E-Banking: Risks & Strategies-A Comparative study of PSBs, PSIBs & PSFBs

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Abstract: E-banking is the way forward for banking operations in any country. Banking industry have seen this technological revolution in past few years. This is digital age and to be successful in this era banks have changed them completely to match to the expectations of customers and time. There are various risks associate with electronic banking. Banks have to adopt strategies to deal with these risks arising out of e-banking. This paper is related to E-banking risks and strategies adopted by banks to mitigate those risks. Present study gives a comparative analysis of three types of banks namely public sector banks, private sector Indian banks and private sector foreign banks. The analysis part of the paper is divided into two sections wherein first section deals with various types of risks associated with these categories of banks and the second section deals with the strategies adopted to mitigate these risks by the banks under study.

Key words: Banking, Risks, Strategies, E-banking, Security, Economy, Private, Public etc.

I. INTRODUCTION

Technology has been one of the major factors for enhancing customer convenience in the products and services offered by banks. With the use of technology besides improvement in customer service, banks have been able to tone up their management information systems, improving productivity of their employees and profitability of banks. But in spite of several benefits of the e-banking in the banking industry, it may prove to be a double edged sword. For instance, banks may gain revenue advantages on the retail side by charging for services such EBPP and may improve cross selling of products. But on the other hand, the effect of the Internet on the commercial side of the bank is negative.

E-banking has characteristics which may increase the overall risk profile of an institution. It happens because there are large number of threats and vulnerabilities in publicly accessible networks. A bank should prepare an appropriate e-banking strategy, which reduces the

vulnerabilities and at the same time, increases the wealth of a bank. E-banking poses a range of risks and threats. These are: -

Transaction/Operations Risk: With full computerization of bank branches, banks are increasingly dependent on information technology for their day-to-day operations. This has increased the risk due to business operations. Transaction/operations risk arises from fraud, processing errors, system disruptions, or other unanticipated events resulting in the institution's inability to deliver products and services. These risks may arise due to weaknesses in design, implementation and monitoring of banks' information system, inadequate technology, negligence by customers and employees, fraudulent activity by employees and hackers. However, it adds to the operational risk. Banks face three main types of operations risk like volume forecasts, management information systems and outsourcing.

Credit Risk: Generally, a financial institution's credit risk is not increased by the mere fact that a loan is originated through an e-banking channel. However, management should consider additional precautions when originating and approving loans electronically, including assuring management information systems effectively track the performance of portfolios originated through e-banking channels. The following aspects of on-line loan origination and approval tend to make risk management of the lending process more challenging. If not properly managed, these aspects can significantly increase credit risk.

Liquidity, Interest Rate, Price/Market Risks: Funding and investment-related risks could increase with an institution's e-banking initiatives depending on the volatility and pricing of the acquired deposits. The Internet provides institutions with the ability to market their products and services globally. Internet-based advertising programs can effectively match yield-focused investors with potentially high-yielding deposits. But Internet-originated deposits have the potential to attract customers who focus exclusively on rates and may provide a funding source with risk characteristics similar to brokered deposits. An institution can control this potential volatility and expanded geographic reach through its deposit contract and account opening practices, which might involve face-to-face meetings or the exchange of paper correspondence.

Compliance/Legal Risk: Legal risk arises when violation of laws, rules and regulations or prescribed practices takes place or when the legal rights and obligations of parties to a transaction are not well established. These risks may also arise due to uncertainty about the validity of some agreements formed via electronic media and law, regarding customer disclosures and privacy

protection. Compliance and legal issues arise out of the rapid growth in usage of e-banking and the differences between electronic and paper-based processes. E-banking is a new delivery channel where the laws and rules governing the electronic delivery of certain financial institution products or services may be ambiguous or still evolving.

Strategic Risk: On strategic risk, e-banking is relatively new and, as a result, there can be a lack of understanding among senior management about its potential and implications. People with technological, but not banking, skills can end up driving the initiatives. E-initiatives can spring up in an incoherent and piecemeal manner in firms. They can be expensive and can fail to recoup their cost. Furthermore, they are often positioned as loss leaders (to capture market share), but may not attract the types of customers that banks want or expect and may have unexpected implications on existing business lines.

Reputation Risk: Reputation risk is the risk of getting significant negative public opinion, which may result in loss of funding or customer. This is considerably heightened for banks using the Internet. For example, the Internet allows for the rapid dissemination of information which means that any incident, either good or bad, is common knowledge within a short space of time. Internet rumors can easily become self-fulfilling prophecies. The speed of the Internet considerably cuts the optimal response times for both banks and regulators to any incident. Banks must ensure their crisis management, particularly PR, processes are able to cope with Internet related incidents (whether they be real or hoaxes).

Business Risk: Business risks are also significant. Given the newness of e-banking, nobody knows much about whether e-banking customers will have different characteristics from the traditional banking customers. This could render existing score card models inappropriate, thus, resulting in either higher rejection rates or inappropriate pricing to cover the risk. Banks may not be able to assess credit quality at a distance as effectively as they do in face to face circumstances. It could be more difficult to assess the nature and quality of collateral offered at a distance, especially if it is located in an area the bank is unfamiliar with particularly if this is overseas. Furthermore, as it is difficult to predict customer volumes and the stickiness of e-deposits, things which could lead either to rapid flows in or out of the bank, it could be very difficult to manage liquidity.

Security Risk: Security issues are a major source of concern for everyone both inside and outside the banking industry. E-banking increases security risks, potentially exposing hitherto isolated systems to open and risky environment. Security risk may arise due to the unauthorized access to

bank's key information like accounting system, risk management system and portfolio management system. A breach of security could result in direct financial loss to the bank. In addition to external attacks, banks are exposed to security risk from internal sources e.g. employees' fraud.

Cross Border Risk: E-banking extends the geographic reach of banks and customers beyond national borders which may lead to cross border risks. These risks are of different types as:

- This risk involves **legal and regulatory risks**, as there may be uncertainty about legal requirements in some countries and jurisdiction ambiguities with respect to the responsibilities of different national authorities. Such considerations may expose the banks to legal risks associated with non-compliance of different national laws and regulations.
- Cross border transactions also involves **credit risk**, since it is difficult to appraise an application for a loan from a customer in another country.
- Banks accepting foreign currencies in payment for electronic money may be subjected to **market risk** because of movements in foreign exchange rates.

E-banking has become a necessary survival weapon and is fundamentally changing the banking industry worldwide. No country today has a choice-whether to implement e-banking or not given the global and competitive nature of the economy. Banks have to upgrade and constantly think of new innovative customized packages and services to remain competitive. The invasion of banking by technology has created an information age and commoditization of banking services.

The rise of e-banking is redefining business relationships and the most successful banks will be those that can truly strengthen their relationship with their customers. Without any doubt, the international scope of e-banking provides new growth perspectives and Internet business is a catalyst for new technologies and new business processes.

II. SCOPE OF THE STUDY

For the purpose of the study, following banks, which are providing e-banking services to their customers, are considered and divided into three categories:

PSBs: State Bank of India, Allahabad Bank, Bank of Baroda, Canara Bank, Corporation Bank, Oriental Bank of Commerce, Punjab National Bank and Syndicate Bank.

PSIBs: ICICI Bank, HDFC Bank Ltd., IDBI Ltd., Centurion Bank of Punjab Ltd.

PSFBs: American Express Bank Ltd., Bank of America NT and SA, Citibank N.C., Deutsche Bank A.G., Standard Chartered Bank.

III. OBJECTIVES & HYPOTHESIS

Research Objectives

The present study aims to examine the progress, prospects and the problems associated with e-banking in India. In this broader framework, an attempt is made to achieve the following specific objectives of the study:

- To study the various types of risks associated with e-banking and the strategies used by the banks to mitigate these risks.
- To suggest the measures for improving the performance of e-banking in India.

Research Hypothesis

The following hypotheses are formulated to achieve the objectives:

H_{01}: There is no significant difference in the various types of risks associated with e-banking in PSBs, PSIBs and PSFBs in India.

H_{a1}: There is a significant difference in the various types of risks associated with e-banking in PSBs, PSIBs and PSFBs in India.

H_{02}: There is no significant difference in the various types of strategies used by PSBs, PSIBs and PSFBs in India to mitigate these risks.

H_{a2}: There is a significant difference in the various types of strategies used by PSBs, PSIBs and PSFBs in India to mitigate these risks.

IV. RESEARCH METHODOLOGY AND DATA BASE

Data Collection:

The present study is of analytical and exploratory nature. Accordingly, the use is made of primary as well as secondary data. The primary data is collected with the help of pre-tested structured questionnaires from a sample of 150(50 from each group) respondents from Haryana, Delhi, Chandigarh and Punjab using the services provided by the various branches of PSBs, PSIBs and PSFBs with the help of judgment or purposive sampling method for the purpose of study of various risks associated with e-banking and strategies used for their management.

To ensure the reliability and validity, the questionnaire was prepared for the bankers to study the risks associated with e-banking and strategies being used by them for their management. Besides questionnaires; interviews and group discussion techniques were also used to unveil the information. Some qualitative questions were also put to the respondents to get the information about the services provided to them by their banks.

The secondary data were collected mainly from RBI monthly bulletins, IBA Bulletins, Economic and Political weekly, Bank Management, Professional Banker; and the newspapers like The Economic Times, The Financial Express, The Hindu and Mail Today have also been referred.

Data Analysis:

The collected data in the present study are analyzed through descriptive and inferential statistical techniques. The analysis has been in conformity with the objectives of the study and the hypotheses formulated to achieve those objectives. In order to examine the various e-banking risks, strategies and their interplay in different banks, various statistical techniques have been applied like frequency distribution, percentage, sample mean, standard deviation, chi-square and ANOVA. The application of normal distribution has been followed in order to categorize the different variables.

Limitations of the Study

In obtaining the responses from the respondents, chances of bias cannot be ruled out, yet every effort has been made to minimize its adverse impact by employing cross questioning and cross examining techniques. There are many banks under the three categories of Public, Private and Foreign banks in India, but only selected banks/branches have been taken for the purpose of the study. Therefore, the results obtained may not represent the scenario of all the banks in India.

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V. ANALYSIS

SECTION-1: E-BANKING RISKS

This section covers the various types of risks with respect to selected PSBs, PSIBs and PSFBs. Six types of risks are considered, i.e. transactional, market, credit, legal, strategic and reputational risks on three parameters like often, rarely and never have been taken for each of these risks.

5.1.1 Transactional Risk

Table 5.1.1 and figure 5.1a envisages that transaction risk is faced more often in PSIBs and PSFBs with equal percentage of 60 and less often in PSBs with 36 per cent. In case of PSBs, 14 per cent banks have never faced it, while this is minimum, i.e. 4 per cent in case of PSIBs and 10 per cent in PSFBs.

Table - 5.1.1: Transactional Risk
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	18(36)	25(50)	07(14)
PSIBs	30(60)	18(36)	02(04)
PSFBs	30(60)	15(30)	05(10)

Chi-Square = 4.667
Source: Compiled from the responses obtained from respondents

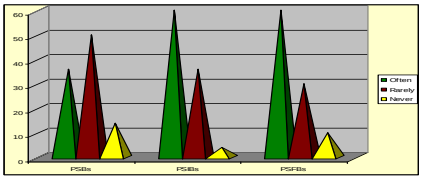

Fig. 5.1a: Transactional Risk

5.1.2 Credit Risk

Table 5.1.2 and figure 5.1b shows that credit risk faced by the PSFBs is maximum, i.e. 60 per cent, whereas it is minimum, i.e. 40 per cent in PSBs. The table also presents that 32 per cent banks in public sector have never faced this risk, whereas this figure is 16 per cent in case of PSFBs.

Table - 5.1.2: Credit Risk
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	20(40)	14(28)	16(32)
PSIBs	21(42)	14(28)	15(30)
PSFBs	30(60)	12(24)	08(16)

Chi-Square = 4.667
Source: Compiled from the responses obtained from respondents

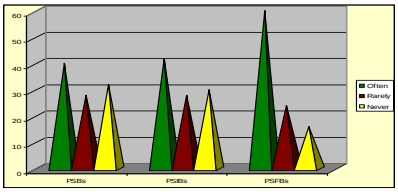

Fig. 5.1b: Credit Risk

5.1.3 Market Risk

Table 5.1.3 and figure 5.1c reveals that most of the banks have never faced this risk. Only 20 per cent banks in PSFBs and 10 per cent in PSIBs are facing this risk oftenly. PSBs are again at the 3rd position with 62 per cent banks, which have never faced it.

Table - 5.1.3: Market Risk
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	-	19(38)	31(62)
PSIBs	05(10)	17(34)	28(56)
PSFBs	10(20)	22(44)	18(36)

Source: Compiled from the responses obtained from respondents

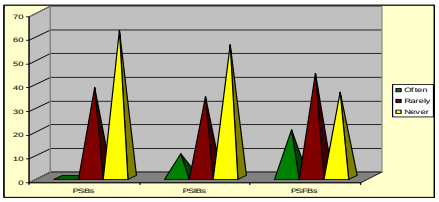

Fig. 5.1c: Market Risk

5.1.4 Legal Risk

Table 5.1.4 and figure 5.1d presents that legal risk is not faced oftenly by any bank in all the three groups. PSIBs are at the 1st position with minimum 52 per cent banks never facing it. On the other hand, PSFBs and PSBs are at the 2nd and 3rd position where 62 per cent and 72 per cent banks respectively have never faced it.

Table - 5.1.4: Legal Risk
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	-	14(28)	36(72)
PSIBs	-	24(48)	26(52)
PSFBs	-	19(38)	31(62)

Source: Compiled from the responses obtained from respondents

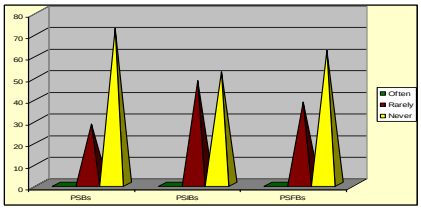

Fig. 5.1d: Legal Risk

5.1.5 Strategic Risk

Table 5.1.5 and figure 5.1e depicts that strategic risk is not oftenly faced in PSBs, whereas 66 per cent have never faced it and 34 per cent have faced it rarely. PSFBs are again at the leading position where only 10 per cent banks facing it oftenly and 48 per cent not facing it at all. On the other hand, PSIBs are at the middle position with 10 per cent and 40 per cent banks facing it oftenly and rarely respectively; and 50 per cent had never faced this risk.

Table - 5.1.5: Strategic Risk
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	-	17(34)	33(66)
PSIBs	05(10)	20(40)	25(50)
PSFBs	05(10)	21(42)	24(48)

Source: Compiled from the responses obtained from respondents

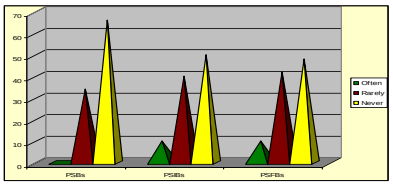

Fig. 5.1e: Strategic Risk

5.1.6 Reputational Risk

Table 5.1.6 and figure 5.1f projects that reputational risk is not so often faced in any type of bank. In PSBs, maximum 70 per cent banks have never faced it and this percentage is 50 per cent each in PSIBs and PSFBs. PSFBs and PSIBs are at the 1st and 2nd position respectively, who faced this risk oftenly to the extent of 12 per cent and 10 per cent respectively.

Table - 5.1.6: Reputational Risk
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	-	15(30)	35(70)
PSIBs	05(10)	20(40)	25(50)
PSFBs	06(12)	19(38)	25(50)

Source: Compiled from the responses obtained from respondents

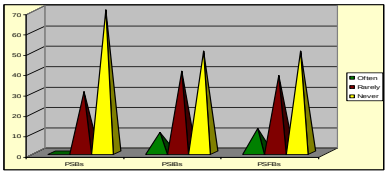

Fig. 5.1f: Reputational Risk

5.1.7 Combined Frequency of the Risks

Table 5.1.7 and figure 5.1g elucidates the combined status of the three groups of banks regarding various risks of e-banking. It is clear that PSFBs are facing more risks where maximum 27 per cent banks are facing these risks oftenly. The banks who have never faced risks is also minimum, i.e. 37 per cent in PSFBs. PSIBs are at the 2nd position where 22 per cent and 40 per cent banks from the total are facing it oftenly and never faced it respectively. In case of PSBs only 13 per cent are facing it oftenly which is lowest among all the groups and maximum 52 per cent have never faced these types of risks.

Table - 5.1.7: Combined Frequency of Risks
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	38(13)	104(35)	158(52)
PSIBs	66(22)	113(38)	121(40)
PSFBs	81(27)	108(38)	111(37)

ANOVA: F = 16.1($F_{.5, 2, 6}$ = 5.14)
Chi-Square = 6.000* (Significant at 5% level)
Source: Compiled from the responses obtained from respondents

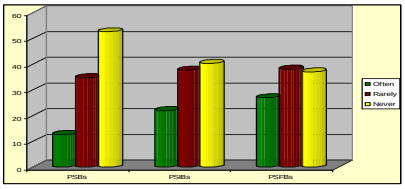

Fig. 5.1g: Combined Frequency of Risks

The calculated value of F, i.e.16.1 is more than the tabulate value, i.e. 5.14 hence, the null hypothesis i.e. there is no significant difference in the various types of risks associated with e-banking in PSBs, PSIBs and PSFBs in India cannot be accepted. It means that the alternative hypothesis, i.e. there is a significant difference in the various types of risks associated with e-banking in PSBs, PSIBs and PSFBs in India can be accepted.

SECTION-2: E-BANKING RISKS' STRATEGIES

This section presents the analysis of various types of e-banking strategies used by the three categories of banks to deal with the above mentioned risks. An analysis of each of these strategies has been made on the basis of three parameters, i.e. often, rarely and never.

5.2.1 Passwords and PIN

Table 5.2.1 and figure 5.2a envisages that all the banks in private and foreign sector are using passwords and PIN, whereas these are being used oftenly by 92 per cent of PSBs.

Table - 5.2.1: Passwords and PIN
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	46(92)	04(08)	-
PSIBs	50(100)	-	-
PSFBs	50(100)	-	-

Source: Compiled from the responses obtained from respondents

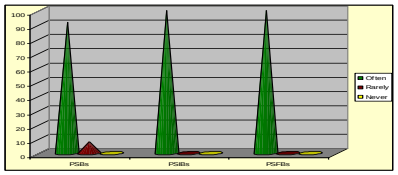

Fig. 5.2a: Passwords and PIN

5.2.2 Public Key Infrastructure

Table 5.2.2 and figure 5.2b reveals that maximum 48 per cent of PSFBs are using this strategy oftenly; while it is being used by 38 per cent and 30 per cent of PSBs and PSIBs respectively. The table also shows that maximum 24 per cent in PSBs have never used it. But in PSIBs and PSFBs, this figure is 12 per cent in each of these categories.

Table - 5.2.2: Public Key Infrastructure
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	19(38)	19(38)	12(24)
PSIBs	15(30)	29(58)	06(12)
PSFBs	24(48)	20(40)	06(12)

Chi-Square = 4.909
Source: Compiled from the responses obtained from respondents

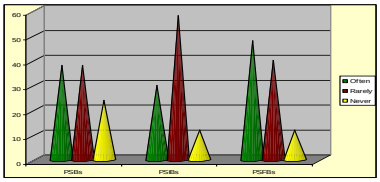

Fig. 5.2b: Public Key Infrastructure

5.2.3 Smart Cards

Table 5.2.3 and figure 5.2c shows that smart cards are more often used in PSIBs where maximum 52 per cent banks are using it oftenly, whereas 48 per cent and 28 per cent of PSFBs and PSBs respectively are oftenly using it. On the other hand, 10 per cent banks in the category of PSIBs have never used it. However, this percentage is 50 per cent in case of PSBs.

Table - 5.2.3: Smart Cards
No. of Respondents (percentage)

	Often	Rarely	Never
PSBs	14(28)	11(22)	25(50)
PSIBs	26(52)	19(38)	05(10)
PSFBs	24(48)	17(34)	09(18)

Chi-Square = 2.000
Source: Compiled from the responses obtained from respondents

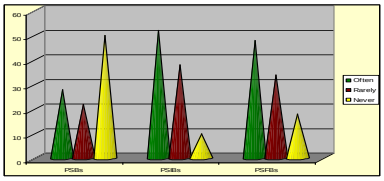

Fig. 5.2c: Smart Cards

5.2.4 Physical Certificates

Table 5.2.4 and figure 5.2d depicts that usage of this strategy is highest in PSBs, i.e. 48 per cent banks are using it oftenly. On the other hand, the PSFBs and PSIBs are at 2nd and 3rd position with 42 per cent and 40 per cent respectively. In case of PSBs and PSFBs, 20 per cent banks and in PSIBs, 12 per cent banks have not used it at all.

Table - 5.2.4: Physical Certificates
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	24(48)	16(32)	10(20)
PSIBs	20(40)	24(48)	06(12)
PSFBs	21(42)	19(38)	10(20)

Chi-Square = 4.667
Source: Compiled from the responses obtained from respondents

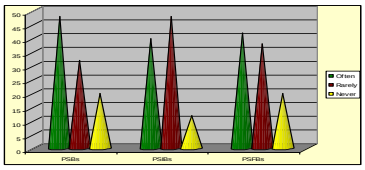

Fig. 5.2d: Physical Certificates

5.2.5 Data Base Comparison

Table 5.2.5 and figure 5.2e clearly presents that data base comparison strategy is highly used in PSFBs where 38 per cent banks are using it oftenly. However, in case of PSIBs and PSBs, this percentage is 36 per cent and 26 per cent respectively.

Table - 5.2.5: Data Base Comparison
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	13(26)	18(36)	19(38)
PSIBs	18(36)	22(44)	10(20)
PSFBs	19(38)	22(44)	09(18)

Chi-Square = 2.000
Source: Compiled from the responses obtained from respondents

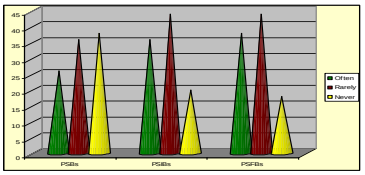

Fig. 5.2e: Data Base Comparison

5.2.6 Biometric Identifiers

Table 5.2.6 and figure 5.2f elucidates that this strategy is not much in use as PSBs and PSIBs are not using it oftenly whereas, only 10 per cent PSFBs are using it. PSFBs, PSIBs and

PSBs are at 1st, 2nd and 3rd position with 30 per cent, 32 per cent and 66 per cent who never used it.

Table - 5.2.6: Biometric Identifiers
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	-	17(34)	33(66)
PSIBs	-	34(68)	16(32)
PSFBs	05(10)	30(60)	15(30)

Source: Compiled from the responses obtained from respondents

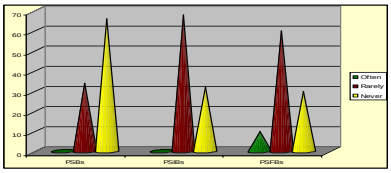

Fig. 5.2f: Biometric Identifiers

5.2.7 Cost Benefit Analysis

Table 5.2.7 and figure 5.2 g projects that cost benefit analysis is widely used in PSFBs where maximum, i.e. 32 per cent of the total banks are using it oftenly and 14 per cent in this category have never used it. In PSIBs, there are 26 per cent and 14 per cent banks using it often and never respectively. PSBs are at 3rd number with 30 per cent and maximum 38 per cent banks using it oftenly and never used respectively.

Table - 5.2.7: Cost Benefit Analysis
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	15(30)	16(32)	19(38)
PSIBs	13(26)	30(60)	07(14)
PSFBs	16(32)	27(54)	07(14)

Chi-Square = 2.000
Source: Compiled from the responses obtained from respondents

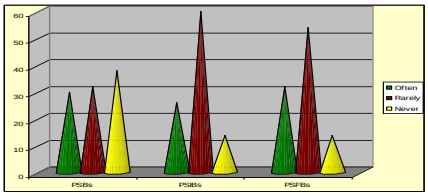

Fig. 5.2g: Cost Benefit Analysis

5.2.8 Third Party Providers

Table 5.2.8 and figure 5.2h envisages that this strategy is used in all the three categories of banks. But it is more oftenly used in PSFBs followed by PSIBs and PSBs. 16 per cent of PSIBs had never used this strategy, while this percentage is 26 and 54 in PSFBs and PSBs respectively.

Table - 5.2.8: Third Party Providers
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	17(34)	06(12)	27(54)
PSIBs	18(36)	24(48)	08(16)
PSFBs	23(46)	14(28)	13(26)

Chi-Square = 0.667
Source: Compiled from the responses obtained from respondents

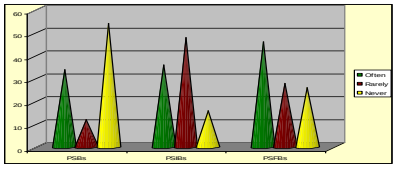

Fig. 5.2h: Third Party Providers

5.2.9 Adequate MIS

Table 5.2.9 and figure 5.2i reveals that PSFBs with regard to the use of this strategy are at the leading position where there is not a single bank that has not used it ever. PSIBs are at 2nd number with 48 per cent and 12 per cent banks using it oftenly and never respectively. While in PSBs, the same is 38 per cent and 22 per cent respectively making the least use of this strategy.

Table - 5.2.9: Adequate MIS
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	19(38)	20(40)	11(22)
PSIBs	24(48)	20(40)	06(12)
PSFBs	19(38)	31(62)	-

Source: Compiled from the responses obtained from respondents

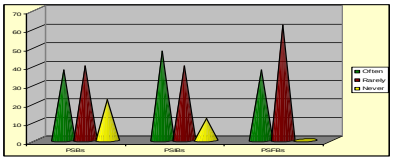

Fig. 5.2i: Adequate MIS

5.2.10 Combined usage of strategies

Table 5.2.10 and figure 5.2j depicts that the usage of all the risk mitigation strategies is highest in PSFBs, where 45 per cent banks are using oftenly. The percentage of banks using strategies often is minimum, i.e. 37 per cent in PSBs and 41 per cent in PSIBs. The percentage of banks never using these strategies is 35 per cent, 14 per cent and 15 per cent in PSBs, PSFBs and PSIBs respectively.

Table - 5.2.10: Combined Usage of Strategies
No. of Respondents (percentage)

Name of Bank	Often	Rarely	Never
PSBs	167(37)	127(28)	156(35)
PSIBs	184(41)	202(45)	64(14)
PSFBs	201(45)	180(40)	69(15)

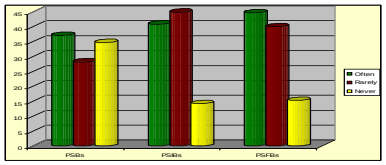

Fig. 5.2j: Combined Usage of Strategies

ANOVA: F = 4.45 ($F_{.5, 2, 6}$ = 5.14)
Chi-Square = 2.667
Source: Compiled from the responses obtained from respondents

The calculated value of F is less than the tabulated value; therefore, the null hypothesis i.e. there is no significant difference in the various types of strategies used by PSBs, PSIBs and PSFBs in India to mitigate these risks can be accepted. It means that the alternative hypothesis, i.e. there is a significant difference in the various types of strategies used by PSBs, PSIBs and PSFBs in India to mitigate these risks cannot be accepted.

Other Concerned Facts about these Banks

Some other valuable data, which is collected in the process of examining the e-banking risks and strategies, is presented as under:

5.3. E-banking Products Offered by the Bank

Table 5.3 and figure 5.3a shows clearly that the various products offered by the banks under e-banking. ATM is the most popular product offered by all the banks and is used oftenly with 100 per cent.

Table - 5.3: E-Banking Products offered by the Banks
No. of Respondents (percentage)

Name of Bank (Service)	Yes	No
a) ATM		
PSBs	50(100)	-
PSIBs	50(100)	-
PSFBs	50(100)	-
b) Mobile Banking		
PSBs	19(38)	31(62)
PSIBs	34(68)	16(32)
PSFBs	36(72)	14(28)
c) Internet Banking		
PSBs	28(56)	32(64)
PSIBs	40(80)	10(20)
PSFBs	42(84)	08(16)
d) Credit Card		
PSBs	45(90)	05(10)
PSIBs	46(92)	04(08)
PSFBs	46(92)	04(08)
e) ATM cum Debit Card		
PSBs	44(88)	06(12)
PSIBs	45(90)	05(10)
PSFBs	45(90)	05(10)
f) Electronic Payments		
PSBs	34(68)	16(32)
PSIBs	41(82)	09(18)
PSFBs	36(72)	14(28)

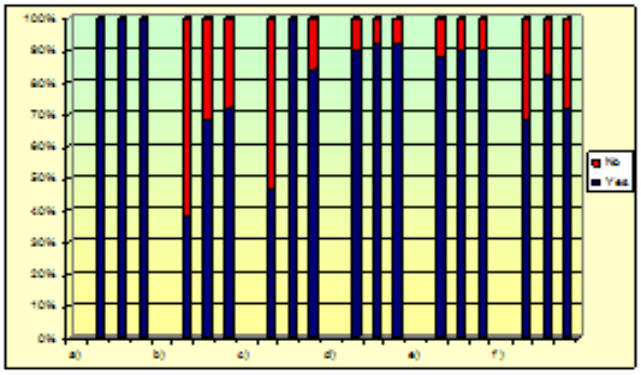

Fig. 5.3a: E-Banking Products offered by the Banks
Source: Compiled from the responses obtained from respondents

5.4. Type of the Bank's Website

Table 5.4 and figure 5.4a presents that in case of PSFBs; the maximum 80 per cent banks are having transactional websites and 20 per cent communicative making it 1st amongst all. PSIBs are at 2nd position with 62 per cent transactional, 28 per cent communicative and 10 per cent informational sites. PSBs are at the last position with 48 per cent, 38 per cent and 14 per cent transactional, communicative and informational sites respectively.

Table - 5.4: Type of the Bank's Website
No. of Respondents (percentage)

Name of Bank	Informational	Communicative	Transactional
PSBs	07(14)	19(38)	24(48)
PSIBs	05(10)	14(28)	31(62)

PSFBs	-	10(20)	40(80)

Source: Compiled from the responses obtained from respondents

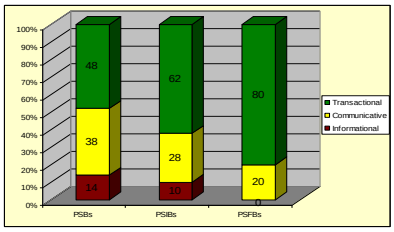

Fig. 5.4a: Type of the Bank's Website

It is informed from the above that risks are less in PSBs and they are not facing the risks very often as is evident from the table 3.1.7 as compared to PSIBs and PSFBs. This is because of the fact that less service are offered in these banks and transactional sites are also comparatively less as shown by the tables 3.3 and 3.4 respectively. As far as the strategies used to mitigate the risks are concerned, there is no significant difference in various groups of banks regarding the use of different strategies.

VI. FINDINGS

The analysis indicates several significant differences in the profile of the banks regarding various e-banking products; and various risks and their strategies. The main findings are summarized as follows:

- Foreign and private sector banks offered a broad range of services through electronic means and their usage rate is also high among the respondents in each type of e-banking service.
- Maximum 82 per cent of the total PSIBs are offering electronic payment facility. PSFBs are at the 2nd place with 72 per cent respondents, whereas PSBs are at the lowest place with only 68 per cent respondents.
- Out of the total respondents, 70 per cent/28 per cent are highly agree/agree that e-banking services saves time, while only 2 per cent respondents are disagreeing to it.
- Users of mobile banking are also very low in PSBs and PSFBs where only 18 per cent and 25 per cent respondents respectively are using it. In case of PSIBs, this is highest, i.e. 58 per cent.
- A significant difference is found in the three groups of banks regarding the various types of e-banking risks which the banks are facing. In PSFBs, 65 per cent banks are facing these risks either often or rarely. The same is 60 per cent and 48 per cent in case of PSIBs and PSBs respectively.

- There is no significant difference between the three groups of banks in respect to the use of risk management strategies. However, PSFBs are using these strategies more often with a usage rate of 45 per cent than PSIBs where the usage rate is 41 per cent, whereas it is lowest, i.e., 37 per cent in PSBs.
- Most of the growth of Internet banking and Mobile banking in India is due to PSIBs and PSFBs operating in India.

VII. SUGGESTIONS

Some of the valuable suggestions to increase the e-banking services in India are given below:

1. Banks' system must be technologically equipped to handle various risks associated with e-banking. Banks to be able to handle all these risks should:

- Have a clear and widely disseminated strategy that is driven from the top and takes into account the effects of e-banking together with an effective process for measuring performance against it.
- Take into account the effect that e-provision will have upon their business risk exposures and manage these accordingly.
- Undertake market research, adopt systems with adequate capacity and scalability, undertake proportional advertising campaigns and ensure that they have adequate staff coverage and a suitable business continuity plan.
- Ensure they have adequate management information in a clear and comprehensible format.
- Take a strategic and proactive approach to information security, maintaining adequate staff expertise, building best practice controls and testing and updating these as the market develops. Make active use of system based security management and monitoring tools.
- Ensure that crisis management processes are able to cope with Internet related incidents.

2. Banks, international organizations, governments and financial institutions should work together to manage all the e-banking risks. The partnerships must continue to enhance consumer trust towards e-banking. Banks conducting business online should consider security and reliability as their first business priority for customer retention.
3. Mostly, the frauds happen due to impersonation, sniffing information on its travel and hacking into the computer. The impersonation can be for an individual, a web site, a

computer, a router etc. The frauds due to impersonation and sniffing can be minimized by adopting PKI. Frauds due to hacking and not able to deploy PKI etc. can be minimized by firewalls and IDS.

4. Credit card fraud was always there even before the e-commerce days, but certainly has gone up due to the advantages Internet offers to the fraudsters. This is one area which is very attractive for organized crime. No doubt that credit cardholder and card issuers also face losses, but it is the e-merchant who suffers maximum losses. All the precautions will not eliminate this fraud totally, but its number can certainly be reduced. The only way to reduce the chances of falling prey to fraudsters is by being eternally vigilant and establishing sound procedures.
5. Developing just a me-too website would not work for the banks. Several banks are creating electronic financial communities in which customers assemble to present and pay bills while satisfying other financial and informational needs. By bringing consumers and vendors together at one site, financial institutions can leverage the trust, clients have in them, and act as the intermediary to ensure billers get paid and consumers get satisfactory services.
6. The banks should have a clear and widely disseminated strategy that is driven from the top and takes into account the effects of e-banking, together with an effective process for measuring performance against it, system with adequate capacity and scalability, strategic and proactive approach to information security and active use of system based security management and monitoring tools.
7. The banks should recognize the potential threat of computer frauds and crimes and focus on its prevention so that the future of computerization becomes safe and sound. The government should come out with laws to handle computer crimes expeditiously.
8. The banks should develop a successful e-banking initiative for poorer people entails managing of a host of inter-related issues, technology, pricing, financial literacy, functionality, partnerships, delivery channels, POS distribution, regulation etc.
9. Last but not the least, banks may conduct periodical surveys and take customer views on the simplicity and ease of operation of their websites and other e-banking initiatives.

Banks in the process of financial intermediation are confronted with various kinds of financial and non-financial risks, viz. credit, interest rate, foreign exchange rate, liquidity, equity

price, commodity price, legal, regulatory, reputational, operational, etc. These risks are highly interdependent and the events that affect one area of risk can have ramifications for a range of other risk categories. Failure to manage adequately these risks exposes the banks not only to losses, but may also threaten their survival as business entities thereby endangering the stability of the financial system. Risk management is an important aspect of a banks using e-banking. Risk management system is the process of identifying, monitoring and developing and selecting the various strategies to mitigate these risks.

VIII. REFERENCES

- Sergeant, Carol, "E-Banking: Risks and Responses", Journal of FSA, www.fsa.gov.u.k., March 29, 2000.
- Chandana, Unnithan "E-banking on Internet – A Preliminary Research Comparison of Australian and Indian Experiences in Banking Sector", RMIT Working paper series, 2001.
- Ramakrishnan, Ganesh, "Risk Management for Internet Banking", Journal of Information Systems Control, Vol. 6, 2001.
- Harris, Lisa and Spence, J., Laura, "The Ethics of E-Banking", Journal of Electronic Commerce Research, Vol. 3, No. 2, 2002.
- Kohli, S.S. "Technology and Risk Management", Professional Bankers, Aug. 9, 2004.
- Sharma, Vinod, "E-banking Risks Management Strategies", Professional Bankers, Special issues, Aug, 11, 2004.
- Mohan and Reddy, "Financial Regulation and Supervision", Publication Report, Reserve Bank of India, 2005.
- Kumar, "Emergence of E-Banking", Finance Article of 1888ARTICLES.COM, www.1888articles.com, 2005.
- Ollie, "Criminals are Banking upon Net to Steal", The Times of India, Sept. 26, 2006.