

AN EMPIRICAL STUDY TO ASSESS THE PERCEIVED SECURITY & PRIVACY CONCERN AND PERCEIVED SECURITY & PRIVACY SATISFACTION REGARDING THE USE OF INTERNET BANKING AMONG BANK CUSTOMERS

Tejinderpal Singh*

Abstract *The present study assesses the Perceived Security & Privacy Concern and Perceived Security & Privacy Satisfaction regarding the use of Internet Banking among bank customers. For study purpose, a sample of 143 Internet banking users, divided equally among selected banks was taken from Tri-city (Chandigarh, Mohali and Panchkula) by using judgmental sampling technique. Primary data from respondents were collected with the help of two self constructed scales i.e. PSPC-Internet Ban and PSPS-Internet Ban study found that respondents' security and privacy concern regarding the use of internet banking was high. It was further found that their perceived level of security & privacy satisfaction regarding the use of Internet banking was also high. Bank-wise, there was significant difference in the level of bank customers' 'Perceived Security & Privacy concern' regarding use of Internet banking across selected banks. Lastly study suggests the ways to banks to reduce the concern for security and privacy issues while using internet banking and to build long term relationship with customers.*

Keywords: *Internet Banking, E-Banking, Perceived Security & Privacy Concern, Perceived Security & Privacy Satisfaction*

INTRODUCTION

The development of communication and information technology has encouraged the emergence of new distribution channels that have enhanced the options available to businesses for building relationships with clients: for communication activities, customer distribution, customer satisfaction control, post-sale service etc. Nowadays, simultaneous use of various channels is increasingly more important, which gives rise to the need for a multichannel contact strategy for clients. The Information technology has brought significant changes in the banking sector too, especially, in the last decade. It has provided an opportunity to banks for offering differentiated products and services to their customers using technology platforms. Apart from operations, advancement in technology has played an important role in the distribution strategy of commercial banks (Baraghani, 2007). Banks, which were traditionally relying on the channel 'branch' to deliver services have now started offering their product and service through variety of innovative and technology based channels which include channels like 'Automated Teller Machines (ATMs)', 'Internet Banking', 'Mobile Banking', 'Phone Banking', 'TV Banking' etc. Among various banking channels, banks

have started giving more importance to internet banking because of increased penetration of internet in India. Internet Banking also called as online banking is the new age banking system. Internet banking uses the internet as the delivery channel to conduct banking activities like transferring funds, paying bills, viewing account statements, paying mortgages and purchasing financial certificates of deposits, etc. (Singhal and Padhmanabhan, 2008). Diniz (1998) developed a model to classify the services delivered through internet banking into three roles having different levels like basic, intermediate and advanced levels of services under each role. The different roles mentioned for internet banking are: Informational: for providing information, Transactional: for conducting transactions and Relationship: for improving customer relationship.

It is evident that internet banking has enhanced the convenience of customers by enabling them to access their bank 24 hours a day. However, as the banker and the customer are not face-to-face, there is the risk of fraud, which may affect the customers and also the bank's reputation. Number of studies found that concern for Security & Privacy is the most important factor influencing the adoption of Internet Banking. In this background, it is apparent that concern for Security & Privacy is the major roadblock in the adoption of

* Assistant Professor, University Business School, Panjab University Chandigarh, Punjab, India. E-mail: tejinderubs@gmail.com

Internet Banking. The level of perceived Security & Privacy Concern may further affect the level of perceived Security & Privacy satisfaction which is very important to maintain the long term relationship with customers. So, there is a need to study the Security & Privacy issues concerning internet banking in depth from customers' perspective. Hence, the present study has been designed.

Research Problem Statement

The research problem for the present study has been defined as '*An Empirical study to assess the Perceived Security & Privacy Concern and Perceived Security & Privacy Satisfaction regarding the use of Internet banking among Bank Customers*'.

Review of Literature

Research in the domain of Internet banking has attracted significant amount of researchers' interest in the recent times. Majority of the studies conducted in this domain, primarily, focused on the identification of factors affecting the adoption of the internet banking. Various studies have revealed that 'reliability', 'ease of use', 'personality', 'accessibility', 'accuracy', 'security' and 'efficiency' may influence the adoption of internet banking. Sathye (1999) found that security concerns and lack of awareness about Internet banking and its benefits stand out as being the obstacles to the adoption of Internet banking in Australia. Polatoglu and Ekin (2001) listed nine factors which according to them influence the diffusion of Internet banking (IB). These factors were 'relative advantage', 'observability', 'trialability', 'complexity', 'perceived risk', 'type of group', 'type of decision', and 'marketing effort'. Gerrard and Cunningham (2003) identified eight characteristics relating to the adoption of internet banking in Singapore such as 'social desirability', 'compatibility', 'convenience', 'complexity', 'confidentiality', 'accessibility', 'economic benefits' and 'PC proficiency'. Karjaluoto et. al, (2002) found that prior experience & knowledge of computer and attitude toward computer influence attitude toward online banking in Thailand. Studies further focused on the application of TAM (Technology Acceptance Model) in adoption of internet banking. Wang et al., (2003) has given the extended version of TAM in the context of acceptance of internet banking. The extended version of TAM included "perceived credibility" as a new factor that reflects the user's security and privacy concerns in the acceptance of Internet banking. In a study conducted by Mattila et al. (2003), perceived difficulty in using computers combined with the lack of personal service in e-banking was found to be the main barriers of Internet banking adoption among mature customers. Geeta (2003) reviewed the current scenario of phishing attacks in India

and provided some countermeasures that can be adopted by online firms to fight this kind of attack. Hutchinson and Warren (2003) proposed a framework concerning how to identify security requirements for internet banking so that the transaction being conducted are secured within their respective environments. Pikkarainen et al., (2004) found that 'perceived usefulness' and 'ease of use' were the main factors influencing the internet banking acceptance. Ndubisi and Sinti (2006) examined the determinant structure of customers 'attitude and system's characteristics on adoption of Internet Banking (IB) by Malaysian bank customers. The research framework links attitudinal constructs such as importance of IB to customers' banking needs, compatibility, complexity, trialability, and risk to internet banking adoption. Gerrard et al., (2006) identified eight factors which explain why consumers were not using internet banking. the identified factors were perceptions about risk; the need; lacking knowledge; inertia; inaccessibility; human touch; pricing and IT fatigue. Sayar and Simon (2007) observed key difference in the approaches of banks towards the issue of 'security' where Turkish banks rely on technology to avoid fraud and British banks prefer more conventional methods to discourage it.

Krauter and Faullanta (2008) investigated the role of internet trust as a specific form of technology trust in the context of internet banking. Rod et. al., (2009) examined the relationships among three dimensions of service quality that influence overall internet banking service quality and its subsequent effect on customer satisfaction in a New Zealand banking context. Chong et. al., (2010) found that perceived usefulness, trust and government support all positively associated with the intention to use online banking in Vietnam. The study further showed that trust in security and privacy of online banking would influence the adoption of online banking in Vietnam. Malhotra and Singh (2010) found that the private and foreign Internet banks had performed well in offering a wider range and more advanced services of Internet banking in comparison with public sector banks. Kesharwani and Bisht (2012) attempted to test the extended version of TAM in the context of internet banking adoption in India under security and privacy threat environment. Moscato and Altschuller (2012) highlighted the significance of user perceptions of security by examining the content of the security policies of banks throughout the world. The security policy was illustrated as a tool for banks to use to manage their users' perceptions. Patsiotis (2012) examined internet banking adoption and resistance behaviour in Greece in order to develop profiles of adopters and non-adopters of the service. The study identified three segments, where the description of their profiles was based on customer perceptions of the service and general usage data. Singh and Kaur (2012) compared the pre-login and after login features of two banks' online portals in India. Study found that selected banks' online portals differ on various features such

as accounts information, fund transfer, online requests and general information.

Gaps in Review of Literature

Review of literature reveals that Internet Banking has received significant amount of interest from academicians especially in the recent times. Majority of studies have been conducted on identification factors influencing the adoption of internet banking services, application of extended Technology Acceptance Model (TAM) to internet banking, behavior of non users of internet banking services, impact of demographic of adoption of internet banking services, development scale to measure e-service quality in internet banking, understanding resistance to e-banking services behavior etc. It is observed that perceived risk, trust security and privacy reminded the integral part of majority of the studies. However, only few studies have been conducted to address the security and privacy issues internet banking. Moreover, these studies primarily focused on prevailing security and privacy practices of banks regarding internet banking channel rather than customers' perceptions. Further, in India there is dearth of literature on internet banking security and privacy. Only few studies are available in this regard. From the available sources, researcher could not find exhaustive study which has been conducted in India to understand the perception of bank customers; perception toward 'security and privacy concern' and 'security and privacy satisfaction' regarding use of internet banking services. Thus, gaps have been found in available literature and present study attempts to fill these gaps.

OBJECTIVES OF THE STUDY

1. To assess and compare the level of 'Perceived Security & Privacy Concern' among bankcustomers regarding the use of Internet banking across selected banks.
2. To measure and compare the level of 'Perceived Security & Privacy Satisfaction' among bank customers regarding use of Internet Banking across selected banks.

Hypotheses

Following null hypotheses were formulated for the study:

H₀1: There is no significant difference in the 'Perceived Security & Privacy Concern' among bank customers regarding use of Internet Banking across selected banks.

H₀2: There is no significant difference in the 'Perceived Security & Privacy Satisfaction' among bank customers regarding use of Internet Banking across selected banks

RESEARCH METHODOLOGY

Research Design

In present research study, a descriptive research design has been used.

Scope of the study

The theoretical scope of the study is limited to Internet banking of four selected banks and the geographical scope of the study was Chandigarh UT, Mohali and Panchkula. The geographical scope has been selected keeping in mind the researcher's convenience.

Population, Sampling and Sample Size

The population for the study comprised of customers of selected public and new private sector banks in the tri-city i.e. Chandigarh, Panchkula and Mohali. For study purpose, four banks, two each from public and private sector were selected. More specifically, the target population for the study was defined as "Bank customers who have used Internet Banking service at least two times in the last quarter". Top two banks were selected from each sector on the basis of Alexa* ranking (March, 2013). The selected banks for the study were State Bank of India (SBI), Punjab National Bank (PNB), ICICI Bank (ICICI), and HDFC Bank (HDFC). Initially, a sample of 200 bank customers divided equally among selected banks was planned. However, the researcher could obtain only 142 valid questionnaires. Thus, the findings of this study are based on opinion of 142 respondents. The sampling technique used in the study was Non-Probability Judgmental Sampling. The prime reason for using Judgmental Sampling was the non availability of Random Sampling Frame. Sampling unit for data collection was individual bank customers

Instruments Design

To collect the data from bank customers, two self constructed scales were used to measure the level of Perceived Security & Privacy Concern (PSPC-InternetBan) (8 Items) and Perceived Security & Privacy Satisfaction (PSPS-InternetBan) (11 Items). Perceived security & privacy concern has been defined as individuals' apprehension about negatives outcomes while using Internet banking. Similarly, Perceived security & privacy satisfaction has been defined as individuals' contentment about security and privacy features of Internet banking. Respondents were asked to

* Alexa Internet, Inc. is a California-based subsidiary company of Amazon.com which provides commercial web traffic data.

Table 1. Reliability of Construct Security and Privacy Concern: Internet Banking

Item code	Item description	Item-Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
IBC1	My internet banking password may be stolen	.516	.809	.825
IBC2	Funds may be fraudulently transferred from my account to other's account	.585	.799	
IBC3	I may provide internet banking password at fake websites by mistake	.487	.814	
IBC4	One can monitor my financial transaction history	.591	.798	
IBC5	Bank will not refund my money back if there is online fraud	.416	.821	
IBC6	My account related may be shared by the bank with third party	.583	.800	
IBC7	My online behaviour may be shared with third party	.604	.796	
IBC8	Internet banking is vulnerable to fraud	.610	.798	

indicate their opinion on Five-Point Likert Scale ranging from 'Strongly Agree'(5) to 'Strongly Disagree'(1).

Reliability and Validity of the Instruments

The reliability of each construct was checked using Cronbach's Alpha. Nunnally (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. Results of reliability test are based on final survey and are shown in following tables.

Table 1 shows that Cronbach's Alpha is .825 (>.7, Nunnally, 1978), the Item-Total Correlation for all items is more than 0.2 (Field, 2005) and none of item results in higher than .825 alpha, if deleted. Thus, items included in the construct were found internally consistent.

Table 2 shows that Cronbach's Alpha is .844 (>.7, Nunnally, 1978), the Item-Total Correlation for all items is more than 0.2 (Field, 2005) and none of item results in higher than .844 alpha, if deleted. Thus, items included in the construct were

found internally consistent.

Criterion Measurement

To measure the level of 'Perceived Security & Privacy concern' and level of 'Perceived Security & Privacy Satisfaction' regarding use of Internet Banking, two self developed constructs were used. Mean scores for each statement were calculated by assigning weights of 5, 4, 3, 2 and 1 to 'Strongly Agree', 'Agree', 'Neutral', 'Disagree' and 'Strongly Disagree' respectively. The overall Level of 'Perceived Security & Privacy concern' and level of 'Perceived Security & Privacy Satisfaction' was measured for each construct by calculating the Grand Mean of all the statements' mean for given construct. The mean score for each statement and Grand mean could vary from 1-5. Based on mean scores the level of concern and satisfaction for each construct has been defined as shown in Table 3.

Table 2. Reliability of Construct Security and Privacy Satisfaction: Internet Banking

Item code	Item description	Item-Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
IBS1	It is safe to use internet banking of my bank	.553	.830	.844
IBS2	The site has virtual keyboard to enter Password and User ID	.590	.825	
IBS3	The site provides security guidelines on home page	.604	.828	
IBS4	OTP(One Time Password) is required, if logging from different browsers/computers	.641	.821	
IBS5	OTP is required while making Third Party payments	.505	.832	
IBS6	OTP is always required while adding beneficiary	.561	.828	
IBS7	Pressing back space results in immediately logout from session	.520	.832	
IBS8	Idle time log out from session exists at my Bank's site	.528	.831	
IBS9	There is maximum number of incorrect password submissions	.454	.839	
IBS10	Bank provide me the facility of choosing strong password for internet banking	.588	.826	
IBS11	Bank remind me to change password from time to time	.383	.843	

Table 3. Measuring Level of Security & Privacy Concern regarding use of Internet banking

Mean Scores Range	Level of Perceived Security & Privacy Concern	Level of Perceived Security & Privacy Satisfaction
1-2	Low	Low
2-3	Moderate	Moderate
3-4	High	High
4-5	Very High	Very High

Period of Survey

The survey of bank customers was carried out during the period of June2013-August 2013.

Data Analysis

Data collected through survey method was entered in data sheet of SPSS16. The entered data was checked for errors

Statistical Tools

For analysis purpose both descriptive and inferential statistics were used. Descriptive statistics included Percentage, Mean and Standard deviation. Inferential statistics included Kruskal-Wallis Test.

Table 4. Demographic Profile of Respondents

Demographic		Frequency	Percentage
Gender	Male	74	52.1
	Female	68	47.9
Age Groups (Years)	< 25	42	29.6
	25-35	47	33.1
	35-45	35	24.6
	45-55	16	11.3
	>55	2	1.4
Education	Undergraduate	3	2.1
	Graduate	69	48.6
	Post graduate	64	45.1
	Others	6	4.2
Occupation	Professional	32	22.5
	Business Person	19	13.4
	Service	46	32.4
	House wife	10	7.0
	Student	35	24.6
Family Income (Rs/ Months)	< 40000	20	14.1
	40000-60000	30	21.1
	60000-80000	32	22.5
	80000-100000	25	17.6
	> 100000	35	24.6

FINDINGS OF THE STUDY

Demographic profile

Demographic profile of surveyed respondents covering information on Gender, Age Groups (Years), Education, Occupation, Family Income has been shown in Table 4

The sample consisted of higher number of males (52.1%) as compared to females (47.9%). Age-wise distribution of respondents shows that majority of the respondents (62.7%) were from age groups ‘Less than 25’ (29.6%) and ‘25-35’ (33.1%) taken together. It was followed by age groups ‘35-45’ (24.6%), ‘45-55’ (11.3%) and ‘Above 55’ (1.4%). Education-wise, majority of respondents (48.6%) were ‘Graduate’ followed by ‘Post-Graduate’ (45.1%), ‘Others’ (4.2%) and Undergraduate (2.1%). The category ‘Others’ included PhD and diploma holders. Occupation-wise, maximum number of respondents was servicemen (32.4%), followed by students (24.6%), professionals (22.5%), business persons (13.4%) and housewife (7.0%). Family income-wise distribution shows that maximum number of respondents were from income group ‘More than Rs.100000’ (24.6%) followed by ‘Rs. 60000- 80000’ (22.5%), ‘Rs.40000-60000’ (21.1%), Rs. ‘80000- 100000’ (17.6%) and ‘less than Rs.40000 (14.1%)

Perception towards Security and Privacy Concern Regarding use of Internet Banking

To measure the internet banking users’ perception toward ‘security and privacy concern’ regarding use of internet banking, a self developed 8 items ‘Security and Privacy Concern: Internet Banking’ construct was used. Respondents were asked to indicate their opinion about given statements on Five point Likert Scale ranging from ‘Strongly Agree’ to ‘Strongly Disagree’. The statements on different aspects of security and privacy concerns were designed in such a way that agreeableness to the statement would reflect the higher concern for given aspect or vice versa. Further, mean scores have been calculated for each statement by assigning weights of 5,4,3,2 and 1 to ‘Strongly Agree’, ‘Agree’, ‘Neutral’, was measured by calculation Grand Mean of all the statements. Bank-wise respondents’ perception towards ‘security and privacy concern’ regarding internet banking use have been shown in Table 5

Table5 shows that in general respondents’ level of security and privacy concern regarding use of internet banking was high (3.1065±.72780). Statement wise analysis shows that respondents had highest level of concern with respect to vulnerability of fraud in Internet (IBC8,3.68±0.949) followed by concern about password hacking (IBC1, 3.06±1.153) , sharing of online behaviour with third party (IBC,3.06±1.166), non refund of money in case of fraud (IBC5, 3.22±1.011), monitoring of financial transaction

Table 5. Security and Privacy Concern Regarding use of Internet Banking (Bank wise Analysis)

Item Code	Statements	Public Sector Banks		Private Sector Banks		Total	Kruskal-Wallis Statistic Df(3)	
		SBI	PNB	ICICI	HDFC		χ^2	P-value
IBC1	My internet banking password may be stolen	3.1667	3.4500	2.9286	2.8684	3.06±1.153	4.177	.243
IBC2	Funds may be fraudulently transferred from my account to other's account	3.1190	3.2500	2.7381	2.8421	2.95±1.074	5.474	.140
IBC3	I may provide internet banking password at fake websites by mistake	2.6190	3.1500	2.6190	3.3947	2.90±1.193	12.117	.007
IBC4	One can monitor my financial transaction history	3.1429	3.7500	2.7381	3.5000	3.20±1.075	16.465	.001
IBC5	Bank will not refund my money back if there is online fraud	3.3095	2.7500	2.9048	3.7105	3.22±1.011	18.738	.000
IBC6	My account related may be shared by the bank with third party	2.6429	2.4500	2.4524	3.5000	2.79±1.044	21.843	.000
IBC7	My online behaviour may be shared with third party	2.8571	2.6500	3.1667	3.3684	3.06±1.166	6.936	.074
IBC8	Internet banking is vulnerable to fraud	3.4524	3.6500	3.7143	3.8947	3.68±0.949	4.570	.206
Level of Security and Privacy Concern		3.0387	3.1375	2.9077	3.3849	3.1065±.72780	10.897	.012

Significant at .05.

history (IBC4, 3.20±1.075), fraudulently transfer of funds (IBC2, 2.95±1.074), chances of providing password to fake websites (IBC3, 2.90±1.193) and sharing of account related information with third party by the bank (IBC6, 2.79±1.044). From above analysis, it may be concluded that those who are using internet banking, even their level of concern is high about various dimensions of security and privacy of internet banking. The prime reason for such concern may be attributed to increase in number of internet banking frauds.

It was further found that overall level of security and privacy concern regarding use of internet banking was highest in among respondents of HDFC (3.3849) followed by PNB (3.1375), SBI (3.0387) and ICICI (2.9077). Kruskal Wallis test shows that there was significant difference in the bank customers' perception towards security and privacy concern regarding use of Internet Banking across selected banks. ($\chi^2(3)=10.897$, $p=.012$). Therefore, null hypothesis (H_0) is not accepted.

Further, analysis of each statement on different aspects of concern shows that there is significant difference in the bank customers' perception towards security and privacy concern regarding use of Internet Banking across selected banks with respect to items IBC3 [$\chi^2(3) = 12.117$, $p=.007$], IBC4 [$\chi^2(3) = 16.465$, $p=.001$], IBC5 [$\chi^2(3) = 18.738$, $p=.000$], IBC6 [$\chi^2(3) = 21.843$, $p=.000$]

Perception towards Security and Privacy Satisfaction Regarding use of Internet Banking

Respondents' satisfaction level regarding security and privacy of Internet Banking has also been measured. The purpose of measuring satisfaction level regarding security and privacy was to find out the relationship between security and privacy concern and satisfaction level regarding the use of Internet banking.

To measure the security and privacy satisfaction level regarding use of Internet Banking, a self developed 11 items 'Security and Privacy satisfaction: Internet Banking' construct was used. Respondents were asked to indicate their opinion about given statements on Five point Likert Scale ranging from 'Strongly Agree' to 'Strongly Disagree'. The statements on different aspects of security and privacy satisfaction were designed in such a way that agreeableness to the statement would reflect the higher satisfaction for given aspect or vice versa. Further, mean scores have been calculated for each statement by assigning weights of 5,4,3,2 and 1 to 'Strongly Agree', 'Agree', 'Neutral', 'Disagree' and 'Strongly Disagree'. Mean score of Security and Privacy satisfaction was measured by taking the Grand Mean of all the statements. Bank-wise security and privacy satisfaction regarding Internet Banking have been shown in Table 6

Table 6. Satisfaction Level Regarding Security and Privacy of Internet Banking (Bank-wise Analysis)

Item Code	Statement	Public Sector Banks		Private Sector Banks		Total	Kruskal-Wallis Statistic Df(3)	
		SBI	PNB	ICICI	HDFC		χ^2	P-value
IBS1	It is safe to use internet banking of my bank	3.9762	3.7500	3.9762	3.6316	3.8521±.59486	10.663	.014
IBS2	The site has virtual keyboard to enter Password and User ID	3.8810	3.4500	4.0714	3.9737	3.9014±.77469	6.654	.084
IBS3	The site provides security guidelines on home page	3.9762	4.1000	4.1190	4.0000	4.0423±.54413	1.821	.610
IBS4	OTP(One Time Password) is required,if logging from different browsers/computers	3.6429	3.8500	4.0238	4.0789	3.9014±.78379	7.665	.053
IBS5	OTP is required while making Third Party payments	3.8571	3.2500	3.9762	4.0263	3.8521±.73366	18.841	.000
IBS6	OTP is always required while adding beneficiary	3.7381	3.6500	3.9286	3.7632	3.7887±.75165	2.767	.429
IBS7	Pressing back space results in immediately logout from session	4.0000	3.5500	3.9286	3.7895	3.8592±.91939	3.441	.328
IBS8	Idle time log out from session exists at my Bank's site	3.9762	4.2000	4.2381	4.1053	4.1197±.67878	3.026	.388
IBS9	There is maximum number of incorrect password submissions	3.7619	3.8000	4.2381	3.9211	3.9507±.95522	5.362	.147
IBS10	Bank provide me the facility of choosing strong password for internet banking	4.1429	4.2000	4.2381	4.2105	4.1972±.73648	.631	.889
IBS11	Bank remind me to change password from time to time	4.0000	3.6500	3.4524	3.7632	3.7254±.94640	7.184	.066
Mean score of Security and Privacy Satisfaction		3.9048	3.7682	4.0173	3.9330	3.9264±.48492	7.923	.048

Significant at .05.

Table 6 show that respondent's degree of overall security and privacy satisfaction level regarding use of internet banking was 'high' (3.9264±.48492). Statement wise, respondents' satisfaction level was 'very high' regarding facility of choosing a strong password (IBS10, 4.1972±.73648) followed by satisfaction toward Idle time log out (IBS8, 4.1197±.67878) and provision of security guidelines on home page (IBS3, 4.0423±.54413). The satisfaction level was found 'high' in case of maximum number of incorrect password submissions (IBS9, 3.9507±.95522), availability of virtual key board (IBS2, 3.9014±.77469), requirement of OTP if login from different locations (3.9014±.78379), immediate logout from session if back space button pressed (IBS7, 3.8592±.91939), safe use of Internet banking (IBS1, 3.8521±.59486), requirement of OTP for third party payments (IBS5, 3.8521±.73366), requirement of OTP to add third party (IBS6, 3.7887±.75165) and reminder of password change (3.7254±.94640).

It was further found that degree of overall Security and Privacy satisfaction level regarding use of Internet Banking was 'very high' among respondents of ICICI (4.0173). The

level of satisfaction was 'High' among respondents from HDFC (3.9330), SBI (3.9048) and PNB (3.7682). Kruskal Wallis test shows that there was significant difference in bank customers' perception towards security and privacy satisfaction regarding use of Internet Banking across selected banks [$\chi^2(3) = 7.923$, $p = .048$]. Therefore, null hypothesis (H_0) is not accepted.

MANAGERIAL IMPLICATIONS AND CONCLUSION

At present Indian banks are investing huge amount in the infrastructure to host internet banking activities. However, adoption rate of internet banking is very low in India as compared to developed countries. Various research studies showed that apart from other factors 'concern for securities and privacy' is most important factor influencing the adoption of internet banking. The present study also found the level of concern for security and privacy regarding use of internet banking services is high. In this context, the findings of the study have implications for banking industry. The study

will be helpful to the bankers to understand the behavior of internet banking users. It will help bankers to understand the security and privacy aspect of various e-banking services where customers have high level of concern. It will assist the bankers to retain the existing bank customer and to design customer relationship strategies for the long term. Finally, bank should educate the customers about ways to avoid frauds while using internet banking by holding educational sessions of customers and transmitting security tips in mass media. Internet and internet media should widely be used for this purpose.

BIBLIOGRAPHY

- Baraghani, S. N. (2007). Factors influencing the adoption of internet banking (Unpublished Master's Thesis). Lulea university of Technology. Sweden
- Chong, A. Y. L., Ooi, K. B., Lin, B., & Tan, B. I. (2010). Online banking adoption: an empirical analysis. *International Journal of Bank Marketing*, 28(4), 267-287.
- Diniz, E. (1998). Web banking in USA. *Journal of Internet Banking and Commerce*, 3(2), e- journal, Retrieved from <http://www.arraydev.com>
- Field, A. (2007). *Discovering statistics using SPSS introducing statistical methods series*, Sage Publication
- Geeta, D. V. (2011). Online identity theft-an Indian perspective. *Journal of Financial Crime*, 18(3), 235-246.
- Gerrard, P., & Cunningham, B. J. (2003). The diffusion of internet banking among Singapore consumers. *International Journal of Bank Marketing*, 21(1), 16-28.
- Gerrard, P., Cunningham, J., Barton, D., & James, F. (2006). Why consumers are not using internet banking: A qualitative study. *Journal of Services Marketing*, 20(3), 160-166.
- Hutchinson, D., & Warren, M. (2003). Security for internet banking: A framework. *Logistic Information Management*, 16(1), 64-73.
- Karjaluoto, H., Mattila, M., & Pento, T. (2002). Factor underlying attitude formation towards online banking in Finland. *International Journal of Bank Marketing*, 20(6), 261-272.
- Kesharwani, A., & Bisht, S. S. (2012). The impact of trust and perceived risk internet banking adoption in India: An extension of technology acceptance model. *International Journal of Bank Marketing*, 30(4), 303-322.
- Krauter, S. G., & Faullant, R. (2008). Consumer acceptance of internet banking: The influence of internet trust. *International Journal of Bank Marketing*, 26(7), 483-450
- Malhotra, P., & Singh, B. (2010). An analysis of Internet banking offerings and its determinants in India, *Internet Research*, 20(1), 87-106.
- Mattila, M., Karjaluoto, H., & Pento, T. (2003). Internet banking adoption among mature customers: Early majority or laggards? *Journal of Services Marketing*, 17(5), 514-528.
- Moscato, D. R., & Altschuller, S. (2012). International perceptions of online banking security concerns. *Communications of the IIMA*, 12(3), 51-64.
- Ndubisi, N. O., & Sinti, Q. (2006). Consumer attitudes, system's characteristics and internet banking adoption in Malaysia. *Management Research News*, 29(1/2), 16-27.
- Nunnally, J. (1978). *Psychometric theory*. New York, McGraw-Hill.
- Patsiotis, A. G., Hughes, T., & Webber, D. J. (2012). Adopters and non-adopters of internet banking: A segmentation study. *International Journal of Bank Marketing*, 30(1), 20-42.
- Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahnla, S. (2004). Consumer acceptance of online banking: An extension of the technology acceptance model. *Internet research*, 14(3), 224-235.
- Polatoglu, V. N., & Ekin, S. (2001). An empirical investigation of the Turkish consumers' acceptance of internet banking services. *International Journal of Bank Marketing*, 19(4), 156-165.
- Rod Michel, A., Nicholas, J., Shao, J., & Carruthers, J. (2009). An examination of the relationship between service quality dimensions, overall internet banking service quality and customer satisfaction: A New Zealand study. *Marketing Intelligence & Planning*, 27(1), 103-126.
- Sathye, M. (1999). Adoption of Internet banking by Australian consumers: An empirical investigation. *International Journal of Bank Marketing*, 17(7), 324-334.
- Sayar, C., & Wolf, S. (2007). Internet banking market performance: Turkey versus the UK, *International Journal of Bank Marketing*, 25(3), 122-141.
- Singh, T., & Kaur, M. (2012). Internet banking: Content analysis of selected Indian public and private sector banks' online portals, 17(1), 1-7.
- Singhal, D., & Padhmanabhan, V. (2008). A study of customer perception toward internet banking: Identifying major contributing factors. *The Journal of Nepalese Business Studies*, 5(1), 101-111. Retrieved from <http://www.nepjol.info/index.php/JNBS/article/view/2088>
- Wang, Y. S., Wang, Y. M., Lin, H. H., & Tang, T. I. (2003). Determinants of user acceptance of Internet banking: An empirical study. *International Journal of Service Management*, 14(5), 501-519.

We References

www.alex.com

www.hdfcbank.com

www.icicibank.com

www.Internetworldstats.com

www.netbanking.hdfcbank.com/netbanking

www.netpnb.com

www.onlinesbi.com

www.pnbindia.in

www.rbi.org.in

www.sbi.co.in