

Management of Risk in Indian Banking Industry

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Abstract: The Banking sector has a crucial role to play in the development of an economy. It is the key driver of economic growth of the country. In India, the banking sector is very strong at the present but at the same time, banking is considered to be a very risky business. Most often than not root cause of a financial turmoil is inefficient risk management practices adopted by the financial institutions. Banks must thus see risk management as an ongoing and valued activity as it is directly linked to financial system stability of the country. The purpose of this research is to outline various risks posed by the Indian Banks and strategies adopted by them for risk management. The secondary objective is to compare the risk severity and success of risk management practices for the public sector and private sector Indian Banks.

Keywords: Banks, risk management, operating risk, market risk, efficiency

INTRODUCTION

Risk Management is the process of identifying, quantifying, and prioritizing risks followed by a chosen strategic action for economical utilization of resources to track, reduce, and control the probability and/or potential impact of unfortunate events. Thus risk management can cause the probability of an unfortunate event to reduce, or it can help minimize the consequences in case of an unfortunate event.

The Indian banking industry is a densely regulated with detailed and focused regulator like Reserve Bank of India. On one hand the Indian banks face a challenge to keep up with the changes in the regulations by RBI, however on the other hand RBI faces a challenge to efficiently regulate the Indian banking industry with timely launch of effective policies. The Indian Banks manage risks associated with accepting deposits, granting loans and trading portfolios. The dynamically changing economic environment has always had a significant impact on Indian Banks and at times it questions the ability of the Indian Banks to use their resources carefully as they fail to effectively manage their interest rate spread owing to low interest rates on loans and high competition for deposits. Indian Banks sometimes struggle to cope up with changing industry trends and economic fluctuations.

Bank Management's failure is openly spotted by their shareholders when it incurs losses owing to over-aggressive loans sanctions and disbursements to essentially increase the loan book by acknowledging risk tolerances that were too high for the bank.

However, more subtle Bank Management's failures can be recognized in inefficient operations, poor internal environment control, and lack of management attention at micro level. It has been a tough challenge for the Indian Banks to effectively formulate their growth strategies aligned with the recent economic market. The current favorable interest rate environment set up by the latest RBI policies may seem to help the Indian Banks, however the impact of these policies on banks' customers and other industries is indeterminable and thus the Indian banks are faced with a challenge to grow and efficiently manage their interest rate spread to generate a lucrative return for their shareholders. Also the management of the asset portfolios of various leading Indian Banks poses a tremendous challenge in today's economic environment. Loans are a bank's basic asset class and when the performance of these assets become doubtful, then it hints a crisis signal to the bank. Thus there is a need for the Indian Banks to see risk management as an ongoing and valued activity not only to ensure sustainable growth for the bank but also to ensure financial system stability of the country.

Risks faced by the Indian Banks

Risk is a possibility of a loss which could be either financial or reputational. Indian Banks as any other commercial organization aspire to gain a higher return, which requires them to take higher risks. The major risks relevant in the Indian Banking context are:

Liquidity Risk -At times banks fund their long term assets through short term liabilities. In such a case there is a possibility that bank may not be able to meet its maturing liabilities or may be able to do so only by

raising capital at higher costs or by selling off its assets at very low prices. The liquidity risks are indicated in different ways:

Funding Risk - Bank's incapability to raise funds to meet its maturing liabilities is funding liquidity risk. This arises due to unanticipated cash outflows (withdrawals)

Time Risk - Stoppage of bank's anticipated cash inflows owing to the increase in the non-performing assets is known as time liquidity risk.

Call Risk - The increasing certainty of the contingent liabilities to be included in the liabilities is known as call liquidity risk

Credit Risk - Credit risk is the failure of the counterparty to honour the maturing obligation in lieu with the terms of the agreement. Thus all the lenders are exposed to the credit risk but its probability of loss depends on the credibility and repayment capability of the borrower. The non-performing assets are alarmingly rising for the Indian banks. The Asian financial crisis occurred as the NPA's grew to about 30% of the total assets. The variants of the credit risk are:

Counterparty Risk - This variant of the credit risk arises owing to the denial or incapability of the trading partners to perform

Country Risk - Country risk arises because of the non-performance of the counterparty owing to the restrictions imposed by its specific country. So the counterparty has no intention and control over the default.

Operational Risk - The Operational risk is the risk of loss due to inadequate resources or inefficient internal processes, workforce and systems. The variants of operational risks are:

Transaction Risk - Transaction risk arises from fraudulent transactions, inefficient business processes and failure to maintain the ongoing business concern and information management.

Compliance Risk - Compliance risk is the financial or reputation loss that bank may face owing to its failure to comply with the statutory laws and regulations. Compliance risk is also called as integrity risk as the banks reputation is at stake.

Market Risk - The risk of loss borne by the banks owing to the fluctuations of market prices in the equity, debt, commodities and currency markets is known as the market risk. Market risk is highly probable during the premature asset selloff. Market risk is closely

associated with the HTF (Held for trading) investments. The variants of market risk are:

Forex Risk - The risk of loss borne by the bank owing to adverse exchange rate fluctuations during the period in which the bank has open position in the foreign currency derivatives market is the forex risk.

Market Liquidity Risk - The risk borne by a bank of being incapable of going through with a large transaction due to the higher market price of a particular instrument is known as the market liquidity risk.

Interest Rate Risk - The interest rate risk is owing to the movement of interest rates as regulated by the Reserve Bank of India which impacts the credit spread of the banks. This can have adverse impact on the NII (Net Interest Income) and thus on NIM (Net Interest Margin). These crucial performance indicators of the banks affect the market value of equity for the banks.

Strategic Risk - Strategic risk is the risk of loss borne by the banks owing to their poor business decisions, incorrect implementation of their business decisions or irresponsiveness to the industry changes. Thus strategic risk is majorly associated with the bank's corporate strategy and thus has a direct impact on the market share of the bank.

Reputation Risk - The risk of loss borne by the bank owing to the adverse changes in the perception about the bank directly affects the reputation of the bank. Reputation risk exposes the bank to withdrawals of deposits, reduction of its customer base and the market value of equity of the bank.

LITERATURE REVIEW

Enormous research has been done so far and numerous studies have been published till date about risk management in general. However, the empirical study on risk management practices in the context of the Indian banking industry is found to be relatively less. Following is an attempt to summarize the review of some selected studies in the related area.

Linbo Fan [1] in his study titled, "Efficiency versus risk in large domestic US" published in the Managerial Finance journal; analyzed the efficiency of profit making versus the degree of risk exposure for large domestic banks in USA. He determined that the profit making efficiency of the banks in the USA is significantly dependent on the degree of the credit risk borne by the banks but not as much dependent on the liquidity risk borne by the banks. Ho Hahm [2] undertook the analysis of the interest rate exposure and the foreign exchange rate exposure of the banking firms in existing in the pre-crisis Korea. Results of his study indicated that the Korean commercial banks and

merchant banks were significantly exposed to both interest rate and exchange rate risks. The subsequent profitability of these banking firms was highly associated with their degree of pre-crisis exposure. Hahm through his study thus highlighted the importance of upgrading the financial supervision and the risk management practices in the banking industry as a crucial prerequisite for successful financial liberalization.

Niinimäki [3] in his journal paper titled “The effects of competition on banks’ risk taking” discovered that the degree of risk averseness depends on the industry structure and the market size in which the banking firms operate. He also concluded that monopolistic competition leads to unchanged risk taking tendency. Thus Banks do tend to take minor risks, however major risks are conveniently avoided. In contrast, in competitive banking industry banks are required to compete for deposits. In this case, to tap more deposits banks tend to offer higher deposit rates; thereby taking extreme risks. Wetmore [4] analyzed the relationship between liquidity risk and credit to deposits ratio of large commercial banks. He highlighted that the average credit to deposits ratio had increased over the period, which reflected increasing efficiency of the asset/liability management practices adopted by the banks. He also observed that there is a positive correlation between the degree of market risk and the credit to deposits ratio after 1994, whereas a negative correlation existed before 1994.

Wang and Sheng-Yung [5] in their Applied Economics paper titled, “Foreign exchange risk, world diversification and Taiwanese ADRs” tried to evaluate the purchase opportunity of the American depository receipts issued by Taiwanese companies for the prospective investors in USA. The results of their study indicated that the foreign exchange risk is absorbed in the price of the Taiwanese ADRs as they are USD denominated. Thus the Taiwanese ADR’s helped the USA investors to diversify their portfolios globally. So ADR’s transfer the foreign exchange risk to the issuing banks and thus prove to be good investment options for USA investors who seek global diversification. Khambata and Bagdi [6] examined the credit risk borne across by the top 20 Japanese banks owing to the off-balance-sheet instruments. The conducted study indicated that the loan obligations are the prime source of credit risk among all the off-balance-sheet instruments. It was observed that the top four banks heavily rely on the financial derivatives for hedging their open exposure. However there is a vast difference in the use of derivative leverage across all the banks. The Japanese banks use relatively few off-balance-sheet instruments as a percentage of their assets as compared to USA and European banks. Thus the study revealed the nature of the Japanese banks as compared to their

USA or European counterparts as to be conservative and risk-averse.

Al-Tamimi [7] in his study titled, “Risk management practices: an empirical analysis of the UAE commercial banks” published in the Finance India journal; analyzed the degree to which the UAE commercial banks implement risk management practices to mitigate various types of risks. It was observed that the UAE commercial banks were majorly exposed to credit risk. The study indicated that the main methods used by the UAE commercial banks for risk identification were managerial inspection by authorities and detailed financial statement analysis. The effective risk management techniques deployed by the UAE commercial banks were setting standards, calculating credit scores, analyzing credit worthiness, risk rating and collateral determination. The study recommended the UAE commercial banks to use sophisticated risk management techniques and conservative credit policy. Salas and Saurina [8] analyzed the credit risk borne by Spanish commercial and savings banks; using the determinants of loan defaults for both the institutional regimes in the period 1985-1997, considering both the macroeconomic and the individual bank-level variables. The economy growth rate, firm’s credit history, bank’s branch expansion, managerial efficiency, portfolio composition, size of firm, net interest margin, capital adequacy ratio and market power are some variables that govern the degree of credit risk. The study proposed the use of bank-level variables as warning indicators, the advantages of cross-cultural acquisitions within the banking industry, and the role of industry competition in determining credit risk.

Key notes based on the above literature review

- Profit making efficiency is significantly dependent on the degree of credit risk borne by the banks but not as much dependent on the liquidity risk borne by the banks.
- Upgrading the risk management practices in the banking industry is a crucial prerequisite for successful financial liberalization.
- The loan obligations are the prime source of credit risk for the Commercial banks.
- Managerial inspection by authorities and detailed financial statement analysis are the means used for risk identification.
- The appropriate risk weight for an off-balance-sheet item for the assessment of credit risk borne by the bank is very likely to depend on the relative market size of the bank in the industry.

RESEARCH METHODOLOGY

Objectives

1. To study the risk management practices adopted by the banks in India (excluding the foreign banks)

2. To identify the difference in perception of the top Indian banks as in 2011 and in 2015 with respect to the importance of the risk management practices
3. To identify the difference between the effectiveness of implementation of risk management practices of the top private sector and the top public sector banks in India

Scope

The domain of the research is the entire banking sector of India (excluding the foreign banks). The research covers various risk management practices adopted by the Indian banks. The research is based on analysis of five year period (FY2011 to FY2015).

Research Design

The research design adopted is the empirical study of the Indian banking sector for a five year period (FY2011 to FY2015). The quantitative analysis is performed on some selected quantitative parameters (secondary data) using the relevant techniques available in SPSS software.

Data

The financial data of the chosen sample banks for the period of FY2011 to FY2015 is collected for the research. This secondary data of the sample banks was obtained from the Database of Indian Economy (DBIE) which is maintained by the Reserve Bank of India (RBI).

Sampling

Top five banks based on the market capitalization each from the private and the public sector, are been chosen to form the sample for the research. These ten banks form the huge majority (approx. 88%) of the total market share of the Indian banking sector. Thus the risk management practices adopted by these banks would largely drive the risk mitigation for the Indian banking sector as a whole.

Data Analysis

The risk management practices adopted by the Indian banks are to be found by empirical study. The change in perception of the top Indian banks with respect to the importance of the risk management practices would be analyzed by using 'paired samples test' on the data of FY2011 and that of FY2015. The difference between the effectiveness of implementation of risk management practices of the top private sector and the top public sector banks in India would be analyzed by using 'Anova' followed by 'Two Independent Sample Test' if required.

Limitations

Although the risks faced by all the Indian banks are the same but the risk potential for mid-cap and small-cap banks is relatively very low. So these

banks would find it cost effective to not employ some of the risk management practices that are employed by the top banks.

2. The research assumes the Indian banks having positive perception with respect to the importance of the risk management practices to mitigate risks by employing these practices.

3. The effectiveness of implementation of risk management practices is to be determined not only based on the tangible parameters but also on the intangible parameters like quality of employee and internal processes.

Data Analysis

Earlier, the Indian banks used risk management practices that only complied with the legal norms and just met the Indian accounting standards. But owing to the dynamic economic environment offer by India and its rapid pace of deregulation, banks were forced to switch to mark-to-market accounting. Thus, the Indian banks had a challenge to formulate a coherent framework for identifying, estimating and managing risks consistent with its business goals and responsive to the market dynamism. According to the market changes, banks are required to maintain vigilance on the convergence of the regulatory frameworks in India, on the changes in the global accounting standards and most importantly on the changes in their clients' ways of doing business. Hence, following certain stringent risk management practices as laid down norms by the central regulatory body (RBI) became important.

RBI identified the potential risks relevant to the banks operating in the Indian context and issued guidelines regarding operational risk management, assets liability management, market risk management and credit risk management. It adopted the CAMELS model based on Capital Adequacy, Asset Quality, Management, Earnings Quality, Liquidity and Sensitivity to Market risk to ensure risk management and in turn the financial soundness of the Indian Banks.

The Indian banks are observed to follow the below practices for risk management:

A. Credit Risk Management

Exposure Limits

The Reserve Bank of India has issued a framework of the rules/regulations/instructions for the Scheduled Commercial Banks relating to credit exposure limits for single/ group borrowers and credit exposure limits in specific industries and credit exposure of banks in the capital market

Loan Review Process

Banks have established multi-level loan review process and constitution wise delegation of authority. Superior delegated powers and preferential time

schedule for loan review/renewal are bestowed over to the better-rated customers. Threshold for fresh exposures and periodicity for renewal are formulated. Banks employed 'Credit Audit' that covered review of sanction process, compliance and risk rating. It also tapped the warning signals and recommended corrective action with the objective of improving credit quality.

Internal Risk Rating

Most Indian banks have set up an intensive risk rating system that clearly defines their acceptable rating thresholds and reviews the ratings periodically, thus helping to estimate the expected profit/loss for the period.

Risk Based Pricing

Banks are found to price the loans based on the risks perceived to be associated with the borrower. High-risk category borrowers are being priced high as compared to the low-risk category borrowers. Capital is allocated to absorb the unexpected losses which are projected based on the historical data on default losses. Such banks are known to follow RAROC (Risk Adjusted Return on Capital) framework.

Portfolio Management

Indian banks have realised the importance of optimizing the benefits obtained by diversification and the necessity of reducing the potential adverse impact of concentration of exposures to a particular group or industry. Thus limits on aggregate exposure to specific high risk rating categories, distribution of borrowers in various industries and business group are maintained. The banks periodically review the loan portfolio and introduce changes as and when required.

Various Models used for credit risk management are:

- Altman's Z-score model
- KMV model for measuring default risk
- Logit & Probit models

Market Risk Management

Maturity Gap Analysis

It is a risk management technique which focuses on the potential variability of net-interest income (NII) over specific period intervals, thus used to mitigate interest rate risk. Bank prepares schedules that categorize the assets, liabilities, and off-balance sheet positions that are highly sensitive to the interest rate fluctuations, into time bands depending on their maturity or time left for their next re-pricing. These schedules generate indicators of both earnings and economic value with respect to the interest-rate sensitivity. The maturity gap reflects the differences between the volume of rate sensitive asset and the volume of rate sensitive liability. Thus banks can

project the impact on their net-income owing to the fluctuations in the interest rate.

Duration Gap Analysis

Banks manage their net interest income (NII) by accounting for all cash flows. Duration is the weighted measure of present values of all cash flows and indicates the average time required to recover the investment. Duration gap indicates the differences in the timing of asset and liability cash flows. So when the interest rates rise, the market value of assets relative to the market value of liabilities decreases, resulting in fall of the market value of equities and expected net-interest income and vice versa.

Value at Risk (VaR)

The Value at Risk (VaR) indicates the potential loss or gain the bank would make over a particular time horizon with a certain probability. Value at Risk basically quantifies the financial risk inherent in banks' portfolios into a numeric value.

Risk Adjusted Rate of Return on Capital (RAROC) Framework

RAROC framework measures all the relevant risks consistently and aids banks' for making optimal risk/return trade-off. This framework is used for allocating capital for different products and businesses depending upon the various risks that they face. This framework determines the total net return on capital of a firm.

Operational Risk Management

Scenario Analysis

Scenario analysis helps in identifying potential problems by way of forward thinking and increases preparedness to tackle them. Outcomes are envisaged for different scenarios and so are the paths that lead to them, thus giving banks a better scope to improvise future plans. Extreme scenarios are used for stress testing of these future plans.

Sensitivity Analysis

Banks use sensitivity analysis to find the effect of change in the value of a parameter on their operations. Sensitivity analysis shows how much the input can be changed without significant change in the output. Thus banks use this approach for achieving operational efficiency thereby handling the operational risks.

Asset Liability Management

In the Indian economy, mostly the interest rates have been deregulated; G-Secs are auctioned by RBI and the banks enjoy the liberty to decide the interest rates on deposits and advances. Hence the Asset Liability Management function is not only for risk management but also employed by the banks for

enhancing their net worth through opportunistic positioning of their balance sheet. The higher the degree of leverage of the bank, the more critical is the Asset Liability Management function within the organization.

Securitization is adopted by the banks for reducing banks' risk exposures by securitizing the banks' assets and loans. Banks strategically bundle a group of income-earning assets and raise funds by selling securities against these in the open market. Thus the banks manage to transform illiquid assets into tradable asset backed securities. As the returns to be paid to these securities' holders depend on the cash flows generated by the group of the underlying assets, the risk of repayment borne by the bank initially is now transferred to the originator of these pooled assets.

Objective 2: To identify the difference in perception of the top Indian banks as in 2011 and in 2015 with respect to the importance of the risk management practices

Null Hypothesis: There is no significant difference in average perception of top Indian banks with respect to the importance of the risk management practices now and as that in FY2011

H0: $\mu_{2011} = \mu_{2015}$

Action Hypothesis: There is a significant difference in average perception of top Indian banks with respect to the importance of the risk management practices now and as that in FY2011

H1: $\mu_{2011} \neq \mu_{2015}$

Data: The transition in banks' outlook is analyzed by comparing the FY2011 and FY2015 data like Cash to Deposit ratio, Credit-Deposit ratio, Net Interest Margin (NIM), Return on Assets (ROA), Return on Equity (ROE), Cost of funds, Capital Adequacy ratio (CRAR) and Non-Performing Assets (NPA)

Analysis Technique: As all the data is expressed in percentage, both the years' data is on ratio scale. Hence Paired Samples Test would be used for analysis.

Level of Significance: As the data is gathered from the Reserve Bank of India publication, it is all secondary data. Thus the confidence level for the analysis of this data is 99%. So the margin for type I error is 1%. Hence the level of significance (α) for the analysis is set as 0.01

Table 1: Paired Samples Test Tabulated Result

Parameters	Hypothesis	P-value	Decision ($\alpha/2= 0.005$)
Cash to Deposits Ratio	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.000	Reject H0 as P-value $< \alpha/2$
Credit to Deposits Ratio	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.477	Accept H0 as P-value $> \alpha/2$
Net Interest Margin (NIM)	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.413	Accept H0 as P-value $> \alpha/2$
Return on Assets (ROA)	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.614	Accept H0 as P-value $> \alpha/2$
Return on Equity (ROE)	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.078	Accept H0 as P-value $> \alpha/2$
Cost of funds	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.000	Reject H0 as P-value $< \alpha/2$
Capital Adequacy Ratio (CRAR)	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.013	Accept H0 as P-value $> \alpha/2$
Non-Performing Assets (NPA)	H0: $\mu_{2011} = \mu_{2015}$ H1: $\mu_{2011} \neq \mu_{2015}$	.019	Accept H0 as P-value $> \alpha/2$

Results Interpretation

The top Indian banks are found to give as much importance to the risk management practices in FY2015 as they use to in FY2011 with regards to the parameters like Credit to Deposits Ratio, Net Interest Margin (NIM), Return on Assets (ROA), Return on Equity (ROE), Capital Adequacy Ratio (CRAR) and Non-Performing Assets (NPA).

However, the importance given to the risk management practices with regards to the Cash to Deposits Ratio and the Cost of Funds has significantly

changed. The banks are currently found to maintain lesser cash and the cost of funds have increased in 2015.

Objective 3: To identify the difference between the effectiveness of implementation of risk management practices of the top private sector and the top public sector banks in India

Null Hypothesis: There is no significant difference between the effectiveness of implementation of risk

management practices of the top private sector and the top public sector banks in India

H0: $\mu_{\text{public}} = \mu_{\text{private}}$

Action Hypothesis: There is a significant difference between the effectiveness of implementation of risk management practices of the top private sector and the top public sector banks in India

H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$

Data: The private and the public sector banks in India are compared based on their financial data like Cash to Deposit ratio, Credit-Deposit ratio, Net Interest Margin (NIM), Return on Assets (ROA), Return on Equity

(ROE), Cost of funds, Capital Adequacy ratio (CRAR) and Non-Performing Assets (NPA)

Analysis Technique: All the financial data of the banks is expressed in percentage, thus the data is on ratio scale. The sector of the bank is on a nominal scale (i.e 1=Public Sector, 2=Private Sector). Hence Independent Samples T-Test would be used for analysis.

Level of Significance: As the data is gathered from the Reserve Bank of India publication, it is all secondary data. Thus the confidence level for the analysis of this data is 99%. So the margin for type I error is 1%. Hence the level of significance (α) for the analysis is set as 0.01

Table 2: Independent Samples T-Test Tabulated Result

Parameters	Hypothesis	P-value	Decision ($\alpha/2= 0.005$)
Cash to Deposits Ratio	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.184	Accept H0 as P-value $> \alpha/2$
Credit to Deposits Ratio	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.000	Reject H0 as P-value $< \alpha/2$
Net Interest Margin (NIM)	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.000	Reject H0 as P-value $< \alpha/2$
Return on Assets (ROA)	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.000	Reject H0 as P-value $< \alpha/2$
Return on Equity (ROE)	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.001	Reject H0 as P-value $< \alpha/2$
Cost of funds	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.159	Accept H0 as P-value $> \alpha/2$
Capital Adequacy Ratio (CRAR)	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.000	Reject H0 as P-value $< \alpha/2$
Non-Performing Assets (NPA)	H0: $\mu_{\text{public}} = \mu_{\text{private}}$ H1: $\mu_{\text{public}} \neq \mu_{\text{private}}$	0.000	Reject H0 as P-value $< \alpha/2$

Results Interpretation

The efficiency of implementation of the risk management practices would be adjudged to be similar in the public and private sector banks based on the Cash to Deposits Ratio maintained by them and the Cost of Funds incurred by them.

However there is a significant difference between the public and the private sector banks with respect to the efficiency of implementation of the risk management practices based on the parameters like Credit to Deposits Ratio, Net Interest Margin (NIM), Return on Assets (ROA), Return on Equity (ROE), Capital Adequacy Ratio (CRAR) and Non-Performing Assets (NPA).

Table 3:

Parameters	Public Sector	Private Sector	Comment
Credit to Deposits Ratio	78.39%	88.12%	Private Sector is more efficient
Net Interest Margin (NIM)	2.53%	3.58%	Private Sector is more efficient
Return on Assets (ROA)	0.7%	1.75%	Private Sector is more efficient
Return on Equity (ROE)	11.44%	16.53%	Private Sector is more efficient
Capital Adequacy Ratio (CRAR)	12.53%	16.24%	Private Sector is more efficient
Non-Performing Assets (NPA)	2.04%	0.54%	Private Sector is more efficient

The ‘Group Statistics’ based on the considered parameters of comparison thus indicate that overall the private sector banks are more efficient in the implementation of the risk management practices.

DISCUSSION

The developed economies of the world have an increasing trend of striving towards achieving uniform risk management with integrated treasury management so as to benefit from information synergies. Similarly the Reserve Bank of India has issued some broad guidelines to the Indian banks for risk management. However, owing to the varying size of banks and different operational efficiencies, they are not observed to adopt uniform risk management practices. Banks thus have to identify their risk parameters and adopt the suitable risk management practices.

The capital adequacy, asset quality and the earnings have been the focus of the risk management framework designed by banks. Still the Indian banking sector has evolved to some extent in terms of the risk management practices from FY2011 to FY2015. India

been rapidly developing, there are great opportunities for capital growth. Thus investors have higher returns expectations. Thus the cost of funds increased and banks pursuing higher returns neglected it as a parameter of importance under their risk management practices. This increasing cost of capital lead to liquidity considered as a bane rather than cushion for safety. Thus banks maintained lower idle cash relaxing the importance of liquidity in their adopted risk management framework.

As the risk management practices adopted by banks do not give much importance to the above two factors, the efficiency of implementation of the risk management practices would be adjudged to be similar in the public and private sector banks based on the Cash to Deposits Ratio maintained by them and the Cost of Funds incurred by them. However efficiency of the private banks is observed to be much superior to the public banks in terms of capital adequacy, asset quality and earnings.

RESULTS SUMMARY

Table 4: Focus of Risk Management Practices in the Indian Banks

Parameters of Risk Management	Importance Given by Risk Management Practices in:	
	FY2011	FY2015
Cash to Deposits Ratio	Considerate	Low
Credit to Deposits Ratio	Considerate	Considerate
Net Interest Margin (NIM)	Considerate	Considerate
Return on Assets (ROA)	Considerate	Considerate
Return on Equity (ROE)	Considerate	Considerate
Cost of funds	Considerate	Low
Capital Adequacy Ratio (CRAR)	Considerate	Considerate
Non-Performing Assets (NPA)	Considerate	Considerate

Table 5: Efficiency of Risk Management Practices in the Private/Public Banks

Parameters of Risk Management	Efficiency of Risk Management Practices in:	
	Private Banks	Public Banks
Cash to Deposits Ratio	Comparable	Comparable
Credit to Deposits Ratio	High	Low
Net Interest Margin (NIM)	High	Low
Return on Assets (ROA)	High	Low
Return on Equity (ROE)	High	Low
Cost of funds	Comparable	Comparable
Capital Adequacy Ratio (CRAR)	High	Low
Non-Performing Assets (NPA)	High	Low

CONCLUSION

RBI has laid down a broad set of guidelines based on the CAMELS framework for risk management in the Indian banking industry.

- ✓ Apart from banks adhering to these mandatory guidelines, they have adopted risk management practices based on their risk philosophy and complexity of business.

- ✓ The focus of the risk management framework designed by the most of the top Indian banks has been capital adequacy, asset quality and the earnings for the past five years.
- ✓ The costs of capital and liquidity have lost consideration in most of the risk management practices adopted by top Indian banks.

- ✓ The study highlights the efficient implementation of the risk management practices in the private banks as against the public banks.
- ✓ The private sectors banks outperform the public sector banks on all the fronts of comparison in the study.
- ✓ Thus the bank management plays a crucial role in designing a strong risk management framework and ensuring the efficient implementation of the same.

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