STATUS OF BASEL IMPLEMENTATION AND ITS IMPACT ON PSBS PERFORMANCE AN ANALYTICAL STUDY

Dr. Rashmy Moray

Associate Professor in Finance,Sinhgad Institute of Business Administration & Research, Kondhwa, (Bk) Pune,Maharashtra

Abstract

In India,RBI introduced the international adequacy norms givingstrong emphasis on harmonization with global standards and best practices in risk managementand the reforms in Indian banking are consistent and moving ahead in a purposeful manner. Managing risk is increasingly becoming the single most important issue for the regulators and financial institutions.In the amidst of these forces creating researcher initiated to find out the application status of Basel norms and the various credit risk approaches adopted by the commercial banks in India. As per the RBI Capital Adequacy norms all Scheduled commercial banks in India were directed to migrate by 31st March 2009.The importance of credit risk is increased by the fact thattransaction exposure and asset classes risk exposure have a direct impact on the profitability of banks.The importance of the credit risk management and its impact on the profitability has motivated the researcher to pursue this study. Profitability is the indicator of credit risk management. This study is an endeavor to find out the status of Indian banks performance post Basel II implementation with the help of few credit risk parameters which can be compared with the financial performance parameters of the banks.

Against this background, the present study is an attempt to address the current status of Basel implementation in Indian PSBs and asses the present scenario of various Credit risk approaches adopted by these bank and its impact on their financial performance. For this purpose multiple correlation analysis has been used and an effort has been made correlating the qualitative data with the quantitative data to establish the relationship between the credit risk approaches adopted by the PSBs with its financial performance and analyze the extent of impact.

Key words:Basel implementation, Credit Risk, Profitability, NPA, Correlation.

1. Introduction

The forces of liberalization, globalization and deregulation brought extensive variations across the Indian financial system. The increased pace of novel financial products and services, practices, methods and technological advancement opened banking to face complex risks, equally opened ways and means for increasing revenues.

This introduced renewed emphasis and accelerated efforts to synchronize with the international capital standards which got accelerated through Bank for International Settlement (**BIS**).[1]And the establishment of Basel Committee on Banking Supervision (**BCBS**)[2]

In India, there has been strong emphasis on harmonization with global standards and best practices in risk managementand the reforms in Indian banking areconsistent and moving ahead in a purposeful manner. Managing risk is increasingly becoming the single most important issue for the regulators and financial institutions. (*VLeeladhar, 2006*)[3]In order to adoptthe NCAF introduced by BCBS which includes the components of credit risk to fortify the capital base of banks, RBI introduced the risk asset ratio system to compute capital in April 1992.

The new minimum regulatory capital requirements drafted by the BCBS have generated significant debate among academics, policy makers and industry practitioners.(Mendoza, 2005)[4]**.** With the advent of NCAF, credit risk management in banks has received significance not only because of the financial crisis that the world has experienced but also due to the introduction of Basel Accord. Since granting credit is one of the main sources of income for commercial banks, the credit risk management affects the profitability of the banks.

According to the Basel Committee, "Credit risk is most simply defined as the potential that a bank borrower or counter party fails to meet the obligations on agreed terms".

---

[1]*The Bank for International Settlements (BIS) is an international organization of central banks which "fosters international monetary and financial cooperation and serves as a bank for central banks.*

[2]*It consisted of senior representatives of bank supervisory authorities and central banks from 13 countries, viz., Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States.*

[3]*VLeeladhar. (2006). Demystifying Basel II. "Global Banking: Paradigm Shift". Mumbai: FICCI-IBA. Retrieved from www.bis.org/review/r061002d.pdf*

[4]*Mendoza, C. S. (2005, April). Credit Measurement Under Basel II: An overview and Implementation Issues for Developing countries.*

As asserted by BCBS that loans are the largest and most obvious source of credit risk while others are found on the various activities that the bank involved itself with. The advanced approaches for credit risk adopted in India under the Basel II Framework has provided an impetus for adopting more sophisticated credit risk management techniques in banks. In the amidst of these forces creating news in the field of risk management across the banking industry researcher initiated to find out the application status of Basel norms and the various credit risk approaches adopted by the commercial banks in India.
With reference to the Master Circular - Prudential Guidelines on Capital Adequacy and Market Discipline - Implementation of the New Capital Adequacy Framework (NCAF) dated DBOD.No.BP.BC.90/20.06.001/2006-07 dated April 27, 2007 and DBOD.No.BP.BC.66/21.06.001/2007-08 dated March 26, 2008, RBI introduced the international adequacy norms.

And at the end of March 2009, all Indian scheduled commercial banks had migrated to the simpler approaches available under the Basel II framework. The importance of credit risk is increased by the fact that it is linked to the problem of collateral, guarantees and settlements.

The transaction exposure and asset classes risk exposure have a direct impact on the profitability of banks. The importance of the credit risk management and its impact on the profitability has motivated the researcher to pursue this study. Profitability is the indicator of credit risk management. This study is an endeavor to find out the status of Indian banks performance post Basel II implementation with the help of few credit risk parameters which can be compared with the financial performance parameters of the banks.

Against this background, the present study is an attempt to address the current status of Basel implementation in Indian PSBs and asses the present scenario of various Credit risk approaches adopted by these bank and its impact on their financial performance. For this purpose multiple correlation analysis has been used.

2. Literature Review
On par with the international economies India too made a stride in implementing the Basel-II norms. Risk-management techniques employed by banks continue to change, improve, and adapt to the ever-changing financial landscape. *(Meera, 2011)*[5]In the article on "Adjustments to Capital Adequacy Ratios by Indian Banks" examined the manner in which Indian banks adjust their balance sheets to meet the required regulatory capital standards.

(Mandira, 2007)[6]in the working paper *on "Capital Adequacy Regime in Inida; An overview"* elaborated the Indian experience of implementation. It presented the current state of capitaladequacy standards in India in the era of liberalisation and also discussed several related issues and challenges. It reveals that Indian banking system is performing reasonably well, with an average CRAR of about 12%.

(Datar, 2004)[7] in the research study named *"Making Indian banks Basel II compliant: Issues and evidence"* are of the opinion that though the new capital adequacy norms are applicable to the internationally active banks, adopting Basel- II stipulations have important implications on the whole banking sector, regulators and the economy in India.

(Banerjee, 2012)[8]In his working paper **"Basel I and Basel II Compliance: Issues for Banks in India"** aims to study the impact of various financial parameters which reflect the risk factors embedded in the Accord – credit risk in Basel I, and also operational risk and market risk in Basel II–on banks'credit risk adjusted ratio (CRAR).The observations shows that PSBs compliance to Basel norms is influenced by the profitability criteria Return OnAssets, business expansion criteria Credit Deposit Ratio and the risk elements credit risk weighted assets and capital.*(Samriti, 2011)*[9]in theirresearch paper **"Basel II in India: Compliance and Challenges"** attempts to assess in detail the role of RBI, in the implementation of Basel II framework in Indian banking sector. The study has shown that RBI has taken significant and structural initiatives to

[5]*Meera. (2011, July). Adjustments to Capital Adeqaucy Ratios by Indian Banks. SSRN*. http://ssrn.com/abstract.

[6]*Mandira, Y. N. (2007, July). Capital Adequacy Regime in Inida; An overview, Working Paper No. 196. Indian Council for Researchon International Economic Relations,*.

7. *Datar, S. (2004). Making Indian Banks Base II complaint: Issues and Evidence. Indian Institute of Banking and Finance.*

8. *Banerjee, S. (2012). Basel I and Basel II Complaince : Issues for Banks in India. Working Paper 68/2012.*

9. *Samriti, M. a. (2011, Nov). Basel II in India: Compliance and Challenges. Sage Publications.*

implement the Basel II norms in Indian financial system in a phased manner.Credit Risk is a fundamental risk which is inherent in bank's lending operations.

(Adem, 2006)[10]in his survey "Credit Risk Management in the Turkish Banking Sector: A Survey Study" explored that, credit risk is managed both at the transaction and portfolio levels. But, banks measure and manage the credit risk on a portfolio basis instead of on a loan-by-loan basis.

(Tetteh, 2012)[11]in his research study ***"Evaluation of Credit Risk Management Practices** in Ghana Commercial Bank Ltd"* assessed the extent to which the implementation of various CRM strategies adopted by the banks in Ghana has reduced the amount of NPAs.

(Abdelrahim, 2013)[12] "Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis: Qualitative Study" Investigated the determinants, challenges and developing means of CRM at Saudi Banks. The research study has used "CAMEL" Model for analyzing performance of CRM. Reasonable results have been obtained entailing that the variables; capital adequacy, asset quality, management

(Kargi, 2011)[13]in his study on ***"Credit Risk and the Performance of Nigerian Banks"*** highlighted that banks witnessed rising non-performing credit portfolios and these significantly contributed to financial distress in the banking sector. This study evaluates the impact of credit risk on the profitability of Nigerian banks. Financial ratios as measures of bank performance and credit risk. *(Kinthinji, 2010)*[14]in his research***"Credit Risk Management and Profitability of Commercial Banks in Kenya"*** explored the reasons behind the increase in the NPLs. Commercial banks in Kenya adopted different CRM policies majorly determined by; ownership of the bank's credit policies of banks, credit scoring systems, banks regulatory environment and the competence of banks management. The research entails that "***Does credit risk management in practice really matter to commercial banks"***.

(Takang, 2008)[15]in the study on "Bank Performance and Credit Risk Management" ascertained to what extent banks can manage their credit risks, using tools and techniques at their disposal. It entails that there is a significant relationship between bank performances (in terms of profitability) and credit risk management (in terms of loan performance). Better credit risk management results in better bank performance.

(Tondon, 2014)[16]in their research on ***"Credit Risk Analysis-New Horizons in the Indian Banking Sector"*** explored the CRM process and system in Indian banks and how this is being regulated by RBI through different Basel norms. It has developed a model to facilitate the banks to predict future defaulters and to improve the current predicting power of financial risk factors of banks, thereby reducing the NPAs.

(Das, 2007)[17]in his study on ***"Determinants of Credit Risk in Indian State-owned Banks: An Empirical Investigation"*** explored that there is limited work in the empirical literature examining the determinants of credit risk for improving the functioning of the banking sector. Credit risk present in the banking system has increased due to fierce competition and Credit risk analysis has emerged as a big challenge for Indian banks as a result of diverse products and services offered in the

[10]*Adem, A. (2006). Credit Risk Management in the Turkish Banking Sector: A Survey Study. Elektronik Sosyal Bilimler Dergisi.*

[11]*Tetteh, F. L. (2012, June). Evaluation of Credit Risk Management Practices in Ghana Commercial Bank Ltd.*

[12]*Abdelrahim, K. E. (2013, May). Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis: Qualitative Study. (A.-1. Transactions, Ed.) Asian Tansactions on Basic and Applied Sciences, 03(02).*

[13]*Kargi, H. S. (2011, July). Credit Risk and the Performance of Nigerian Banks. Retrieved from Abu.edu.ng/publications/2011-09-22-223148_1169*

[14]*Kinthinji. (2010, October). Credit Risk Management and Profitability of Commercial Banks in Kenya. Aibuma.repository.uonbi.ac.ke./bitstream/.../aibuma2011_submission232.pdf.*

[15]*Takang, F. A. (2008). Bank Performance and Credit Risk Management. 36. http://urn.kb.se/resolve?urn=urn:nbn:se:his:diva-1318*

[16]*Tondon, A. B. (2014, Jan). Credit Risk Analysis-New Horizons in the Indian Banking Sector. Asian Journal of Research in Banking and Finance, 4(1), 158-180.*

[17]*Das, S. G. (2007). Determinants of Crdit Risk in Indian State-woned Banks: An Empirical Investigation. Munich Personal RePEc Archive, MPRA(MPRA Paper No. 17301). http://mpra.ub.uni-muenchen.de/17301/*

world of globalisation. *(Arora, 2012)*[18]in his research "Credit risk Analysis in Indian Commercial Banks" identified the factors that contribute to Credit Risk analysis in Indian banks and to compare Credit Risk analysis practices followed by Indian public and private sector banks. *(Patrick, 2005)*[19]in the   working paper "Credit Ratings And The Standardised Approach to Credit Risk in Basel II" estimated the minimum capital requirements for the wholesale exposures of a medium-sized bank in each EMU country depending on the credit rating agencies chosen by the bank to risk-weight its exposures in the standardised approach to credit risk in Basel II.

(Kupiec, 2006)[20]In his working paper "Financial Stability and Basel II" analyzed the minimum solvency standards that are set under the June 2006 Basel II IRB approaches for corporate, sovereign, and bank credits. The international active banks adopting the A-IRB approach may require significantly less capital than the Basel-I accord. The research states that a fully compliant AIRB bank may produce a wide range of capital requirements for a given level of risk exposure. *(Narayanan, 2012)*[21]Highlighted about the scorching pace of PSBs in loan growth over the last five years. According to the survey undertaken by Credit Suisse exposure is concentrated on a select group of ten corporate houses competing in the same sectors which poses risk.

In the context of Basel implementation and credit risk management though there has been a large empirical literature on the Indian banking sector. Very few studies have focused exclusively on the dynamic linkages between the qualitative data of status of Basel implementation and credit risk approaches with the quantitative data measuring the performance of the PSBs in India. However it is imperative thatthere is a need to link the qualitative data of Basel implementation status with the performance of banks with reference to Indian PSBs.

3. Objectives of the Study
The present study has been undertaken to examine the impact of Basel implementation status on the performance of PSBs. Broadly the objectives are
1. To identify the status of Basel implementation in PSBs
2. To assess the status of implementation of various credit risk approaches under Basel – II accord
3. To study the impact of Credit Risk Approaches on the performance of PSBs

4. Methodology
To achieve the objectives of the research study, the researcher has attempted to correlate the qualitative data collected from the respondent banks on adoption and implementation of Basel and Credit Risk approaches as prescribed under the same. Since the researcher believes that credit risk management is a very complex issue, it requires a deliberate qualitative study supplemented with quantitative data to achieve the goal.The purpose behind correlating the qualitative data with the quantitative data is to establish the relationship between the credit risk approaches adopted by the PSBs with its financial performance and analyse the extent of impact.

4.1 Sampling Design
4.1.1. Population of the study: The unit of analysis in the present study is the Scheduled commercial Banks, a cluster of the Indian Banking industry for whom the Credit risk management framework under Basel accord is applicable and implemented comprising, PSBs (20 nationalized and 6 SBI and its associates), Private Sector Banks (old – 13 & New - 7), Foreign Banks (43).

4.1.2. Sampling Frame&Technique : To ensure the sample size the researcher targeted 15 and above banks in the finite cluster of population. Using simple random sampling without replacement method from the selected cluster, 17 PSBs each banks respondent was approached on the basis of judgemental sampling method. Thus the total respondents came out to be 17 banks as respondents.The researcher has used a two stage cluster sampling method for the selection of the sample. The population was divided into three clusters of SCBs comprising, nationalised banks (PSBs), private sector banks and foreign banks.

---

[18]*Arora, S. (2012, Jan-Mar). Credit risk Analysis in Inidan Commercial Banks. Asia Pacific Finance and Accounting Review, 2.*

[19]*Patrick, V. R. (2005, August). Credit Ratings & The Standardised Appraoch to Credit. Working Paper Series.*
   http://ssrn.com/abstract_id=781085

[20]*Kupiec, P. H. (2006). Financial Stability and Basel II, http://www.fdic.gov/banl/analytical/cfr/.../workingpapers_2006htm.*

[21]*Narayanan, Y. (2012, Aug). Concentration Risk for Banks Rising: Credit Suisse. Article in The Hindu Business Line. The Hindu Business Line.*

Research Paper
Impact Factor: 3.853
Peer Reviewed, Listed & Indexed

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

4.2 Sources of Data Collection: The **primary data** through structured comprehensive and the questionnaires were distributed to the selected banks. The respondents were in the rank of General Manager, Deputy General Manager, Assistant General Manager, and Executive Director from the sample banks regional office, who has the primary job responsibility of the development of credit risk management framework in their banks. The **secondary data** source for the study is Annual Reports for 5 years, from 2009-2013 of PSBs. The annual reports of sample banks for 5 years, data base of RBI, BIS and IBA, etc. are the prime sources used for quantitative data. The researcher has attempted to establish relationship between Status of Basel implementation the credit risk approaches with the help of CAMEL indicators (C-capital adequacy, A-asset quality, M-management efficiency, E-earnings quality and L-liquidity). CAMEL model has been used as a proxy for credit risk management. Within CAMEL model only select parameters were considered as performance indicators that are affected by credit risk approaches adopted by banks. They are Capital to Risk Weighted Assets Ratio (CRAR) to assess the capital adequacy, to assess the asset quality of banks, Gross Non Performing Assets (GNPA)&Net Non-Performing Assets (NNPA)Net Interest Margin (NIM) & Credit Deposit Ratio (CDR) has been used for analyzing the performance**.**

4.3Tools and Techniques Used
Ratios have been calculated for CAR, GNPA, NNPA, NIM and CDR. Average Mean has been used average is the arithmetical mean. Researcher has used Mean to arrive at the average of 5 years i.e. from the financial year 2008-09 to 2012-13 of the CAMEL variables used in the study as well the performance measures.

Since in this study relationship among variables especially for the adoption of Basel II & prescribed credit risk approaches and financial performance is examined, this study is also a correlation type of investigation. Multiple correlations has been used to find out how best a given variable can be predicted using a linear function of a set of other variables.

4.6 Hypothesis Testing
Hypothesis No. 1
H_0: There is no relationship between status of Basel implementation and financial performance parameters - (CAR, Gross NPA, Net NPA, NIM and CDR)

H_1: There is a significant relationship between status of Basel implementation and CAR, Gross NPA, Net NPA, NIM and CDR

Hypothesis No. 2
H_0: There is no relationship between the status of the credit risk approaches (Standardised Approach, Foundation Internal Rating Based Approach and Advanced Internal Rating Based Approach) implemented in PSBs and its impact on their financial performance - parameters (CAR, Gross NPA, and Net NPA, NIM and CDR).

H_1: There is a significant relationship between the status of the credit risk approaches (Standardised Approach, Foundation Internal Rating Based Approach and Advanced Internal Rating Based Approach) implemented in PSBs and its impact on their financial performance - parameters (CAR, Gross NPA, and Net NPA, NIM and CDR).

4. Data Analysis and Implementation
The data analysis and interpretation presented in this section is with an ***objective to examine the status of Credit Risk Management practices post Basel II implementation of PSBs*** with the help of descriptive statistics.
**Status of Basel Implementation in India, chart no. 1**
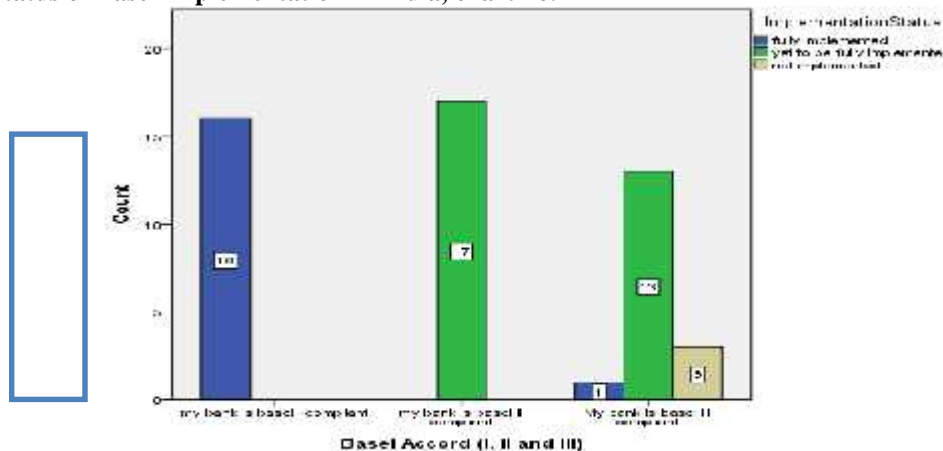
The above clustered chart shows the association between the Basel Accord and its implementation status. The x- axis represents the Basel accord – III&III and the Y-axis shows the count i.e. the number of banks implementation status of Basel accord. The blue colour bar represent the option of fully implementation of Basel-I accord, green bar in the chart represents the status of yet to be fully implemented of Basel-II accord and bar yellow stands for implementation status of Basel Accord –III. The clustered bar chart has been used to compare the implementation status of Basel accord in the Public sector banks. The difference in mean Basel accord and its implementation seems to be very less as observed from the chart.

From the chart it can be seen that clustered bars show the differences in frequencies or percentages among the categories of PSBs. 16 banks i.e. (94.11%) out of the sample population (17 PSBs) said that Basel accord – I is fully implemented in their banks. Subsequently, the whole sample population 17 banks i.e. 100% acknowledged that Basel-II accord is yet to be fully implemented. The reason behind this is there are many approaches involved in Pillar –I, Pillar-II and Pillar-III which need huge infrastructure (system, people, technology up gradation) and database which is a challenging factor for PSBs post Basel accord adoption since 31st March 2008. Further it has been noted that the third clustered bars representing blue, green and yellow indicates that only 1 bank (i.e. 5.88%) account for fully implementation of Basel Accord – III, 13 bank (i.e.76.47%) of the sample population stated that Basel Accord – III is in the process of implementation and yet to be fully implemented. Only 3 banks (i.e. 17.64%) of the sample population stated that they have not initiated implementing Basel accord – III.

From the above description it can be concluded that Basel Accord – I has been completely implemented in the Indian Public Sector Banks (PSBs), whereas from the above analysis the researcher assumes that Basel Accord – II though has been adopted, the advanced approaches in credit risk, operational risk and market risk is yet to be implemented hence the status quo is so. Finally, Basel accord – III has not been initiated by majority of the PSBs where as per the guidelines of the regulatory body, RBI the banks are to implement in phases till the end of 2019.

Status of implementation of various Credit Risk Approaches (Standardised Approach, Foundation Internal Rating Based Approach and Advanced Internal Rating Based) under Basel –II Accord. Chart No.2
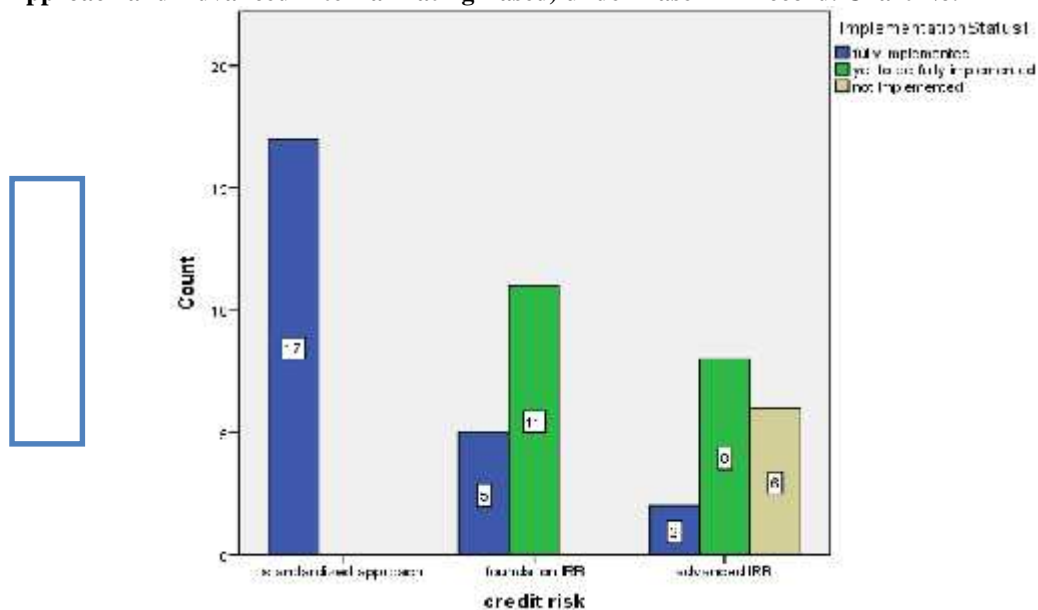
The above clustered bar chart shows the relationship between various approaches of credit risk and its implementation status under Basel accord – II.

The X-axis represents the various approaches of credit risk rating models of the Basel accord – II and the Y-axis shows the count i.e. the number of banks implementing the various approaches of credit risk measurement techniques. The blue colour bar represent the option of fully implementation of approaches of credit risk, green bar in the chart represents the status of yet to be fully implementation of Basel-II accord credit risk approaches and bar yellow stands for implementation status of credit risk measurement approaches under Basel Accord - II. The clustered bar chart has been used to compare the implementation

status of various approaches of credit risk approaches in the PSBs. The difference in mean credit risks various approaches of Basel accord and its implementation seems to be very high as observed from the chart.

From the chart it can be seen that clustered bars show the differences in frequencies or percentages among the categories of PSBs adopting the various approaches to credit risk calculation. 17 banks comprising the whole sample population, (i.e. 100%) stated the implementation of standardized approach of credit risk measurement techniques. It is due to the fact that regulatory body RBI insisted on the PSBs to initiate with the standardized approach mandatorily where the banks use the external credit rating agencies rating for their clients. 5 banks (i.e. 29.41%) of the sample stated that foundation Internal Rating Based approach (F-IRB) of credit risk measurement techniques has been implemented whereas, 11 banks (i.e.64.70%) are yet to fully implement this measurement technique. This shows that majority of the PSBs have initiated in adopting the advanced approaches in order to comply with integrated risk management solutions of the banks. Further, it is observed that 2 banks out of 17 (i.e. 11.76%) have stated their status of implementing the Advanced Internal Rating Based (A-IRB)credit risk measurement techniques and 6 banks (i.e. 35.29%) declared stating that they are yet to be fully implemented in their risk measurement solutions. Finally, it is clearly observed from the clustered bar, that 6 banks (i.e. 35.29%) have yet not initiated the adoption of Advanced Internal Rating Based (A-IRB) credit risk measurement techniques.

Hence, from the above analysis researcher assumes that mean score of the clustered sample in the implementation of Standardized approach of credit risk measurement technique is high. Whereas, Foundation Internal Rating Based approach and Advanced Internal Rating Based approaches of credit risk measurement techniques of the PSBs is scattered. It indicates that 50% of the sample population has migrated to the Foundation Internal Rating Based approach and other 50% are still in the process of migrating towards out of which few banks have yet to initiate the same.

Hypothesis Testing
 I. Status of Basel –II implementation and financial performance parameters
 Ha_0: There is no relationship between status of Basel implementation and financial performance parameters - (CAR, Gross NPA, Net NPA, NIM and CDR)
 Ha_1: There is a significant relationship between status of Basel implementation and CAR, Gross NPA, Net NPA, NIM and CDR
 Purpose: To study if there is a relationship between status of Basel implementation and financial performance parameters of PSBs.
 Statistical test: Multiple Correlation Analysis
 Variable and measurement: The following variables were involved in the correlation analysis. Status of Basel implementation and the financial performance parameters (CAR, Gross NPA, Net NPA to Net Advances, NIM and CDR)

S.No	Parameters	R-Value	P-Value	Result	Analysis
Relationship between the Status of Basel implementation &performance parameters				
1	Status of Basel implementation and CAR	0.336	0.187	Since the P-value > 0.05 the null hypothesis is accepted	weak association between the variables indicating change in the status of Basel implementation has no impact on CAR
2	Status of Basel implementation and Rate of Growth of Gross NPA in %	0.729	0.001	Since the P-value < 0.05 the null hypothesis is rejected	linear association between the variables denoting that change in the Status of Basel implementation has an impact on Rate of growth of Gross NPA
3	Status of Basel implementation and Rate of growth of Net NPA in %	0.547	0.023	Since the P-value < 0.05 the null hypothesis is rejected	Positive correlation between the variables indicating change in the status of Basel implementation has shown a linear impact on the rate of growth of Net NPA

Research Paper
Impact Factor: 3.853
Peer Reviewed, Listed & Indexed

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

| 4 | Status of Basel implementation and Net Interest Margin in % | 0.336 | 0.188 | Since the P-value > 0.05 the null hypothesis is accepted | Weak association between the variables indicating change in the status of Basel implementation has no impact on Net Interest margin |
| 5 | Status of Basel implementation and Credit Deposit Ratio in % | 0.098 | 0.709 | Since the P-value > 0.05 the null hypothesis is accepted | No linear association between the variables denoting that change in the Status of Basel implementation has no impact on Credit Deposit Ratio |

Table No. 1
The above table provides the output from the correlations analysis. The correlation table represents variables; status of Basel implementation, CAR, Gross NPA, Net NPA to net advances, Net Interest Margin and CDR in the rows and columns. The tables provides us the value for Pearson`s r, a Sig. (2-tailed) denoted as P value and a number (N) value.

R, called the Multiple Correlation Coefficient, is a measure of the strength of the association between the independent variables and the dependent variables.A Sig. (2-tailed) denoted as P value tell us if there is a statistically significant correlation between the two variables.

The *Pearson`s r* for the correlation between the status of Basel implementation and Capital Adequacy Ratio (CAR) is 0.336, denoting a weak association between these two variables. This indicates that change in the status of Basel implementation has no linear association with Capital Adequacy Ratio (CAR) maintained by the Public Sector Banks (PSBs). The Sig. (2-tailed) of the Status of Basel implementation and CAR is 0.187.
I.e. $R = 0.336$, $n = 17$, $P = 0.187$. Since $P > 0.05$, the null hypothesis is accepted

The *Pearson`s r* for the correlation between the status of implementation and Gross NPA is 0.398, denoting a weak relationship between these two variables and they do not vary together. *This indicates that change in the status of Basel implementation has a linear association with Gross NPA. The Sig. (2-tailed) of the Status of Basel implementation and rate of growth of Gross NPA is 0.001.*
I.e. $R = 0.729$, $n = 17$, $P = 0.001$, since $P < 0.05$, the null hypothesis is rejected.

The *Pearson`s r* for the correlation between the status of implementation and rate of growth of Net NPA to Net advances is 0.547, denoting a strong relationship between these two variables and they vary together and show statistically significant relationship.. *This indicates that change in the status of Basel implementation has a strong and linear association with rate of growth of Net NPA to net advances. The Sig. (2-tailed) of the Status of Basel implementation and rate of growth of Net NPA to net advances are 0.023.*
I.e. $R = 0.547$, $n = 17$, $P = 0.023$, since the $P < 0.05$, the null hypotheses is rejected.

The *Pearson`s r* for the correlation between the status of implementation and Net Interest Margin is 0.336, denoting a weak relationship between these two variables and they do not vary together. *This indicates that change in the status of Basel implementation has no linear association with NIM. The Sig. (2-tailed) of the Status of Basel implementation and Net Interest Margin (NIM) are 0.188.*
I.e. $R = 0.336$, $n = 17$ $P = 0.188$, since $P > 0.05$, hence the null hypothesis is accepted.

The *Pearson`s r* for the correlation between the status of implementation and Credit deposit ratio (CDR) is 0.098, denoting a weak relationship between these two variables and they do not vary together. *This indicates that change in the status of Basel implementation has no linear association with Credit Deposit Ratio. The Sig. (2-tailed) of the Status of Basel implementation and credit deposit ratio is 0.709.*
I.e. $R = 0.098$ $P = 0.709$, since $P > 0.05$, the null hypothesis is accepted

Research Paper
Impact Factor: 3.853
Peer Reviewed, Listed & Indexed

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

II. Hypothesis testing of Status of various Credit Risk approaches adopted by the PSBs and its impact on its performance parameters

Purpose: To study if there is a relationship between the status of implementation of various Credit risk approaches adoptedby the PSBs and its impact on the financial performance parameters (CAR, Gross NPA, Net NPA to Net Advances, NIM and CDR).

Statistical test: Multiple Correlation Analysis

Variable and measurement: The following variables were involved in the correlation analysis,The Status of the credit risk approaches (Standardised Approach, Foundation Internal Rating Based Approach and Advanced Internal Rating Based Approach) implementation in PSBs and its impact on their financial performance - parameters (CAR, Gross NPA, and Net NPA to Net Advances, NIM and CDR).

Hb$_0$: There is no relationship between the status of the credit risk approaches (Standardised Approach, Foundation Internal Rating Based Approach and Advanced Internal Rating Based Approach) implemented in PSBs and its impact on their financial performance - parameters (CAR, Gross NPA, and Net NPA, NIM and CDR).

Hb$_1$: There is a significant relationship between the status of the credit risk approaches (Standardised Approach, Foundation Internal Rating Based Approach and Advanced Internal Rating Based Approach) implemented in PSBs and its impact on their financial performance - parameters (CAR, Gross NPA, and Net NPA, NIM and CDR).

Relationship between the Status of implementation of Credit Risk approaches and performance parameters					
S.No	Parameters	R-Value	P-Value	Result	Analysis
1	Status of implementation of Credit Risk approaches and CAR	0.204	0.432	Since the P-value > 0.05 the null hypothesis is accepted	weak association between the variables, i.e., change in the status of credit risk approaches adopted by the PSBs has no impact on CAR
2	Status of implementation of Credit Risk approaches and Rate of Growth of Gross NPA	0.744	0.001	Since the P-value < 0.05 the null hypothesis is rejected	denotes a statistically linear relationship between the variables i.e., change in the status of implementation of various credit risk approaches has a linear impact on the rate of growth of Gross NPA
3	Status of implementation of Credit Risk approaches and Rate of Growth of Net NPA	0.730	0.001	Since the P-value < 0.05 the null hypothesis is rejected	Strong association between two variables; indicating that change in the status of implementation of various credit risk approaches has brought an significant impact on the rate of growth of Net NPA
4	Status of implementation of Credit Risk approaches and Net Interest Margin	0.619	0.008	Since the P-value < 0.05 the null hypothesis is rejected	denotes a statistically strong and positive association between the variables; indicates that change in the status of implementation of credit risk approaches adopted by PSBs has increased the status of NIM
5	Status of implementation of Credit Risk approaches and Credit Deposit Ratio	0.333	0.191	Since the P-value > 0.05 the null hypothesis is accepted	denotes a weak association between the two variables. Change in the status of implementation of various credit risk approaches has no impact on CDR

Table No.2

The above table provides the output from the correlations analysis. The correlation table represents variables; status of implementation of credit risk approaches (SA, FIRB & AIRB approaches) and financial performance - parameters (CAR, Gross NPA, and Net NPA to Net Advances, NIM and CDR).

The *Pearson`s r* for the correlation between the status of implementation of credit risk approaches (Standardized approach, Foundation Internal Rating Based approach and Advanced Internal Rating Based approach) and Capital Adequacy Ratio (CAR) is 0.204, denoting a weak association between these two variables. This indicates that change in the status of implementation of various credit risk approaches has no linear association with Capital Adequacy Ratio (CAR) maintained by the Public Sector Banks (PSBs). The Sig. (2-tailed) of the Status of Basel implementation and CAR is 0.432.
I.e. R = 0.204,   n = 17, P = 0.432. Since P > 0.05,   the null hypothesis is accepted.

The *Pearson`s r* for the correlation between the status of implementation of credit risk approaches and rate of growth of Gross NPA is 0.744, denoting a statistically strong relationship between these two variables. Status of implementation of credit risk approaches and Gross NPA moves in linear direction means, as the Public Sector Banks (PSBs) have adopted various credit risk approaches there is significant association with the rate of growth of Gross NPA among the PSBs. This indicates that change in the status of implementation of various credit risk approaches has brought a significant movement in the rate of growth of Gross NPA of the PSBs. The Sig. (2-tailed) of the Status of implementation of credit risk approaches and rate of growth of Gross NPA is 0.001.
I.e. R = 0.744,   n = 17, P = 0.001. Since P > 0.05,   the null hypothesis is accepted.

The *Pearson`s r* for the correlation between the status of implementation of credit risk approaches and rate of growth of Net NPA to Net advances is 0.730 denoting a strong association between these two variables. This indicates that change in the status of implementation of various credit risk approaches has a strong linear association with rate of growth of Net NPA to Net advances of the PSBs. The Sig. (2-tailed) of the Status of Basel implementation and rate of growth of Net NPA to Net advances are 0.001
I.e. R = 0.730,   n = 17, P = 0.001. Since P < 0.05,   the null hypothesis is rejected

The *Pearson`s r* for the correlation between the status of implementation of credit risk approaches and Net Interest Margin is 0.619   denoting a strong linear association between these two variables. This indicates that change in the status of implementation of various credit risk approaches adopted by the Public Sector Banks has increased the status of Net Interest Margin. The Sig. (2-tailed) of the Status of Basel implementation and Net Interest Margin are 0.008.
I.e. R = 0.619,   n = 17, P = 0.008. Since P < 0.05,   the null hypothesis is rejected.

The *Pearson`s r* for the correlation between the status of implementation of credit risk approaches and Credit Deposit Ratio is 0.333 denoting a weak association between these two variables. This indicates that change in the status of implementation of various credit risk approaches has no linear association with Credit Deposit Ratio (CDR) of the PSBs. The Sig. (2-tailed) of the Status of Basel implementation and Credit Deposit Ratio are 0.191.
I.e. R = 0.333,   n = 17, P = 0.191. Since P > 0.05,   the null hypothesis is accepted.

5. Findings and Discussion
With the help of clustered bar charts it was identified that all the sample banks (17) are Basel I & II compliant. 13 banks have initiated migrating towards adopting Basel III norms in a phased manner as prescribed by RBI. The RBI directives specify that the migration to Basel – II was effective from March 31st 2007 and adopt standardised approach for credit risk and the Basic Indicator Approach for the assessment of Operational Risk and shall be complied by March 31st 2009. As per the prescribed guidelines of RBI, PSBs have adopted and implemented accordingly.

The status of Basel I, II & III implementation has shown a significant correlation with Gross NPA and Net NPA. The Basel Accords proposed focused on reducing credit risk, prescribing a minimum capital risk adjusted ratio (CRAR) of 8 % of the risk weighted assets. Whereas RBI raised the minimum regulatory CRAR requirement to 9%, and banks were advised to meet level by March 31, 2009.

Since past few years NPA has become matter of concern for bank authorities and regulators across the country. It is observed from the data analysis that implementation of Basel accord has a significant correlation with the rate of growth of gross NPA and Net NPA.

Adopting the NCAF by RBI intend to manage the asset quality of Indian banking system. The widely accepted credit risk approaches by the PSBs should have controlled the rising NPAs. But the scenario got worsened since the financial crisis of 2008-09. The notion carried in this regard is interest rates prevailing in the market were high and slowing economic activity has impacted viability of project investments. A sharp increase in the gross NPA was registered and economist had the opinion that adoption of Basel II norms would facilitate the banks in controlling the decline trend of the asset quality with the

help of credit risk approaches. The NPA of PSBs were at 4.4% in March 2014 compared with 2.09% in 2008-09, where if we observe the gross NPA increased by almost four times from March 2010 (Rs 59,972 crore) to March 2014 (Rs 2,04,249 crore). *(Economic Times, 2014)*[22].

The PSBs have taken several steps for migrating towards advanced approaches. The banks have introduced asset class wise credit rating models with two dimensional approach obligor and facility rating. As the foundation /advanced credit based approaches demand a robust data management framework and exhaustive integrated risk management where the PSBs have initiated the process vigorously. This status of credit risk approaches shows a significant positive correlation with Gross NPA, Net NPA and NIM in the study.

The increasing trend in the rate of growth NPAs is mainly accounted for by switchover to system-based identification of NPAs by PSBs, i.e. adoption of credit risk approaches as prescribed by NCAF, which needs adequate data management system with a robust credit history of obligors and effective management information and reporting system. The other reasons are slowdown of economic growth, and aggressive lending by these banks during the high economic cycle (boom period). The NIM grew marginally as there was increase in the rate of growth of NPA. In the period under study i.e. 2009-2013, the slowing growth coupled with high interest rates and had multiplied the implications in the operations of the banks.

6. Conclusion
The overall performance of the PSBs has been significantly differed during the study period indicating a highly fluctuating trend. In this paper an attempt has been made to study the status of Basel implementation of PSBs operating in India from the period of 2009-2013. The adoption of various credit risk approaches by PSBs has shown a significant impact on the performance. An attempt has been made to build an association between the qualitative data and quantitative data and also to arrive at a model that can help Indian banks to identify their performance in a better way.

The paper mainly adopts multiple correlations analysis model to build the association between the qualitative and the quantitative parameters and show the impact of Basel implementation on the financial performance of the Indian banks for the period of 5 years from 2009-2013. This kind of simple and state-of-the-art can provide a new standard to assess the impact over the banks performance levels. The study also helps in improving the performance levels by analyzing the factors, options and challenges contributing towards adoption and implementation of advanced credit risk approaches. Adopting and implementing the advanced approaches would benefit the banks and tracing the defaulters thereby reducing their NPAs.

7. Bibliography
1. Abdelrahim, K. E. (2013, May). Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis: Qualitative Study. (A.-1. Transactions, Ed.) *Asian Tansactions on Basic and Applied Sciences, 03*(02).
2. Arora, S. (2012, Jan-Mar). Credit risk Analysis in Inidan Commercial Banks. *Asia Pacific Finance and Accounting Review, 2*.
3. Balthazar, L. (2006). *From Basel 1 to Basel 3.* New York: PALGRAVE MACMILLAN.
4. Banerjee, S. (2012). Basel I and Basel II Complaince : Issues for Banks in India. *Working Paper 68/2012.*
5. Chatrath, S. (2005). Risk Based Pricing:Are India`s Credit Markets Moving Towards This Paradigm? *CRSIL Young Thought Leader.*
6. Choudhary, S. (2012, June). Performance Appraisal of Indian Banking Sector: A Comparative Study of Selected Public andPrivate Sector Banks. *International Journal of Research in Commerce & Management.*
7. Dang, U. (2011). *The CAMEL Rating System in Banking Supervision.* Arcade University of Applied Sciences - International Business.
8. Das, S. G. (2007). Determinants of Crdit Risk in Indian State-woned Banks: An Empirical Investigation. *Munich Personal RePEc Archive, MPRA*(MPRA Paper No. 17301).
9. Datar, S. (2004). Making Indian Banks Base II complaint: Issues and Evidence. *Indian Institute of Banking and Finance.*

---

[22]*Abdelrahim, K. E. (2013, May). Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis: Qualitative Study. (A.-1. Transactions, Ed.) Asian Tansactions on Basic and Applied Sciences, 03(02).*

10. Fredrick, O. (2012). The Impact of Credit Risk Management on Financial Performance of Commercial Banks in Kenya. *DBA Africa Management Review, 3*(1), 22-37.
11. Ghosh, D. G. (2011). Management of Non-Performing Assets in Public Sector Banks: Evidence from India. *International Conference on Management (ICM).*
12. Hai, S. S. (2008). Implementation of Basel II: Challenges and Implications for Developing countries.
13. Hanumantha Rao, N. G. (2013, May). Determinants of Return on Assets of Public Sector. *Pacific Business Review International, 5*(11), 23-28.
14. Hosna, A. M. (2009). *Credit risk Management and Profitability in commercial Banks in Sweden.* Univrsity of Gothenberg, Department of Science and Accounting.
15. (2014, June 9). *http://articles.economictimes.indiatimes.com/2014-07-09/news/51247902_1_npas-psbs-asset-quality.*
16. Kargi, H. S. (2011, July). Credit Risk and the Performance of Nigerian Banks.
17. Kinthinji. (2010, October). Credit Risk Management and Profitability of Commercial Banks in Kenya. *Aibuma*.
18. Kupiec, P. H. (2006). Financial Stability and Basel II.
19. Luy, D. D. (2010). Evaluation of Credit Risk Management Policies and Practices in a Vietnamese Joint Stock Commercial Banks`s Transaction. *Business Economics and Tourism*.
20. Mandira, Y. N. (2007, July). Capital Adequacy Regime in Inida; An overview, Working Paper No. 196. *Indian Council for Researchon International Economic Relations,*.
21. Meera. (2011, July). Adjustments to Capital Adeqaucy Ratios by Indian Banks. *SSRN*.
22. Mendoza, C. S. (2005, April). Credit Measurement Under Basel II: An overview and Implementation Issues for Developing countries.
23. Narayanan, Y. (2012, Aug). Concentration Risk for Banks Rising: Credit Suisse. *Article in The Hindu Business Line*. The Hindu Business Line.
24. Patrick, V. R. (2005, August). Credit Ratings & The Standardised Appraoch to Credit. *Working Paper Series* .
25. Powell, A. a. (2011). Credit Risk Measurement Methodologies. *19th International Congress on Modelling and Simulation.* Perth australia.
26. Samriti, M. a. (2011, Nov). Basel II in India: Compliance and Challenges. *Sage Publications*.
27. Singh, A. (2013, July). Credit risk Management in Inidan Commercial Banks. *International Journal of Marketing, Financial Services & Management Research, 2*(7).
28. Takang, F. A. (2008). Bank Performance and Credit Risk Management. 36.
29. Tetteh, F. L. (2012, June). Evaluation of Credit Risk Management Practices in Ghana Commercial Bank Ltd.
30. Tondon, A. B. (2014, Jan). Credit Risk Analysis-New Horizons in the Indian Banking Sector. *Asian Journal of Research in Banking and Finance, 4*(1), 158-180.
31. V.Leeladhar. (2007). Basel II and Credit Risk Management. Goa: Advance Financial Learning for the wholeitime Directors of the commercial banks.
32. VLeeladhar. (2006). Demystifying Basel II. *"Global Banking: Paradigm Shift".* Mumbai: FICCI-IBA.