RISK OF FRAUD BY EMPLOYEES IN E-BANKING IN INDIA

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ABSTRACT

This paper analyzed the bankers' viewpoint towards the factors responsible for risk of fraud by employees in e-banking, their potential impacts and the risk management measures taken by selected public, private and foreign banks. A sample of 107, 104 and 100 respondents (bank employees) is taken for data collection from the different branches located in Haryana, Punjab, Chandigarh and Delhi from selected public, private and foreign banks respectively. Statistical techniques such as mean, mode, standard deviation have been used for the analysis of data. ANOVA technique has been applied to arrive at the conclusion. The analysis shows that alteration of data by the employees to draw funds from general bank accounts is the most important factor leading to the fraud by the employees followed by alteration of data by the employees to draw information from the records and theft of smart cards by the employees. On the other hand, increase in costs associated with reimbursing customers' losses is considered as the most potential impact followed by increase in costs associated with reconstructing accurate data of customers in public and private sector banks. However, bank may face legal sanctions is viewed as the most potential impact in case of foreign banks followed by increase in costs associated with reconstructing accurate data of customers and increase in costs associated with reimbursing customer losses. The analysis further shows that developing policies for adequately screening new employees is considered as the top most adopting measure in public sector banks, whereas designing institute's internal controls including segregation of duties is viewed as the top most adopting measure in private sector banks. However, developing the policies for adequately screening new employees is found as the top most adopting measure in foreign banks followed by designing institute's internal controls including segregation of duties and external auditing of employees performance.

Key Words: *Alteration, Smart cards, Sanctions, Segregation, Performance.*

RISK OF FRAUD BY EMPLOYEES IN E-BANKING IN INDIA

Indian banking industry today is in the mid of an IT revolution. New private sector banks and foreign banks have an edge over public sector banks in the implementation of technological solutions. However, public sector banks are in the process of making huge investment in technology. To be successful in this competitive environment, these banks have to take certain steps like cost reduction by economies of scale, better relations with the customers by providing better services and facilities to them. Pressure of performance and profitability will keep them on their toes all the times as the shareholders expect good performance along with good returns on their equity. The changing scenario and the new technologies like internet banking, mobile banking, improvement in payment technology, etc. can help in increasing the scale of economies in providing financial services. With the help of technology, the banks are now able to offer such products and services, which were difficult or impossible with traditional banking. But Indian banks have to go a long way before making themselves technology savvy. India has been able to take one step in this direction - physical cash has been replaced by anytime, anywhere money, but these are more pronounced in foreign and private sector banks. The public sector banks are far behind in technology integration. Thus, there is a huge scope for automation in the banking industry. The service based areas of banks have perhaps been the largest beneficiary of e-banking. ATMs, credit cards, internet banking, mobile banking which are already widely used around the world, have yet to reach their full potential in India. These services and products are all expected to grow in the coming years. No doubt, e-banking provides so many benefits, but face to face contact between the bank and the customer is absent in e-banking transactions, which causes most of the problems like credit card frauds, fraud of internet, etc. Rising competition is forcing the banks to find innovative ways to reduce the cost of transactions and increase the profitability. Technology has been one of the major enabling factors for enhancing the customer convenience in the products and services offered by the various banks and help in enhancing service range but the security of the transactions is a major concern. While it mitigates some risks, but induces some risks also. The main risks of e-banking are: strategic risk, business risk, operational risk, security risk, privacy/security risk, legal risk, cross-border risk, reputational risk, liquidity risk, etc. These risks are highly interdependent and events that affect one area of risk can have ramifications for a range of other risk categories.

Review of Literature

Various articles appeared in different journals in varied aspects of e-banking, which are restrictive in nature and do not give a comprehensive picture. Ahmad et. al. (2010) discussed the security issues on banking systems and stated that banking system intrusion shows the vulnerabilities that exists in financial institution, that have been used by those illegal and unauthorized individuals or groups to intrude an area with secure environment. With the developing of high technology and information system around the world, banking system should not be left behind in terms of security system and should keep a sharp eye when there is any vulnerability in authentication and authorization that may lead to confidentiality, availability and integrity issues. Fatima (2011) concluded that biometric based authentication and identification systems are the new solutions to address the issues of security and privacy. One thing that can be said with certainty about the future of the biometrics industry is that is growing. Biometrics are finding their way into all kinds of applications beyond access control. It is expected that more and more information systems/computer networks will be secured with biometrics with the rapid expansion of internet and intranet. Adewuyi (2011) examined the concept of information technology, meaning of e-banking, origin of e-banking in Nigeria, areas of information and communication technology deployment by banks, guidelines on e-banking in Nigeria, reasons for automation of banking operation, challenges of regulatory on e-banking in Nigeria and the way forward. It is concluded that the adoption of TCT has influenced the content and quality of banking operations and presents great potential for business re-engineering of Nigerian banks. Thus investment in ICT should form an important component in the overall strategy of banking operation to ensure effective performance. Mermod (2011) analyzed the internet bank branches in Turkey with regard to many dimensions and found that online customers admit that internet bank branches are safe and cheaper and understandable and saving extra time. Internet banking usage rate have increased in the last years, depending on the increase of educated users. The usage rate of the internet banking is significantly related with the education levels. Education and also income level makes an important difference in the usage of internet banking facilities. Karimzadeh and Alam (2012) examined the e-banking challenges in India and concluded that legal and security, socio-cultural and management, banking issues are accepted as challenges for the development of e-banking. But there is less awareness regarding new technologies and

unsuitable software which are ranked respectively as the highest and lowest obstacles in India. Osunmuyiwa (2013) examined the various aspects of online banking risks and the risk management methods employed in mitigating these risks. It is widely recommended that banks that carry out online banking clearly should explain the privacy rule and communicate it to their clients. Banks can also make use of materials like vendor oversight, assignment sheet; excel spreadsheet for risk assessment for policies amongst so many created from a range of date resources to carry out data safekeeping. With this background, an attempt is made to examine the various aspects of risk of fraud by the employees in e-banking in selected public, private and foreign banks in India.

Scope of the Study

The present study is confined to the selected public, private and foreign banks in Haryana, Delhi, Chandigarh and Punjab.

Objectives of the Study

The present study is conducted to achieve the following objectives:

1. To identify the factors leading to risk of fraud by the employees in e-banking.
2. To analyze the potential impacts risk of fraud by the employees in e-banking.
3. To examine the risk management measures for overcoming the risk of fraud by the employees in e-banking.

Research Hypotheses

The following hypotheses have been formulated and tested to validate the results of the study:

H_{01}: There is no significant difference among the bankers' viewpoint towards the factors leading to risk of fraud by the employees in e-banking.

H_{02}: There is no significant difference among the bankers' viewpoint towards the potential impacts of risk of fraud by the employees in e-banking.

H_{03}: There is no significant difference among the bankers' viewpoint towards the risk management measures to overcome the risk of fraud by employees in e-banking.

Sample Profile

For the purpose of the study, all the banks have been divided into three categories *i.e.* public, private and foreign banks. The banks selected from the public sector are State Bank of India (SBI), State Bank of Patiala (SBP), State Bank of Bikaner and Jaipur (SBBJ), Punjab National Bank (PNB), Dena Bank (DB), Oriental Bank of Commerce (OBC), Canara Bank (CB), Central Bank of India (CBI), Union Bank (UB), Corporation Bank (CB), Bank of Baroda (BOB), Allahabad Bank (AB), Bank of India (BOI), Syndicate Bank (SB) and Indian Bank (IB). The banks selected from the private sector are ICICI Bank (ICICI), Axis Bank (AXIS), IDBI Bank (IDBI), HDFC Bank (HDBC), Yes Bank (YB), Kotak Mahindra Bank (KOTAK) and The Federal Bank Limited (FBL). Foreign banks include Standard Chartered Bank, City Bank, SBER Bank, State Bank of Mauritius, ABN-AMRO Bank N.V., HSBC Bank, American Express, BNP Paribas, Deutsche Bank and Barclays Bank.

Data Collection

The present study is of analytical and exploratory in nature. Accordingly, the use is made of primary as well as secondary data. The primary data are collected with the help of pre-tested structured questionnaire from the respondents (banks' officials) of selected banks on five point Likert Scale *i.e.* Strongly Disagree (SD), Disagree (A), Neutral (N), Agree (A), and Strongly Agree (SA). A sample of 375 respondents is taken from the various branches of the selected banks (125 respondents from each group). After examination, 107 questionnaires from public sector banks, 104 from private sector banks and 100 from foreign banks were found complete and used for further analysis. Besides questionnaires, interviews and discussion techniques were also used to unveil the information. On the other hand, the secondary data were collected mainly from RBI Monthly Bulletins, IBA Bulletins, Economic and Political Weekly, Bank Management, Professional Banker; and newspapers like The Economic Times, The Financial Express and The Hindu were also referred.

Data Analysis

The collected data were analyzed through descriptive statistical techniques like frequency distribution, percentage, mean, mode, standard deviation. For coding and analyzing the data,

weights are assigned in order of importance i.e. 1 to Strongly Disagree (SD), 2 to Disagree (A), 3 to Neutral, 4 to Agree (A), and 5 to Strongly Agree (SA). To examine the bankers' viewpoints towards factors responsible for e-banking risks, their potential impacts, and the risk management measures taken by the selected banks; ANOVA technique was employed to test the hypotheses and validate the results. The analysis is in conformity with the objectives of the study and the hypotheses formulated. The collected data are analyzed through PASW 18.0 version.

Results and Discussions

(A) Factors leading to Risk of Fraud by Employees

Various factors leading to the risk of fraud by the employees in selected banks are shown in Table 1 (a) and 1 (b).

Public Sector Banks

Most of the respondents *i.e.* 47 respondents (43.9 per cent) found the alteration of data by the employees to draw funds from general bank accounts (Mean = 3.74, S.D. = 1.058) as the most important factor leading to the fraud by the employees. Alteration of data by the employees to draw information from the records (Mean = 3.44, S.D. = 1.092) is considered as the second important factor by 47 respondents (43.9 per cent). On the other hand, the theft of smart cards by the employees (Mean = 2.95, S.D. = 1.224) is found as the least important factor by 29 respondents (27.1 per cent).

Private Sector Banks

Most of the respondents *i.e.* 51 respondents (49.0 per cent) put the alteration of data by the employees to draw funds from general bank accounts (Mean = 3.73, S.D. = 0.895) at the top in terms of factor leading the fraud by employees. Alteration of data by the employees to draw information from the records (Mean = 3.59, S.D. = 0.991) is found as the second important factor by 48 respondents (46.2 per cent). However, the theft of smart cards by the employees (Mean = 2.86, S.D. = 1.028) is considered as the least important factor as per the opinion of 44 respondents (42.3 per cent).

Table 1 (a): Factors Leading to Risk of Fraud by Employees

Statemen	N/	Public Sector Banks	Private Sector Banks	Foreign Banks

ts	P	SD	D	I	A	SA	SD	D	I	A	SA	SD	D	I	A	SA
Alteration of data by the employees to draw funds from general bank accounts	N	3	14	17	47	26	2	7	26	51	18	2	12	26	42	18
	%	2.8	13.1	15.9	43.9	24.3	1.9	6.7	25.0	49.0	17.3	2.0	12.0	26.0	42.0	18.0
Alteration of data by the employees to draw information from the records	N	5	20	20	47	15	3	13	24	48	16	5	8	15	59	13
	%	4.7	18.7	18.7	43.9	14.0	2.9	12.5	23.1	46.2	15.4	5.0	8.0	15.0	59.0	13.0
Theft of smart cards by the employees	N	13	29	29	22	14	11	24	44	19	6	5	29	28	31	7
	%	12.1	27.1	27.1	20.6	13.1	10.6	23.1	42.3	18.3	5.8	5.0	29.0	28.0	31.0	7.0

Note: N = Number of Respondents, P = Percent
Source: Survey

Table 1 (b): Factors Leading to Risk of Fraud by Employees

Particulars	Public Sector Banks			Private Sector Banks			Foreign Banks			ANOVA	
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	F (df=2,308)	Sig.
Alteration of data by the employees to draw funds from general bank accounts	107	3.74	1.058	104	3.73	0.895	100	3.62	0.982	.464	.629

Alteration of data by the employees to draw information from the records	107	3.44	1.092	104	3.59	0.991	100	3.67	0.975	1.360	.258
Theft of smart cards by the employees	107	2.95	1.224	104	2.86	1.028	100	3.06	1.043	.873	.419

Note: N = Number of Respondents, S.D. = Standard Deviation.
Source: Survey

Foreign Banks

Alteration of data by the employees to draw information from the records (Mean = 3.67, S.D. = 0.975) is found by 59 respondents (59.0 per cent) as the most important factor leading to the fraud by the employees. Alteration of data by the employees to draw funds from general bank accounts (Mean = 3.62, S.D. = 0.982) is viewed as the second most important factor by 42 respondents (42.0 per cent). However, the theft of smart cards by the employees (Mean = 3.06, S.D. = 1.224) is considered as the least important factor as viewed by 31 respondents (31.0 per cent).

The results of ANOVA in Table 1 (b) show that there is no significant difference among the bankers' viewpoint towards the factors leading to fraud by the employees. Therefore, the null hypothesis (H_{01}) is accepted.

(B) Potential Impacts of Risk of Fraud by Employees

The potential impacts of risk of fraud by the employees on the performance of selected banks are shown in Table 2 (a) and 2 (b).

Public Sector Banks

Increase in costs associated with reimbursing customers' losses (Mean = 4.02, S.D. = 0.931) is considered by 51 respondents (47.4 per cent) as the most potential impact. Increase in costs associated with reconstructing accurate data of customers (Mean = 3.93, S.D. = 0.974) is considered as the next potential impact as per the opinion of 56 respondents (52.3 per cent). On

the other hand, negative publicity of the bank (Mean = 3.87, S.D. = 0.891) is found as the third important impact by 49 respondents (45.8 per cent), whereas the customers may perceive the bank as being unreliable entity (Mean = 3.75, S.D. = 0.952) is considered as the next potential impact on these banks as per the responses of 50 respondents (46.7 per cent). However, bank may face legal sanctions (Mean = 3.72, S.D. = 1.007) is found as the least potential impact by 40 respondents (37.4 per cent).

Private Sector Banks

Increase in costs associated with reimbursing customers' losses (Mean = 4.13, S.D. = 0.664) is considered as the most potential impact in these banks by 63 respondents (60.6 per cent). Increase in costs associated with reconstructing accurate data of customers (Mean = 4.01, S.D. = 0.770) is found as the next potential impact as per the opinion of 60 respondents (57.7 per cent). On the other hand, customers may perceive the bank as being unreliable entity (Mean = 3.89, S.D. = 0.696) is viewed as the third important impact on these banks by 62 respondents (59.6 per cent), whereas negative publicity of the bank (Mean = 3.87, S.D. = 0.789) is found as next potential impact on these banks by 52 respondents (50.0 per cent). Possible losses from redeeming electronic money for which no corresponding prepaid funds were received (Mean = 3.79, S.D. = 0.821) is considered as the next potential impact by 60 respondents (57.7 per cent). However, bank may face legal sanctions (Mean = 3.76, S.D. = 0.757) is found as the least potential impact on these banks by 56 respondents (53.8 per cent).

Foreign Banks

Bank may face legal sanctions (Mean = 3.79, S.D. = 0.868) is viewed as the most potential impact on these banks by 61 respondents (61.0 per cent). Increase in costs associated with reconstructing accurate data of customers (Mean = 3.68, S.D. = 0.931) is found as the next potential impact as per the responses of 58 respondents (58.0 per cent).

Table 2 (a): Potential Impacts of Risk of Fraud by Employees on Banks

Statements	N/P	Public Sector Banks					Private Sector Banks					Foreign Banks				
		SD	D	I	A	SA	SD	D	I	A	SA	SD	D	I	A	SA

Increase in costs associated with reimbursing customer losses	N	3	4	15	51	34	0	2	11	63	28	5	8	21	48	18
	%	2.8	3.7	14.0	47.7	31.8	0	1.9	10.6	60.6	26.9	5.0	8.0	21.0	48.0	18.0
Increase in costs associated with reconstructing accurate data of customers	N	4	6	12	56	29	1	3	15	60	25	3	10	16	58	13
	%	3.7	5.6	11.2	52.3	27.1	1.0	2.9	14.4	57.7	24.0	3.0	10.0	16.0	58.0	13.0
Customers may perceive the bank as being unreliable entity	N	4	4	28	50	21	0	3	22	62	17	5	11	16	60	8
	%	3.7	3.7	26.2	46.7	19.6	0	2.9	21.2	59.6	16.3	5.0	11.0	16.0	60.0	8.0
Bank may face legal sanctions	N	2	11	28	40	26	1	3	30	56	14	2	8	14	61	15
	%	1.9	10.3	26.2	37.4	24.3	1.0	2.9	28.8	53.8	13.5	2.0	8.0	14.0	61.0	15.0
Negative publicity of the bank	N	2	4	26	49	26	1	2	28	52	21	4	13	15	56	12
	%	1.9	3.7	24.3	45.8	24.3	1.0	1.9	26.9	50.0	20.2	4.0	13.0	15.0	56.0	12.0

Note: N = Number of Respondents, P = Percent
Source: Survey

Table 2 (b): Potential Impacts of Risk of Fraud by Employees on Banks

Particulars	Public Sector Banks			Private Sector Banks			Foreign Banks			ANOVA	
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	F (df=2,308)	Sig.
Increase in costs associated with reimbursing customer losses	107	4.02	0.931	104	4.13	0.664	100	3.66	1.027	7.683	.001*
Increase in costs associated with reconstructing accurate data of customers	107	3.93	0.974	104	4.01	0.77	100	3.68	0.931	3.777	.024*
Customers may perceive the bank as being unreliable entity	107	3.75	0.943	104	3.89	0.696	100	3.55	0.968	3.952	.020*
Bank may face legal sanctions	107	3.72	1.007	104	3.76	0.757	100	3.79	0.868	.165	.848
Negative publicity of the bank	107	3.87	0.891	104	3.87	0.789	100	3.59	0.996	3.260	.040*

Note: N = Number of Respondents, S.D. = Standard Deviation, ***** Significant at 0.05 level of significance
Source: Survey

On the other hand, increase in costs associated with reimbursing customer losses (Mean = 3.66, S.D. = 1.027) is considered as the third important impact as viewed by 48 respondents (48.0 per

cent), whereas negative publicity of the bank (Mean = 3.59, S.D. = 0.996) is given as the next potential impact on these banks by 56 respondents (56.0 percent). However, customers may perceive the bank as being unreliable entity (Mean = 3.55, S.D. = 0.968) is considered as the least potential impact on the performance of these banks by 60 respondents (60.0 per cent).

Foreign Banks

Bank may face legal sanctions (Mean = 3.79, S.D. = 0.868) is viewed as the most potential impact on these banks by 61 respondents (61.0 per cent). Increase in costs associated with reconstructing accurate data of customers (Mean = 3.68, S.D. = 0.931) is found as the next potential impact as per the responses of 58 respondents (58.0 per cent). On the other hand, increase in costs associated with reimbursing customer losses (Mean = 3.66, S.D. = 1.027) is considered as the third important effect as viewed by 48 respondents (48.0 per cent), whereas negative publicity of the bank (Mean = 3.59, S.D. = 0.996) is given as the next potential impact on these banks by 56 respondents (56.0 per cent). However, customers may perceive the bank as being unreliable entity (Mean = 3.55, S.D. = 0.968) is considered as the least potential impact on these banks by 60 respondents (60.0 per cent).

The results of ANOVA in Table 2 (b) show that there is a significant difference among the bankers' viewpoint towards increase in costs associated with reimbursing customers' losses (p=0.001, df=2, 308), increase in costs associated with reconstructing accurate data of customers (p=0. 024), customers may perceive the bank as being unreliable entity (p=0.020, df=2, 308) and negative publicity of the bank (p=0.040, df=2, 308). Therefore, the null hypothesis (H_{02}) is rejected.

(C) Risk Management Measures to Overcome the Risk of Fraud by the Employees

The risk management measures to overcome the risk of fraud by the employees are shown in Table 3 (a) and 3 (b).

Public Sector Banks

It is found that developing policies for adequately screening new employees (Mean = 4.32, S.D. = 0.653) is considered as the top most adopting measure in these banks by 51 respondents (47.7 per cent). External auditing of employees performance (Mean = 4.17, S.D. = 0.852) is found as

the next most adopting measure as per the responses of 50 respondents (46.7 per cent). On the other hand, designing institute's internal controls including segregation of duties (Mean = 4.10, S.D. = 0.900) is found as the third important measure by 49 respondents (45.8 per cent), whereas proper control over storage or manufacturing of smart cards (Mean = 3.82, S.D. = 0.878) is considered as the least adopting measure as per the responses of 45 respondents (42.1 per cent).

Table 3 (a): Risk Management Measures to Overcome the Risk of Fraud by Employees

Statements	N/P	Public Sector Banks					Private Sector Banks					Foreign Banks				
		SD	D	I	A	SA	SD	D	I	A	SA	SD	D	I	A	SA
Developing policies for adequately screening new employees	N	0	0	11	51	45	1	2	4	44	53	1	6	14	55	24
	%	0	0	10.3	47.7	42.1	1.0	1.9	3.8	42.3	51.0	1.0	6.0	14.0	55.0	24.0
Design Institute internal controls including segregation of duties	N	1	7	11	49	39	0	1	13	33	57	3	11	6	58	22
	%	.9	6.5	10.3	45.8	36.4	0	1.0	12.5	31.7	54.8	3.0	11.0	6.0	58.0	22.0
External auditing of employees performance		1	5	10	50	41	1	5	10	33	55	4	12	17	45	22
	%	.9	4.7	9.3	46.7	38.3	1.0	4.8	9.6	31.7	52.9	4.0	12.0	17.0	45.0	22.0
Proper control over storage or manufacturing of smart cards	N	1	5	31	45	25	1	3	19	41	40	4	18	18	44	16
	%	.9	4.7	29.0	42.1	23.4	1.0	2.9	18.3	39.4	38.5	4.0	18.0	18.0	44.0	16.0

Note: N = Number of Respondents, P = Percent
Source: Survey

Private Sector Banks

Designing institute's internal controls including segregation of duties (Mean = 4.40, S.D. = 0.744) is viewed as the top most adopting measure in these banks by 57 respondents (54.8 per cent). Developing the policies for adequately screening new employees (Mean = 4.40, S.D. = 0.744) is considered as the next most adopting measure as per the opinion of 53 respondents (51.0 per cent). On the other hand, external auditing of employees performance (Mean = 4.31, S.D. = 0.904) is the third important measure as per the opinion of 55 respondents (52.9 per cent), whereas the proper control over storage or manufacturing of smart cards (Mean = 3.12, S.D. = 0.874) is found as the least adopting measure in these banks by 41 respondents (39.4 per cent).

Table 3 (b): Risk Management Measures to Overcome the Risk of Fraud by Employees

Particulars	Public Sector Banks			Private Sector Banks			Foreign Banks			ANOVA	
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	F	Sig.

										(df=2, 308)	
Developing the policies for adequately screening new employees	107	4.32	0.653	104	4.4	0.744	100	3.95	0.845	10.511	.000*
Designing of internal controls including segregation of duties	107	4.1	0.9	104	4.4	0.744	100	3.85	0.989	10.088	.000*
External auditing of employees performance	107	4.17	0.852	104	4.31	0.904	100	3.69	1.07	11.962	.000*
Proper control over storage or manufacturing of smart cards	107	3.82	0.878	104	4.12	0.874	100	3.5	1.087	10.727	.000*

Note: N = Number of Respondents, S.D. = Standard Deviation, ***** Significant at 0.05 level of significance
Source: Survey

Foreign Banks

Developing the policies for adequately screening new employees (Mean = 3.95, S.D. = 0.845) is found as the top most adopting measure in these banks as per the responses of 55 respondents (55.0 per cent). Designing institute's internal controls including segregation of duties (Mean = 3.85, S.D. = 0.969) is considered as the next most adopting measure by 58 respondents (58.0 per cent). On the other hand, external auditing of employees performance (Mean = 3.69, S.D. = 1.070) is considered as the third important measure by 45 respondents (45.0 per cent), whereas proper control over storage or manufacturing of smart cards (Mean = 3.50, S.D. = 1.087) is viewed as the least adopting measure in these banks by 44 respondents (44.0 per cent).

The results of ANOVA in Table 3 (b) show that there is a significant difference among the bankers' viewpoint towards developing the policies for adequately screening new employees (p=0.00, df=2, 308), designing institute's internal controls including segregation of duties (p=0.00, df=2, 308), external auditing of employees performance (p=0.00, df=2, 308) and proper control over storage or manufacturing of smart cards (p=0.00, df=2, 308) at 0.05 level of significance. Therefore, the null hypothesis (H_{03}) is rejected.

Conclusion

To sum up, the alteration of data by the employees to draw funds from general bank accounts is the most important factor leading to fraud by the employees followed by alteration of data by the employees to draw information from the records and theft of smart cards by the employees in

these banks. On the other hand, increase in costs associated with reimbursing customers' losses is considered as the most potential impact followed by increase in costs associated with reconstructing accurate data of customers in public and private sector banks. However, bank may face legal sanctions is viewed as the most potential impact in case of foreign banks followed by increase in costs associated with reconstructing accurate data of customers and increase in costs associated with reimbursing customer losses. It is also found that developing policies for adequately screening new employees is considered as the top most adopting risk management measure in public sector banks followed by external auditing of employees performance and designing institute's internal controls including segregation of duties. Further, designing institute's internal controls including segregation of duties is viewed as the top most adopting risk management measure followed by developing the policies for adequately screening new employees and external auditing of employees performance in private sector banks. However, developing the policies for adequately screening new employees is found as the top most adopting measure in foreign banks followed by designing institute's internal controls including segregation of duties and external auditing of employees performance.

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