ANALYSIS OF SYSTEM DEFICIENCIES IN E-BANKING

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ABSTRACT

In this study, an attempt is made to analyze the bankers' viewpoint towards the factors responsible for widespread system deficiencies in e-banking, its potential impacts on the functioning of the banks and the measures initiated by the selected public, private and foreign banks in India. A sample of 107, 104 and 100 bank employees is taken on the basis of judgement sampling from different branches of selected public, private and foreign banks respectively located in Haryana, Punjab, Chandigarh and Delhi. The primary data are collected with the help of pre-tested structured questionnaire on five point Likert Scale i.e. Strongly Disagree (SD), Disagree (A), Neutral (N), Agree (A), and Strongly Agree (SA). For coding and analyzing the data, weights are assigned in order of importance i.e. 1 to Strongly Disagree (SD), 2 to Disagree (D), 3 to Neutral (N), 4 to Agree (A), and 5 to Strongly Agree (SA). Statistical techniques such as mean, mode, standard deviation have been used for the analysis of data. ANOVA technique has been applied to validate the results of the study. The analysis shows that customers' access to their funds is impaired is viewed as the most important factor leading to the significant and widespread system deficiencies in the selected banks. Further, the customer may discontinue the use of product or the service is found as the most potential impact on functioning of these banks. However, testing the system before implementing and developing the backup facilities and contingency plans are found as the most adopting measures for overcoming the widespread system deficiencies in the selected banks. Further, it is recommended that there should be a regular review of capabilities of existing hardware and software system, and transparency in the use of technology for overcoming the risk of obsolescence of the system.

Key Words: *Widespread, Impaired, Testing, Implementing, Developing.*

ANALYSIS OF SYSTEM DEFICIENCIES IN E-BANKING

Indian banking sector today is in the mid of an IT revolution. The public sector banks are in the process of making huge investment in technology. However, new private sector banks and foreign banks have an edge over public sector banks in the implementation of technological solutions. 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, operational risk, credit risk, security risk, legal risk, cross-border risk, reputational risk, liquidity risk, strategic risk, country risk, etc. These risks are highly interdependent and events that affect one area of risk also have ramifications for a range of other risk categories.

REVIEW OF LITERATURE

Various articles appeared in different journals on 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 exist in financial institution and 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 it is growing. Biometrics is finding its ways 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 presented a 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. *Singh and Chaudhry (2014)* analyzed the bankers' viewpoint towards various types of e-banking risks in selected public, private and foreign banks in India. The operational risk is found as the most important risk in e-banking in all the three categories of banks followed by reputational and legal risk, whereas strategic risk was considered as the least important risk in all the selected banks.

The foregoing review of literature shows that no concerted effort has been made so far to examine the various aspects of widespread system deficiencies in e-banking in selected banks, therefore the present study is undertaken to fill the gap in the existing literature.

RESEARCH METHODOLOGY

Scope of the Study

The present study is confined to the analysis of widespread system deficiencies in e-banking in selected public, private and foreign banks in Haryana, Delhi, Chandigarh and Punjab.

Objectives of the Study

The main objective of the study is to examine the various aspects of widespread system deficiencies in e-banking in selected banks. In this broader framework, the following are the specific objectives of the study:

1. To analyze the factors leading to system deficiencies in e-banking.
2. To examine the potential impacts of system deficiencies in e-banking on the functioning of the selected banks.
3. To appraise the measures for overcoming the system deficiencies 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 widespread system deficiencies in e-banking.

H_{02}: There is no significant difference among the bankers' viewpoint towards the potential impacts of widespread system deficiencies in e-banking on the functioning of the selected banks.

H_{03}: There is no significant difference among the bankers' viewpoint towards the measures for overcoming the widespread system deficiencies in e-banking.

Sample Profile

For collecting data, 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, State Bank of Patiala, State Bank of Bikaner and Jaipur, Punjab National Bank, Dena Bank, Oriental Bank of Commerce, Canara Bank, Central Bank of India, Union Bank, Corporation Bank, Bank of Baroda, Allahabad Bank, Bank of India, Syndicate Bank and Indian Bank. The banks selected from the private sector are ICICI Bank, Axis Bank, IDBI Bank, HDFC Bank, Yes Bank, Kotak Mahindra Bank and The Federal Bank Limited. 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 of Haryana, Delhi, Noida, Chandigarh and Punjab on five point Likert Scale *i.e.* Strongly Disagree (SD), Disagree (D), 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. Some qualitative questions were also put to the respondents to get the required 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 (D), 3 to Neutral (N), 4 to Agree (A) and 5 to Strongly Agree (SA). To examine the bankers' viewpoints towards factors responsible for the system deficiencies, their potential impacts and the measures taken by the selected banks; ANOVA technique is used to test the hypotheses and validate the results. The analysis was in conformity with the objectives of the study and the hypotheses formulated. The collected data is analyzed through PASW 18.0 version.

RESULTS AND DISCUSSIONS

(A) Factors leading to Risk

The factors leading to the widespread system deficiencies in the selected banks are given in Table 1 (A) and 1 (B).

Public Sector Banks

Most of the respondents *i.e.* 66 respondents (61.7 per cent) put the customers' access to their funds is impaired (Mean= 3.97, S.D. = 0.720) at the top as the most important factor leading to the widespread system deficiencies in the selected banks. However, the customers' access to their account information is impaired (Mean= 3.86, S.D. = 0.706) is viewed as the next important factor by 63 respondents (58.9 per cent).

Private Sector Banks

Most of the respondents *i.e.* 58 respondents (55.8 per cent) put the customers' access to their funds is impaired (Mean= 3.86, S.D. = 0.793) at the top and considered it as the most important factor leading to the widespread system deficiencies. However, the customers' access to their account information is impaired (Mean= 3.64, S.D. = 0.823) is given as the next important factor by 45 respondents (43.3 per cent) in the selected banks.

Table 1 (A): Factors Leading to Risk of System Deficiencies

Statements	N/P	Public Sector Banks					Private Sector Banks					Foreign Banks				
		SD	D	N	A	SA	SD	D	N	A	SA	SD	D	N	A	SA
Customers' access to their funds is impaired	N	1	2	17	66	21	0	7	20	58	19	0	13	17	54	16
	P	0.9	1.9	15.9	61.7	19.6	0	6.7	19.2	55.8	18.3	0	13.0	17.0	54.0	16.0
Customers' access to their account information is impaired	N	1	1	26	63	16	0	8	36	45	15	3	19	15	51	12
	P	0.9	.9	24.3	58.9	15.0	0	7.7	34.6	43.3	14.4	3.0	19.0	15.0	51.0	12.0

Note: N/P = Number of Respondents/Percent

Source: Survey

Table 1 (B): Factors Leading to Risk of System Deficiencies

Statements	Public Sector Banks			Private Sector Banks			Foreign Banks			ANOVA	
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	F	Sig.
Customers' access to their funds is impaired	107	3.97	0.72	104	3.86	0.793	100	3.73	0.886	2.360	0.096
Customers' access to their account information is impaired	107	3.86	0.706	104	3.64	0.823	100	3.5	1.03	4.607	0.011*

Note: N = Number of Respondents, S.D. = Standard Deviation, ***-** Significant at 5 percent level, df=2,308

Source: Survey

Foreign Banks

Most of the respondents *i.e.* 54 respondents (54.0 per cent) ranked the customers' access to their funds is impaired (Mean= 3.73, S.D. = 0.886) at the top as the most important factor leading to the widespread system deficiencies in foreign banks. However, the customers' access to their account information is impaired (Mean= 3.50, S.D. = 1.030) is viewed as the least important factor by 51 respondents (51.0 per cent).

The ANOVA results show that there is a significant difference among the bankers' viewpoint towards customers' access to their account information is impaired (p=0.011, df=2, 308) as a factor leading to widespread system deficiencies at 5 percent level. Therefore, the null hypothesis (H_{01}) is rejected.

(B): Potential Impacts of Risk

The potential impacts of widespread system deficiencies on the functioning of the selected banks are given in Table 2 (A) and 2 (B).

Public Sector Banks

The customers may discontinue the use of the products or services (Mean= 3.86, S.D. =0.829) is found as the most potential impact on these banks by 55 respondents (51.4 per cent). Directly affected customers leave the bank (Mean= 3.71, S.D. = .952) is considered as the next potential impact as viewed by 42 respondents (39.3 per cent). On the other hand, other customers may follow, if problems are publicized (Mean= 3.66, S.D. = 0.921) is found as the least potential impact by 40 respondents (37.4 per cent) in these banks.

Table 2 (A): Potential Impacts of System Deficiencies on Banks

Statements	N/P	Public Sector Banks					Private Sector Banks					Foreign Banks				
		SD	D	N	A	SA	SD	D	N	A	SA	SD	D	N	A	SA
Customers may discontinue the use of the products or services	N	1	5	24	55	22	0	4	26	57	17	2	10	19	57	12
	P	0.9	4.7	22.4	51.4	20.6	0	3.8	25.0	54.8	16.3	2.0	10.0	19.0	57.0	12.0
Directly affected customers leave the bank	N	2	8	32	42	23	1	4	29	55	15	5	8	18	59	10
	P	1.9	7.5	29.9	39.3	21.5	1.0	3.8	27.9	52.9	14.4	5.0	8.0	18.0	59.0	10.0
Other customers may follow if problems are publicized	N	1	9	36	40	21	5	11	37	38	13	6	15	22	45	12
	P	0.9	8.4	33.6	37.4	19.6	4.8	10.6	35.6	36.5	12.5	6.0	15.0	22.0	45.0	12.0

Note: N/P = Number of Respondents/Percent.

Source: Survey

Table 2 (B): Potential Impacts of System Deficiencies on Banks

Statements	Public Sector Banks			Private Sector Banks			Foreign Banks			ANOVA	
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	F	Sig.
Customers may discontinue the use of the products or services	107	3.86	0.829	104	3.84	0.739	100	3.67	0.888	1.625	0.199
Directly affected customers leave the bank	107	3.71	0.952	104	3.76	0.782	100	3.61	0.952	0.731	0.482
Other customers may follow if problems are publicized	107	3.66	0.921	104	3.41	1.001	100	3.42	1.075	2.144	0.119

Note: N = Number of Respondents, S.D. = Standard Deviation, (df=2,308)

Source: Survey

Private Sector Banks

The customers may discontinue the use of the products or the services (Mean= 3.84, S.D. = 0.739) is viewed as the most potential impact on these banks by 57 respondents (54.8 per cent), whereas the directly affected customers leave the bank (Mean= 3.76, S.D. = 0.782) is considered as the next potential impact as per the opinion of 55 respondents (52.9 per cent). On the other hand, the other customers may follow, if problems are publicized (Mean= 3.41, S.D. = 1.001) is found as the next potential impact by 38 respondents (36.5 per cent).

Foreign Banks

The customer may discontinue the use of products or services (Mean= 3.67, S.D. = 0.888) is viewed by the 57 respondents (57.0 per cent) as the most potential impact on functioning of these banks, whereas the directly affected customers leave the bank (Mean= 3.61, S.D. = 0.952) is found as the next potential impact by 59 respondents (59.0 per cent). On the other hand, other customers may

follow, if problems are publicized (Mean= 3.42, S.D. = 1.075) is considered as the next potential impact on these banks as per the responses of 45 respondents (45.0 per cent).

The ANOVA results show that there is no significant difference among the bankers' viewpoint towards potential impacts of significant and widespread system deficiencies at 5 percent level of significance. Therefore the null hypothesis (H_{02}) is accepted.

(C) Measures to Overcome the Risk

The measures to overcome the widespread system deficiencies in public, private and foreign are given in Table 3 (A) and 3 (B).

Public Sector Banks

Testing the system before implementation (Mean= 4.38, S.D. = 0.668) is viewed by 51 respondents (47.7 per cent) as the top most adopting measure, whereas developing the backup facilities and contingency plans (Mean= 4.15, S.D. = 0.888) is found as the next most adopting measure by 50 respondents (46.7 per cent). However, developing the contingency plans to address customers' problems during system disruptions (Mean= 3.79, S.D. = 0.880) is considered by the respondents as the least adopting measure by 52 respondents (48.6 per cent).

Table 3 (A): Measures to Overcome the Risk of System Deficiencies

Statements	N/P	Public Sector Banks					Private Sector Banks					Foreign Banks				
		SD	D	N	A	SA	SD	D	N	A	SA	SD	D	N	A	SA
Testing the system before implementation	N	0	1	8	47	51	1	1	6	60	36	3	6	4	42	45
	P	0	0.9	7.5	43.9	47.7	1.0	1.0	5.8	57.7	34.6	3.0	6.0	4.0	42.0	45.0
Developing the backup facilities and contingency plans	N	1	7	8	50	41	1	2	24	47	30	3	6	9	51	31
	P	0.9	6.5	7.5	46.7	38.3	1.0	1.9	23.1	45.2	28.8	3.0	6.0	9.0	51.0	31.0
Developing the contingency plans to address customers' problems during system disruptions	N	1	8	25	52	21	0	3	35	56	10	9	11	13	51	16
	P	0.9	7.5	23.4	48.6	19.6	0	2.9	33.7	53.8	9.6	9.0	11.0	13.0	51.0	16.0

Note: N/P = Number of Respondents/Percent.

Source: Survey

Table 3 (B) Measures to Overcome the Risk of System Deficiencies

Particulars	Public Sector Banks			Private Sector Banks			Foreign Banks			ANOVA	
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	F	Sig.
Testing the system before implementation	107	4.38	0.668	104	4.24	0.69	100	4.2	0.985	1.553	0.213

Developing the backup facilities and contingency plans	107	4.15	0.888	104	3.99	0.83	100	4.01	0.959	0.996	0.370
Developing the contingency plans to address customers' problems during system disruptions	107	3.79	0.88	104	3.7	0.681	100	3.54	1.158	1.870	0.156

Note: N = Number of Respondents, S.D. = Standard Deviation, (df=2,308)

Source: Survey

Private Sector Banks

Testing the system before implementation (Mean= 4.24, S.D. = 0.690) is considered by 60 respondents (57.7 per cent) as the top most adopting measure for overcoming the widespread system deficiencies, whereas developing the backup facilities and contingency plans (Mean= 3.99, S.D. = 0.830) is viewed as the next most adopting measure by 47 respondents (45.2 per cent). However, developing the contingency plans to address customers' problems during system disruptions (Mean= 3.70, S.D. = 0.681) is found as the least adopting measure by 56 respondents (53.8 per cent).

Foreign Banks

Testing the system before implementation (Mean = 4.20, S.D. = 0.985) is found by 45 respondents (45.0 per cent) as the top most adopting measure in the foreign banks, whereas developing the backup facilities and contingency plans (Mean = 4.01, S.D. = 0.959) is viewed as the next most adopting measure by 51 respondents (51.0 per cent). However, developing contingency plans to address customers' problems during system disruptions (Mean = 3.54, S.D. = 1.158) is considered as the least adopting measure by 51 respondents (51.0 per cent) for overcoming the widespread system deficiencies.

The ANOVA results show that there is no significant difference among the bankers' viewpoint towards the measures adopted to overcome the widespread system deficiencies at 5 percent level of significance. Therefore the null hypothesis (H_{03}) is accepted.

CONCLUSION

To sum up, the customers' access to their funds is impaired is viewed as the most important factor leading to the widespread system deficiencies in the selected banks. Further, the customers may discontinue the use of the products or the service is found as the most potential impact on these banks. However, testing the system before implementation and developing the backup facilities and contingency plans are found as the top most adopting measures for overcoming the widespread system deficiencies in the selected banks. Further, it is recommended that there should be a regular review of capabilities of existing hardware and software system, and transparency in the use of technology for overcoming the risk of obsolescence of the system.

REFERENCES

- Adewuyi, I. D. (2011). Electronic Banking in Nigeria: Challenges of the Regulatory Authorities and the Way Forward. *International Journal of Economic Development Research and Investment,* 02 (01), April, 149-156.
- Ahmad, Mohd. Khairul Affendy and others (2010). Security Issues on Banking Systems. *International Journal of Computer Science and Information Technologies*, 01 (4), 268-272, ISSN: 0975-9646.
- Fatima, Amtul (2011). E-Banking Security Issues - Is There A Solution in Biometrics? Journal of Internet Banking and Commerce, 16 (02), August, 1-9.
- Karimzadeh, Majid and Alam, Dastgir (2012). Electronic Banking Challenges in India: An Empirical Investigation. *Interdisciplinary Journal of Contemporary Research in Business,* 4 (2), June, 31-45.
- Lal, D. (2015). Customer Perceptions and Satisfaction Levels toward Internet Banking Services of Indian Banking Companies. *Scholedge International Journal of Management & Development ISSN 2394-3378, 2*(6), 13-18.
- Mermod, Asli Yijksel (2011). Customer's Perspectives and Risk Issues on E-Banking in Turkey: Should We Still be Online? *Journal of Internet Banking and Commerce,* 16 (1), 1-15.
- Osunmuyiwa, Olufolabi (2013). Online Banking and the Risks Involved. *Research Journal of Information Technology,* 05 (02), 50-54, ISSN: 2041-3106, e-ISSN: 2041-3114.

- Singh, S. & Chaudhry, Sahila (2014). Appraisal of Risks in E-Banking in India. Published in Emerging Paradigm in Management in the Era of Globalization edited by Ahlawat, Jagbir; Bohra, Monika Tushir, *Savera Publishing House*, New Delhi, pp. 143-147.