents); 'Fund transfer' (using 82% of the respondents) basic account information (using 78% of the respondents); making online bill payment(using 68% of the respondents); Booking for train/bus/flight or movie tickets (using 52% of the respondents); Statement enquiry (using 51% of the respondents); Mobile recharging (using 47% of the respondents); Applying for cheque books/Pass book/ATM cards/Credit Cards etc and change pin number (using 41% of the respondents). But the services named Seeking product and rate information (using 37% of the respondents); Stock trading (using 27% of the respondents); Calculate loan payment information (using 20% of the respondents); Download loan applications (using 20% of the respondents); Download personal bank transaction activities (using 20% of the respondents); Apply for consumer loans or credit cards online (using 20% of the respondents); Activate Debit/Credit cards (using 20% of the respondents); payment of taxes (using 20% of the respondents); Collect information related to new services from your bank's website and Request for demand draft/pay order (using 20% of the respondents) are used at a lower rate by the internet banking users.
11. The most common problem encountered by the internet banking users are constant breakdown (48% respondents) followed by complicated websites (41% respondents); problem in log in (36% respondents); fake websites (12% respondents) and transaction fraud (09% respondents).
12. The maximum number of respondents i.e. 67% of total respondents are using internet to avail internet banking services from home and remaining 33% are using internet from their work place or office.
13. 40% of total respondents reported that the excellent service offered by their bank is the most important reason of their choosing a particular bank for availing internet banking services while 38% of total respondents reported the reason that they have traditional bank account with the same bank. 11% of total respondents explained the reason of the brand name of their bank and remaining 11% have reported other reasons except all the other reported reasons.
14. 44% of total respondents are using internet banking services on weekly basis while 29% are using monthly; 20% are using on daily basis and remaining 7% are using internet banking service less than a month.
15. The maximum number of respondent i.e. 49% of total are feeling comfortable while using internet banking and 18% are somewhat comfortable; 17% are feeling very uncomfortable; 13% are feeling somewhat uncomfortable and 3% are feeling neither comfortable nor uncomfortable while using internet banking.

16. The 23 items taken to study the perceptions towards security and privacy of internet banking users shows the positive reliability test with value .913 as it is greater than the value of 0.7. Hence it can be concluded that the items reliably measure the defined constructs.
17. It was found that respondent's perception towards security and privacy regarding 'Banking institutions keep customers information private and confidential' (PSP 14,  $2.70 \pm .503$ ) was 'very high' and it was highest among all the given statements. It was followed by 'My personal information is secured and protected in my bank's site' and 'Printable receipt of the internet banking service is a proof for payment' (PSP1 and 2,  $2.69 \pm .563$ ); 'Bank cannot provide my personal information to other people without my consent' (PSP 12,  $2.67 \pm .551$ ); 'Customer's financial details are never passed on to other banks' and 'Your bank gives you warning time to time to secure your internet banking account user name and password' (PSP 15 and PSP 21,  $2.66 \pm .536$  and  $2.66 \pm .572$ ); 'The bank provides secure communication to ensure all payment transactions between the clients and the banks' and 'Your bank gives you warning if somebody tries to hack your internet banking account' (PSP 5 and PSP 22,  $2.64 \pm .56$  and  $2.64 \pm .578$ ); 'I am confident over the privacy aspects of internet banking' (PSP 13,  $2.63 \pm .562$ ); 'I am confident with the security aspects of internet banking' (PSP4,  $2.62 \pm .582$ ); 'My credit card/ debit card number is secure' and 'There is automatic log out facility after specified time if account is not used more by the customer' (PSP16 and PSP20,  $2.61 \pm .665$  and  $2.61 \pm .65$ ); 'The current security measures taken by banks to protect Internet banking are sufficient' (PSP3,  $2.57 \pm .607$ ); 'Your account gets sealed after specified number of continuous efforts of hacking' (PSP23,  $2.56 \pm .656$ ); 'My personal information cannot be sold to advertisers' (PSP17,  $2.52 \pm .717$ ); 'Other people cannot tamper with information concerning my Internet banking transactions' (PSP10,  $2.51 \pm .643$ ); 'Other people have no way in knowing about my internet banking activities' (PSP11,  $2.5 \pm .644$ ); 'The bank provides the latest encryption technology to prevent unauthorized access' (PSP6,  $2.49 \pm .595$ ); 'The bank updates its antivirus software periodically to safeguard my data' (PSP7,  $2.43 \pm .573$ ); 'In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money' (PSP8,  $2.35 \pm .687$ ); 'After hearing or reading about news regarding Internet banking security, such as fake websites and banking frauds, my confidence in Internet banking has not been affected negatively' (PSP9,  $2.34 \pm .67$ ); 'I do not worry about giving my ATM number or log in to banking website' (PSP18,  $2.25 \pm .809$ ); 'There is a great risk of error in paying by internet banking than paying by cash' (PSP19,  $2.05 \pm .796$ ).
18. It is found from Table 18 that out of 23 items to study perceptions towards security and privacy of internet banking users 9 items namely 'The current security measures taken by banks to protect Internet banking are sufficient'; 'The bank provides the latest encryption technology to prevent unauthorized access'; 'The bank updates its antivirus software periodically to safeguard my data'; 'Other people cannot tamper with information concerning my Internet banking transactions'; 'Other people have no way in knowing about my internet banking activities'; 'My credit card/ debit card number is secure'; 'My personal information cannot be sold to advertisers'; 'There is automatic log out facility after specified time if account is not used more by the customer'; 'Your account gets sealed after specified number of continuous efforts of hacking' are not significantly different in relation to internet banking adoption. Thus we accept null hypothesis for these items.
19. The study reveals that there is significant difference in other 14 items out of 23 items to study perceptions towards security and privacy of internet banking regarding internet banking adoption. Thus we reject null hypothesis for these items namely 'My personal information is secured and protected in my bank's site'; 'Printable receipt of the internet banking service is a proof for payment'; 'I am confident with the security aspects of internet banking'; 'The bank provides secure communication to ensure all payment transactions between the clients and the banks'; 'In the event that my online bank account has been hacked into and my money stolen, I am confident that the bank will help me to recover my money'; 'After hearing or reading about news regarding Internet banking security, such as fake websites and banking frauds, my

confidence in Internet banking has not been affected negatively'; 'Bank cannot provide my personal information to other people without my consent'; 'I am confident over the privacy aspects of internet banking'; 'Banking institutions keep customers information private and confidential'; 'Customer's financial details are never passed on to other banks'; 'I do not worry about giving my ATM number or log in to banking website'; 'There is a great risk of error in paying by internet banking than paying by cash'; 'Your bank gives you warning time to time to secure your internet banking account user name and password'; 'Your bank gives you warning if somebody tries to hack your internet banking account'.

## **IMPLICATIONS AND CONCLUSIONS:**

Perception towards privacy and security are factors that affect customers' trust and confidence in relation to internet banking adoption. In the modern banking era, user of internet banking services must be cautious enough while using internet banking services. The aim of this research paper is to study the perceptions concerned with security and privacy issues of users of internet banking services. The internet banking users are still not confident towards the security and privacy features of banks providing internet banking services. The internet banking users are not feeling safe for their personal information lying with their banks. It can be concluded that for maximum number of items (14 items) under study there is significant differences in perceptions towards security and privacy of internet banking regarding internet banking adoption. But for the rest of 9 items there is no significant difference in perceptions towards security and privacy of internet banking regarding internet banking adoption.

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