SERVICE PROVIDERS' RISK IN E-BANKING IN INDIA

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(ABSTRACT)

This paper analyzed the bankers' viewpoint towards the factors responsible for service providers' risk in e-banking in India, 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 non-delivery of services by the service providers' is viewed as the most important factor leading to the service provider risk followed by lack of data integrity and lack of reliability of the system in selected banks. Further, bank may be held accountable by the customers for service provider-induced problems is found as the most potential impact on these banks followed by the possible costs associated with repairing a compromised system. On the other hand, undertaking due diligence before entering into a service contract with service provider is considered as the top most adopting measure for overcoming the service providers risk in public sector banks followed by establishing the backup plans with service providers. However, developing the service provider contracts that establish performance benchmarks is viewed as the top most adopting measure for overcoming the service providers risk in private sector banks followed by undertaking due diligence before entering into a service contract with service provider. Whereas, undertaking due diligence before entering into a service contract with service provider is viewed as the top most adopting measure for overcoming the service providers' risk in foreign banks followed by developing the service providers' contracts that establish performance benchmarks.

Key words: *Data integrity, Reliability, Due diligence, Backup plans, Benchmark.*

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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 service providers' risk 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 service providers' risk in e-banking.
2. To examine the potential impacts of service providers' risk in e-banking.
3. To analyze the risk management measures for overcoming the service providers' risk 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 service providers' risk in e-banking.

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

H_{03}: There is no significant difference among the bankers' viewpoint towards the risk management measures to overcome the service providers' risk 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 Service Providers' Risk

Various factors leading to the service providers' risk in selected public, private and foreign banks are given in the Table 1 (a) and 1 (b).

Public Sector Banks

The non-delivery of services by the service provider as expected by the bank (Mean = 4.07, S.D. = 0.821) is viewed as the most important factor which led to the service providers' risk as per the responses of 58 respondents (54.2 per cent). Lack of data integrity (Mean = 3.74, S.D. = 0.769) is found as the second important factor by 58 respondents (54.2 per cent). Lack of reliability of the system (Mean = 3.66, S.D. = 0.824) is considered as the least important factor as viewed by 59 respondents (55.1 per cent).

Private Sector Banks

The non-delivery of services by the service provider as expected by the bank (Mean = 3.68, S.D. = 0.862) is found as the most important factor, which led to the service provider risk by 71 respondents (68.3 per cent). Lack of data integrity (Mean = 3.56, S.D. = 0.912) is viewed as the second important factor by 53 respondents (51.0 per cent). Lack of reliability of the system (Mean = 3.43, S.D. = 0.922) is considered as the least important factor by 49 respondents (47.1 per cent).

Foreign Banks

The non-delivery of services by the service provider as expected by the bank (Mean = 3.88, S.D. = 0.879) is found as the most important factor which led to the service provider risk by 56 respondents (56.0 per cent). Lack of data integrity (Mean = 3.75, S.D. = 0.892) is considered as the second important factor by 51 respondents (51.0 per cent). Lack of reliability of the system (Mean = 3.58, S.D. = 0.955) is considered as the least important factor by 53 respondents (53.0 per cent).

Table 1 (a): Factors Leading to Service Providers' Risk

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
Non-delivery of services by the service provider as expected by the bank	N	1	5	11	58	32	6	2	18	71	7	2	6	15	56	21
	%	.9	4.7	10.3	54.2	29.9	5.8	1.9	17.3	68.3	6.7	2.0	6.0	15.0	56.0	21.0

Lack of data integrity	N	0	7	28	58	14	5	5	31	53	10	0	12	19	51	18
	%	0	6.5	26.2	54.2	13.1	4.8	4.8	29.8	51.0	9.6	0	12.0	19.0	51.0	18.0
Lack of reliability of the system	N	3	4	30	59	11	6	6	36	49	7	2	15	18	53	12
	%	2.8	3.7	28.0	55.1	10.3	5.8	5.8	34.6	47.1	6.7	2.0	15.0	18.0	53.0	12.0

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

Table 1 (b): Factors Leading to Service Providers Risk

Statements	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.
Non-delivery of services by the service provider as expected by the bank	107	4.07	0.821	104	3.68	0.862	100	3.88	0.879	5.562	.004*
Lack of data integrity	107	3.74	0.769	104	3.56	0.912	100	3.75	0.892	1.634	.197
Lack of reliability of the system	107	3.66	0.824	104	3.43	0.922	100	3.58	0.955	1.771	.172

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

The results of ANOVA in Table 1 (b) show that there is a significant difference among the bankers' viewpoints towards non-delivery of services by the service provider as expected by the bank (p=0.004, df=2, 308) at 0.05 level of significance. Therefore, the null hypothesis (H_{02}) is rejected.

(B) Potential impacts of Service Providers' Risk

The potential impacts of service provider risk on the selected banks are given in Table 2 (a) and 2 (b).

Public Sector Banks

Bank may be held accountable by the customers for service provider-induced problems (Mean = 4.07, S.D. = 0.691) is viewed as the most potential impact on these banks by 73 respondents (68.2 per cent). On the other hand, possible costs associated with repairing a compromised system (Mean = 3.96, S.D. = 0.713) is considered as the next potential impact as per the opinion of 70 respondents (65.4 per cent).

Table 2 (a): Potential Impacts of Service Providers' Risk 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
Bank may be held accountable by the customers for service provider-induced problems	N	1	3	7	73	23	1	0	14	73	16	2	9	18	57	14
	%	.9	2.8	6.5	68.2	21.5	1.0	0	13.5	70.2	15.4	2.0	9.0	18.0	57.0	14.0
Possible costs associated with repairing a compromised system	N	1	3	14	70	19	1	2	25	70	6	2	12	14	64	8
	%	.9	2.8	13.1	65.4	17.8	1.0	1.9	24.0	67.3	5.8	2.0	12.0	14.0	64.0	8.0

Note: N = Number of Respondents/Percent
Source: Survey

Table 2 (b): Potential Impacts of Service Providers' Risk 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.
Bank may be held accountable by the customers for service provider-induced problems	107	4.07	0.691	104	3.99	0.615	100	3.72	0.889	6.200	.002*
Possible costs associated with repairing a compromised system	107	3.96	0.713	104	3.75	0.635	100	3.64	0.871	5.064	.007

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

Private Sector Banks

The bank may be held accountable by the customers for service provider-induced problems (Mean = 3.99, S.D. = .615) is viewed by the respondents as the most potential impact on these banks as per the responses of 73 respondents (70.2 per cent). On the other hand, the possible costs associated with repairing a compromised system (Mean = 3.75, S.D. = 0.635) is found by the respondents as the next potential impact as per the responses of 70 respondents (67.3 per cent).

Foreign Banks

The bank may be held accountable by the customers for service provider-induced problems (Mean = 3.72, S.D. = 0.889) is found as the most potential impact on these banks by 57 respondents (57.0 per cent). However, the possible costs associated with repairing a

compromised system (Mean = 3. 46, S.D. = 0.871) is considered as the next potential impact by 64 respondents (64.0 per cent).

The results of ANOVA in Table 2 (b) show that there is a significant difference among the bankers' viewpoint towards the bank may be held accountable by the customers for service provider-induced problems (p=0.002, df=2, 308) at 0.05 level of significance. Therefore, the null hypothesis (H_{02}) is rejected.

(C) Risk Management Measures to Overcome the Service Providers Risk

The risk management measures to overcome the service provider risk in the selected banks are given in Table 3 (a) and 3 (b).

Public Sector Banks

Undertaking due diligence before entering into a service contract with service provider (Mean = 4.21, S.D. = 0.813) is considered as the top most adopting measure in these sector banks by 60 respondents (56.1 per cent). Establishing the backup plans with service providers (Mean = 4.15, S.D. = 0.799) is considered as the next most adopting measure as per the responses of 46 respondents (43.0 per cent). On the other hand, developing the service provider contracts that establish performance benchmarks (Mean = 4.06, S.D. = 0.960) is found as the third important measure by 41 respondents (38.3 per cent), whereas developing service provider contracts that covers auditing provisions (Mean = 3.98, S.D. = 0.901) is given as the next adopting measure by 38 respondents (35.5 per cent). However, developing the service provider contracts that address contingencies (Mean = 3.95, S.D. = 0.905) is found as the next adopting measure as per the opinion of 54 respondents (50.5 per cent).

Private Sector Banks

Developing the service provider contracts that establish performance benchmarks (Mean = 4.40, S.D. = 0.819) is viewed as the top most adopting measure in these banks by 59 respondents (56.7 per cent). Undertaking due diligence before entering into a service contract with service provider (Mean = 4.25, S.D. = 0.707) is considered as the next most adopting measure as per the responses of 60 respondents (57.7 per cent). On the other hand, establishing the backup plans with service providers (Mean = 4.19, S.D. = 0.860) is found as the third important measure as per the responses of 43 respondents (41.3 per cent), whereas developing service provider contracts that covers auditing provisions (Mean = 4.13, S.D. = 0.764) is taken as the next adopting measure by 51 respondents (49.0 per cent). However, developing service provider contracts that

address contingencies (Mean = 4.10, S.D. = 0.795) is considered by 55 respondents (52.9 per cent) as the next adopting measure.

Foreign Banks

Undertaking due diligence before entering into a service contract with service provider (Mean = 3.93, S.D. = 0.913) is viewed as the top most adopting measure in these banks as per the responses of 59 respondents (59.0 per cent). Developing the service provider contracts that establish performance benchmarks (Mean = 3.89, S.D. = 0.909) is considered as the next most adopting measure as viewed by the 55 respondents (55.0 per cent). On the other hand, developing service provider contracts that address contingencies (Mean = 3.76, S.D. = 1.016) and establishing backup plans with service providers (Mean = 3.76, S.D. = 1.147) are viewed as the next two important measures as per the responses of 47 respondents (47.0 per cent) and 52 respondents (52.0 per cent) respectively. However, developing service provider contracts that covers auditing provisions (Mean = 3.72, S.D. = 1.055) is found as next adopting measure by 55 respondents (55.0 per cent).

The results of ANOVA in Table 3 (b) show that there is a significant difference among the bankers' viewpoint towards undertaking due diligence before entering into a service contract with service provider (p=0.010, df=2, 308), developing the service provider contracts that establish performance benchmarks (p=0.000), developing the service provider contracts that covers auditing provisions (p=0.005, df=2, 308), developing the service provider contracts that address contingencies (p=0.031) and establish backup plans with service providers (p=0.002, df=2, 308) at 0.05 level of significance. Therefore, the null hypothesis (H_{03}) is rejected.

Table 3 (a): Risk Management Measures to Overcome the Service Providers Risk

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
Undertaking due diligence before entering into a service contract with service provider	N	2	4	2	60	39	1	2	4	60	37	3	6	9	59	23
	%	1.9	3.7	1.9	56.1	36.4	1.0	1.9	3.8	57.7	35.6	3.0	6.0	9.0	59.0	23.0
Developing service provider contracts that establish performance benchmarks	N	2	5	19	40	41	0	5	7	33	59	1	10	11	55	23
	%	1.9	4.7	17.8	37.4	38.3	0	4.8	6.7	31.7	56.7	1.0	10.0	11.0	55.0	23.0
Developing service provider contracts that covers auditing provisions	N	1	3	29	38	36	0	3	15	51	35	5	11	10	55	19
	%	.9	2.8	27.1	35.5	33.6	0	2.9	14.4	49.0	33.7	5.0	11.0	10.0	55.0	19.0
Developing service provider contracts that address contingencies	N	2	6	16	54	29	1	3	13	55	32	2	13	15	47	23
	%	1.9	5.6	15.0	50.5	27.1	1.0	2.9	12.5	52.9	30.8	2.0	13.0	15.0	47.0	23.0
Establishing backup plans with service providers	N	0	3	18	46	40	2	1	15	43	43	8	8	8	52	24
	%	0	2.8	16.8	43.0	37.4	1.9	1.0	14.4	41.3	41.3	8.0	8.0	8.0	52.0	24.0

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

Table 3 (b): Risk Management Measures to overcome the Service Providers Risk

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.
Undertaking due diligence before entering into a service contract with service provider	107	4.21	0.813	104	4.25	0.707	100	3.93	0.913	4.726	.010*
Developing service provider contracts that establish performance benchmarks	107	4.06	0.96	104	4.4	0.819	100	3.89	0.909	8.742	.000*
Developing service provider contracts that covers auditing provisions	107	3.98	0.901	104	4.13	0.764	100	3.72	1.055	5.372	.005*
Developing service provider contracts that address contingencies	107	3.95	0.905	104	4.1	0.795	100	3.76	1.016	3.513	.031*
Establishing backup plans with service providers	107	4.15	0.799	104	4.19	0.86	100	3.76	1.147	6.484	.002*

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

Conclusion

To sum up, non-delivery of services by the service provider is viewed as the most important factor which led to the service provider's risk followed by lack of data integrity and lack of reliability of the system in selected banks. Further, bank may be held accountable by the customers for service provider-induced problems is found as the most potential impact on these banks followed by the possible costs associated with repairing a compromised system. On the other hand, undertaking due diligence before entering into a service contract with service provider is considered as the top most adopting measure for overcoming the service providers risk in public sector banks followed by establishing the backup plans with service providers, developing the service provider contracts that establish performance benchmarks developing service provider contracts that covers auditing provisions and developing the service provider contracts that address contingencies. In case of private sector banks, developing the service provider contracts that establish performance benchmarks is viewed as the top most adopting measure for overcoming the service providers risk in private sector banks followed by undertaking due diligence before entering into a service contract with service provider, establishing the backup plans with service providers, developing service provider contracts that covers auditing provisions, and developing service provider contracts that address contingencies. On the other hand, undertaking due diligence before entering into a service contract with service provider is viewed as the top most adopting measure for overcoming the service providers risk in foreign banks followed by developing the service provider contracts that establish performance benchmarks, developing service provider contracts that address contingencies, establishing backup plans with service providers, developing service provider contracts that covers auditing provisions.

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