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CREDIT RISK MANAGEMENT IN PUBLIC SECTOR BANKS: A SUGGESTED APPROACH

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ABSTRACT

Financial system is the backbone of any economy as it has direct bearing on the economic growth of a country. Banks are the major stakeholder of economic development as banks has a requisite position in handling the savings and its circulation. The effective banking operation is simply based on effective risk management, transparency and accountability. Commercial banks play an indispensible role of intermediaries between the borrowers and the lenders to yield profit and catalyze growth of economy. Credit risk incurves due to borrower's glitch at the time of repayment of loan or to meet any contractual obligations which gives rise to the contingency of incurring loss. Credit risk is the most primeval risk associated with the bank's modus operandi. Financial institutions, should handle the risk through and thorough in order to be long-lived in the highly uncertain world. The future of banking will indubitably place reliance on risk management dynamics. In the long run, the only banks having efficient risk management system will be in the land of living. Credit risk management in banks is important to keep on with the credit risk exposure within proper and acceptable parameters. As banks manage their risk better, they will get advantage to operate banking functions effectively and to increase their performance (return). This paper will try to evaluate the Credit Risk Management (CRM) practices of Indian public sector banks in grant of commercial loans to find the grey areas which need review and restructuring to improve banks' asset quality. For this purpose, capital adequacy ratio (CAR) and non-performing assets (NPAs) has been taken into consideration to measure the efficiency of banks. The CAR and NPAs are credit risk management indicators.

Keywords: *Credit Risk Management (CRM), Banking Performance, Primeval Risk, NPA and CAR.*

Introduction

A bank is a financial entity that performs a variety of functions such as accepting deposits and lending funds. The financial system is considered to be the backbone of any economy since it has a direct and significant impact on the economic growth of a country. Banks are the major stakeholder of economic development as banks has a requisite position in handling the savings and its circulation. Prior to liberalisation, all the bank activities were regulated independently, and so the operational environment was not favourable for risk-taking. Now, banks have evolved from being a financial intermediary to a risk intermediary. Banks face fierce competition and thus, are compelled to deal with a wide range of financial and non-financial risks. Risk is an essential aspect of the banking operations. Credit risk is the oldest and the biggest risk that commercial banks have to undertake by the virtue of nature of business inherited by banks. Credit risk incurves due to borrower's glitch at the time of repayment of loan or to meet any contractual obligations which gives rise to the contingency of incurring loss. The high incidence of the sickness in the businesses and the lengthy and complex procedures for obtaining credit, have led to increasing need to upgrade credit practices and asset quality. One of the top most priorities in the banking industry appears to be to streamline credit sanctioning, systematic risk management and to provide inputs for a bank-wide credit policy and set of procedures. As banks enter a new high-powered world of financial operations and trading, with new risks, the necessity is felt for

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more complex and versatile instruments for risk management by assessing, monitoring and controlling risk exposures. It is, therefore, time that banks' management must equip themselves fully to take into custody, the demand of creating tools and systems that are competent enough to assess, monitor and control risk exposures in a scientific way. Credit risk has become all-pervasive in recent decades. Therefore, banks not only need to manage the credit risk in their credit portfolio but also in any individual credit or transaction. The systematic management of credit risk is a vital component of comprehensive risk management and is very important for the long-term success of the banks. Credit risk management is the practice of minimizing losses by determining the capital adequacy and loan loss reserves of a bank at any given time. Credit risk managers are delegated with the responsibility of making decisions that has a significant impact on the composition and performance of the loans. In the light of the introduction of second-generation reform in banking sector, it is the need of the hour that banks should assess their risk properly; maintain Non-Performing Assets (NPAs) and Capital Adequacy Ratio (CAR) within the limit prescribed by the RBI and Basel Accord. Credit risk management in banks is important to keep on with the credit risk exposure within proper and acceptable parameters. The effective banking operation is simply based on effective risk management, transparency and accountability.

Literature Review

Asima Siddique, Muhammad Asif Khan, Zeeshan Khan (2021) in their work "The Effect of Credit Risk Management and Bank-Specific Factors on the Financial Performance of the South Asian Commercial Banks" indicated that NPLs, CER and LR are negatively related to FP (ROA and ROE), while CAR and ALR are positively related to the FP of the Asian commercial banks. The current study results recommended that policymakers of Asian countries should create a strong financial environment by implementing the monetary policy which stimulates interest rates in such a way that automatically helps to lower down the high ratio of NPLs (tied monitoring system). Liquidity position should be well maintained so that even in a high competition environment, the commercial banks are able to survive in that environment.

Mayank (2021) in the study "A Guide to Credit Risk Management for Indian Banks" suggested that effective credit risk management starts with assessing the borrower's profile and continues till recovery and beyond. Banks must create agile lending processes equipped with relevant rating systems to identify the creditworthiness of the borrowers and charge appropriate interest rates. This will help them cover up any potential loan defaults that may happen in the future. Banks must also allocate enough capital to cover up any major loan losses and remain afloat. Such practices are necessary to reduce higher default probabilities.

Shivaleela Salimath (2021) in the study "Credit Risk Management Practices of Commercial Banks in India an Empirical Study with Special Reference to Select Banks in North Karnataka Region" concludes that most of the commercial banks are concentrating only on reaching targets, but simultaneously very poorly apprising loan application of the customers. In the same way bankers are forgetting, where they are investing the money, it leads to credit risk. Sound practices of credit risk management help to decrease the credit risk and NPA in the banks. By providing quality services with reduced cost, public sector banks are maintaining good relationship with their customers. But private sector banks are providing services with high cost.

Nikhilkumar Shah, Nisarg Shah (2020) in his work "A Credit Risk Management in Public and Private Sector Banks" contemplates that Credit risk incurve due to borrower's failure to repay a loan or meet contractual obligations which creates possibilities of loss. Nonpayment of these loans and advances leads to bank crisis and perform as economic development blockage. These kinds of situation have been faced in past by world economies in term of sub-prime crisis. Thus, credit risk management in banks is important to maintain credit risk exposure within proper and acceptable parameters.

Sundarka, Baibhav P. (2020) the main findings of the study "Empirical Study of Credit Risk Management of Commercial Banks" is Credit Risk Management is becoming buzz word in today's ever dynamic business world. Modern organized Banking Firms are concentrating more on this area as an efficient strategy to gain competitive advantage. Paradigm shift in the field if banking sector has made Credit Risk Management a new frontier to gain competitive advantage. Traditional Banking practices of attracting customer through Customer Assessment and advertisements have become outdated in nature.

Sudip Basu, Dr. Alok Satsangi (2019) in their work "A Study on Credit Risk Management Practices in Indian Banks" opined that Risk is a crucial element of any form of business. Earnings and default risk move in an opposite direction. A business has to confront risk to earn revenue for the survival in competitive business environment. Credit risk is the risk of loss arises from the borrower who failed to pay the loan amount on due date. A proper management of credit risk leads to achieve financial standards as well as ensures success in the long run. The present study encompasses on the credit risk administration strategies of the Indian banks to overcome the default risk.

Dalvi Madhukar & Shelankar Mitali (2018) has measured the Impact of Credit Risk Management on the Financial Performance of selected Public and Private Sector Banks in India. Data for study obtained by taking average of five years figures of financial performance indicator namely Net Profit Margin (NPM) and credit risk management indicators viz. Capital Adequacy Ratio (CAR), Credit Deposit Ratio (CDR). Data has been analyzed by using Regression Model. Researcher conclude that Public sector banks have low credit risk and negative profitability whereas private sector banks have high credit risk and high profitability.

Kumar, Deepak (2018) in his work "Impact of Credit Risk Management on Profitability and Liquidity of Public Sector Banks" concluded that after the banking sector reforms, there had been a shift in the emphasis from development or social banking to commercially viable banking. In this changed scenario, profitability is indicator of the competitive edge of the banking industry. Banks desire to follow good credit risk management policies, practices, strategies or processes as they wish to make profits or create value. To be profitable, liquidity and capital adequacy or solvency is essential.

Research Gap

After getting through a number of studies associated with the subject, it has been figured out that though many researchers have concentrated on various issues connected with the risk management but still there is a considerable scope for the present study. The focal point of many researchers is to make a comparative analysis of Credit Risk Management Practices of selected public sector and private sector banks. None of the studies had made an effort to understand the effectiveness of Credit Risk Management Practices undertaken by Public Sector banks only. Thus, the present study is an important venture for studying, measuring and comparing the effectiveness of credit risk management practices of selected public sector commercial banks in India and offer suggestions on the basis of the findings.

Objectives of the Study

The main objective of the study is to have a bigger picture of credit risk management practices of selected Public sector banks in India. In this broader framework, the following are the specific objectives of the study:

- To study the Credit Risk Management Practices adopted by selected public sector banks.
- To examine the Deposits, Advances, Recovery, Net NPA and CAR to assess the credit efficiency of banks.
- To evaluate the NPA positions of selected banks.
- To identify the areas where there is scope for improvement and offer suggestions on the basis of findings.

Research Methodology

Problem Statement

Credit Risk Management in Public Sector Banks: A Suggested Approach

Research Design

The study is purely based upon empirical research design. Empirical research is a type of research methodology that makes use of verifiable evidence in order to arrive at research outcomes. In other words, this type of research relies solely on evidence obtained through observation or scientific data collection methods.

Sample Profile

The sample size of the study is 3 banks viz; SBI, Canara Bank and PNB. The sampling technique used is probabilistic sampling more specifically the random and the judgmental sampling.

Period of Study

The study has taken into consideration data of selected banks commencing from the year 2011 till 2021.

Sources of Data Collection

The study is based on Secondary sources of information.

Statistical Tools and Techniques

The collected data has been analyzed by using MS-Excel.

Hypotheses of the Study

Hypotheses for the present study are:

H_{01}: There is no significant relationship between Credit Risk Management and Bank's performance.

H_{02}: There is no significant relationship between Net NPA and Recovery of selected banks.

Limitations of the Study

- This research study is time bound and only certain criteria has been taken up for study.
- The study revolves around only 3 public sector banks. Hence, findings may differ for other banks.
- The secondary data has its own limitations.

Data Analysis and Interpretation

The major components of the sample banks in relation to the concerns of problem taken under study are Deposits, Advances, Recovery, Net NPAs and CAR. The in-depth analysis of these components is as follows:

Table 1: Deposits and Advances of Selected Public Sector Banks (in Crores)

	SBI		Canara Bank		PNB	
Year	**Deposits**	**Advances**	**Deposits**	**Advances**	**Deposits**	**Advances**
2011	933,932.81	756,719.45	293,436.64	211,268.29	312,898.73	242,106.67
2012	1,043,647.36	867,578.89	327,053.73	232,489.82	379,588.48	293,774.76
2013	1,202,739.57	1,045,616.55	355,855.99	242,176.62	391,560.06	308,725.21
2014	1,394,408.50	1,209,828.72	420,722.82	301,067.48	451,396.75	349,269.13
2015	1,576,793.25	1,300,026.39	473,840.10	330,035.51	501,378.64	380,534.40
2016	1,730,722.44	1,463,700.42	479,791.56	324,714.82	553,051.13	412,325.80
2017	2,044,751.39	1,571,078.38	495,275.24	342,008.76	621,704.02	419,493.15
2018	2,706,343.29	1,934,880.19	524,771.86	381,702.99	642,226.19	433,734.72
2019	2,911,386.01	2,185,876.92	599,033.27	427,727.27	676,030.14	458,249.20
2020	3,241,620.73	2,325,289.56	625,351.17	432,175.20	703,846.32	471,827.72
2021	3,681,277.08	2,449,497.79	1,010,874.58	639,048.99	1,106,332.47	674,230.08

Source: Compiled from various Annual Reports of selected Banks

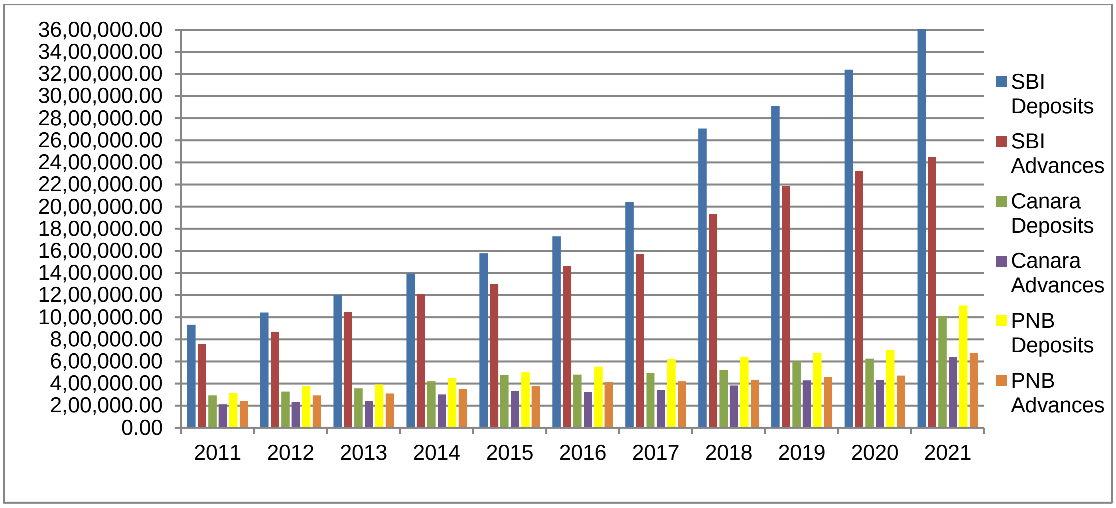
The Deposits and Advances of SBI, Canara Bank and PNB from the year 2011 to 2021 are clearly stated in Table no. 1. There is a significant growth in the deposits received by the banks and the advances made are also in increasing trend for the said banks. Deposits of SBI has been increased from Rs. 933932.81 in the year 2011 to Rs. 1730722.44 in the year 2016 which again surged to Rs. 3681277.08 in 2021 which is approx 294.1% increase from 2011 to 2021. Similarly, deposits of Canara Bank has been lifted up from Rs. 293436.64 in 2011 to Rs. 479,791.56 in *2016 which further jumped up to Rs. 1010874.58 in 2021 i.e. 244.49% approx. increase in deposits from 2011 to 2021 and in case of PNB deposits has been increased from Rs. 312898.733 in 2011 to Rs.* 553,051.13 *in 2016 and thereafter puffed up to Rs. 1106332.47 in 2021 which is showing a boom of 253.57% approx. from the year 2011 -2021.*

So far as the advances of these banks are concerned there is a noticeable increment. Advances of SBI has been augmented from Rs. 756,719.45 in the year 2011 to Rs. 1,463,700.42 in the year 2016 and bloated further up to Rs. 2,449,497.79 in the year 2021 which is approximately 223.69% increase from 2011 to 2021. Likewise, advances of Canara bank has been amplified from Rs. 211,268.29 in 2011 to Rs. 324,714.82 in 2016 and hiked up to Rs. 639,048.99 in 2021 which indicated a progress of 202.48% in advances from 2011 to 2021. Similarly, the advances of PNB has increased from Rs. Rs. 242,106.67 in 2011 to Rs. 412,325.80 in 2016 and jumped up to Rs. 674,230.08 in 2021 that is 178.48% approximate increase in advances from 2011 to 2021.

From the above analysis it has been pointed out that the percentage increase in Deposits of SBI, Canara bank and PNB is 294.1%, 244.49% and 253.57% respectively. At the same time, the percentage increase in advances of SBI, Canara Bank and PNB came out to be 223.69%, 202.48% and 178.48% sequentially.

The percentage increase in advances of the selected banks turn out to be relatively less in proportion to the increase in deposits. Instead of this the proportionate increase in advances should be more than the percentage increase in deposits for a bank to be financially sound.

Chart 1: Deposits and Advances of Selected Public Sector Banks (in Crores)



Graphical Representation of Table 1

The data in Table no.1 has been represented graphically in Chart no.1. The deposits and advances of the selected banks have been shown by different colored bars. The Blue, Green and Yellow colored bars show the deposits of SBI, Canara bank and PNB and the advances has been shown by Brown, Purple and Orange colored bars. The chart clearly shows that the deposits and advances of the said banks are on increasing trajectory. It is worth mentioning here that the deposits and advances of SBI are significantly surmounting the combined deposits and advances of Canara Bank and PNB.

Table 2: Advance to Deposit Ratio (%) of Selected Public Sector Banks

	SBI	CANARA	PNB
2011	81.03%	72.00%	77.38%
2012	83.13%	71.09%	77.39%
2013	86.94%	68.05%	78.84%
2014	86.76%	71.56%	77.38%
2015	82.45%	69.65%	75.90%
2016	84.57%	67.68%	74.55%
2017	76.83%	69.05%	67.47%
2018	71.49%	72.74%	67.54%
2019	75.08%	71.40%	67.79%
2020	71.73%	69.11%	67.04%
2021	66.54%	63.22%	60.94%
Mean	**78.78%**	**69.60%**	**72.02%**

Source: Compiled from various Annual Reports of selected Banks

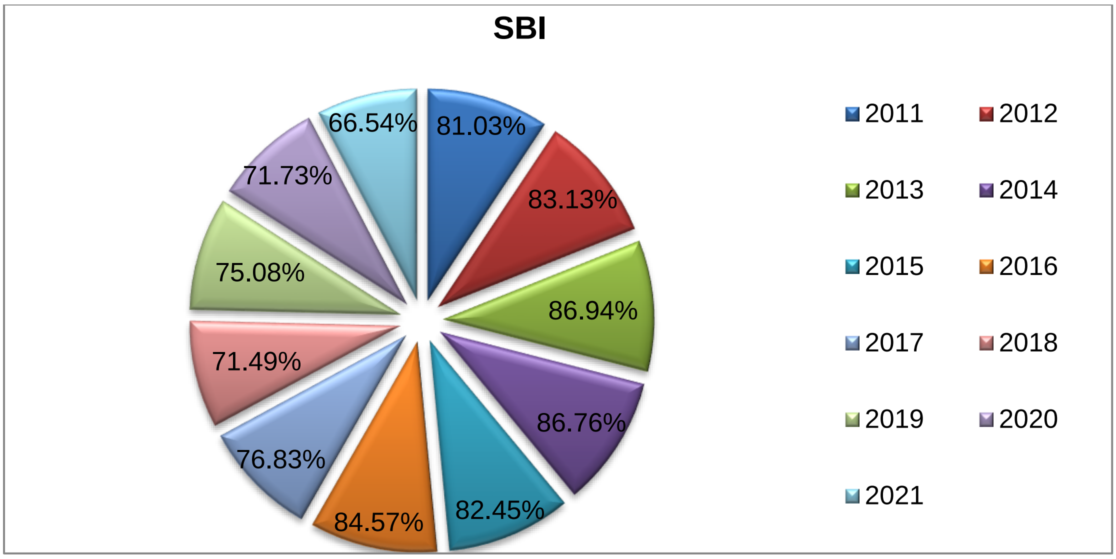
[(Advance/Deposits)*100]

The Advance to Deposit Ratio (%) of the selected banks has been shown in Table no. 2. Advance to Deposit ratio illustrates that proportion of bank's deposit which has been given away in the form of loans. It is evident from the above table that SBI bank has high Advance to Deposit ratio from 2011-2016, it is quite satisfactory in between the year 2017 to 2019 and then showcased a downfall at 66.54% for the year ending March 2021. The Advance to Deposit Ratio for Canara Bank is roughly oscillating between 69% to 70% for 10 consecutive years and thereafter in 2021 it went down to 63.22%. In case of PNB, the Advance to Deposit ratio is above 70% from the year 2011 to 2016. The ratio turned out to be constant in next three years (2017-2019) and within a short period of time, it came down to 60.94% in the year 2021.

The sink in Advance to Deposit Ratio of the selected banks clearly implies that the banks are issuing less loans and advances which is not a good indicator of banks' financial condition as it is fairly evident that the lesser the loans and advances granted by the banks , the lesser will be the interest income earned.

The few reasons due to which banks are not granting sufficient credit or in other words, does not offer higher portion of banks deposits may be insufficient collateral security, economic concern, management team are not being serious on advances issue etc. A precise picture of the advance to deposit ratio of the banks is shown in various segments of Chart no. 2 in the form of pie charts.

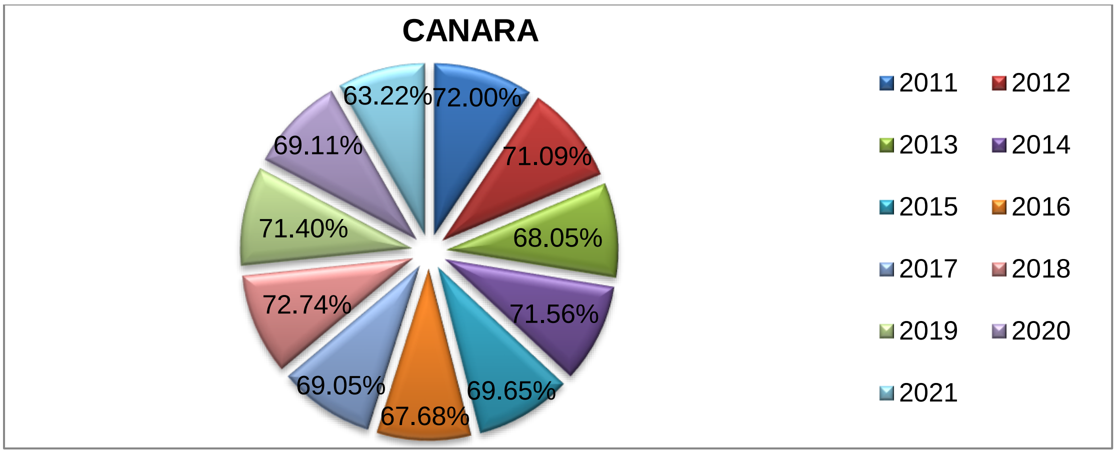
Chart 2(i) : Advance to Deposit Ratio (%) of State Bank of India



Graphical Representation of Table 2

The Advance to Deposit Ratio of SBI is shown in Pie Chart 2(i). In the year 2013 SBI has highest advance to deposit ratio which is 86.94% and this ratio is lowest at 66.54% in the year 2021. The impact of these data has already explained in Table no. 2

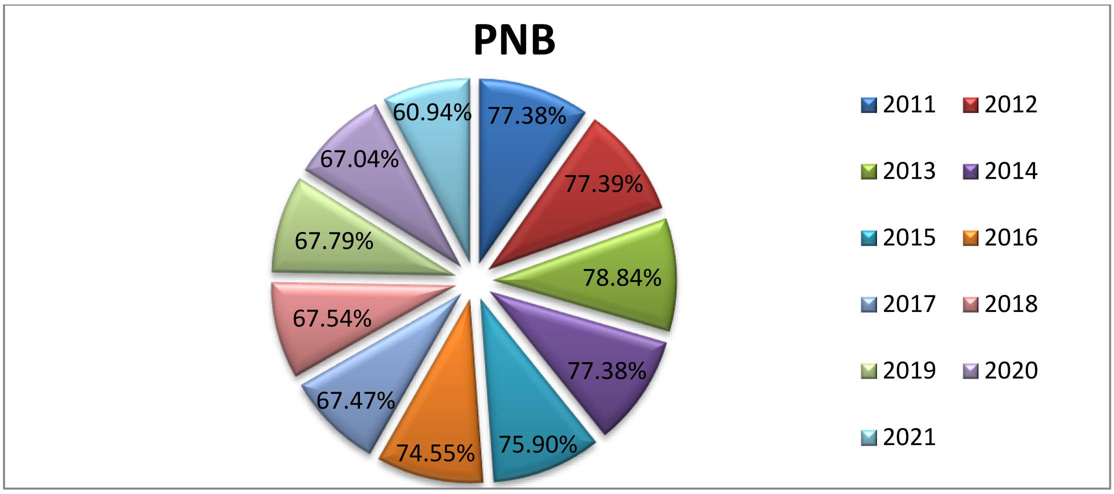
Chart 2(ii): Advance to Deposit Ratio (%) of Canara Bank



Graphical Representation of Table 2

The Advance to Deposit Ratio of Canara Bank is shown in Pie Chart 2(ii). The bank has maximum 72.74% advance to deposit ratio in 2018 and minimum 63.22% ratio in 2021. The impact of these data has already explained in Table no. 2

Chart 2(iii): Advance to Deposit Ratio (%) of Punjab National Bank



Graphical Representation of Table 2

The Advance to Deposit Ratio of PNB is shown in Pie Chart 2(iii). The bank has recorded its highest advance to deposit ratio in the year 2013 which is 78.84% and the lowest ratio in the year 2021 which is 60.94%

For the period under study, the average Advances to Deposit ratio of SBI, Canara bank and PNB is 78.78%, 69.60% and 72.02% respectively.

Table 3: Advances and Recovery of Selected Public Sector Banks (in crores)

	SBI		Canara Bank		PNB	
	Advances	**Recovery**	**Advances**	**Recovery**	**Advances**	**Recovery**
2011	756,719.45	744,372.55	211,268.29	208920.96	242,106.67	240,068.04
2012	867,578.89	851,760.04	232,489.82	229103.51	293,774.76	289,320.53
2013	1,045,616.55	1,023,660.07	242,176.62	236898.55	308,725.21	301,488.71
2014	1,209,828.72	1,178,732.65	301,067.48	295102.02	349,269.13	339,352.14
2015	1,300,026.39	1,272,435.81	330,035.51	321295.42	380,534.40	365,137.90
2016	1,463,700.42	1,407,893.40	324,714.82	303881.91	412,325.80	376,903.24
2017	1,571,078.38	1,512,801.00	342,008.76	320359.78	419,493.15	386,791.05
2018	1,934,880.19	1,824,025.49	381,702.99	353160.59	433,734.72	385,050.43
2019	2,185,876.92	2119982.18	427,727.27	404772.16	458,249.20	428,211.54
2020	2,325,289.56	2,273,418.26	432,175.20	413924.25	471,827.72	444,608.82
2021	2,449,497.79	2,412,688.07	639,048.99	614606.99	674,230.08	635,654.38

Source: Compiled from various Annual Reports of selected banks[Recovery = Advances – NPA]

The Advances and Recovery of the selected banks from the year 2011 - 2021 has been summarized in Table no. 3. There is a considerable escalation in the advances made by the bank between the 2011 and 2021. On the flip side the recovery made by the banks is also mushrooming year after year.

Advances of SBI has been augmented from Rs. 756,719.45 in the year 2011 to Rs. 1,463,700.42 in the year 2016 and bloated further up to Rs. 2,449,497.79 in the year 2021 which is approximately 223.69% increase from 2011 to 2021. Likewise, advances of Canara bank has been amplified from Rs. 211,268.29 in 2011 to Rs. 324,714.82 in 2016 and hiked up to Rs. 639,048.99 in 2021 which indicated a progress of 202.48% in advances from 2011 to 2021. Similarly, the advances of PNB has increased from Rs. Rs. 242,106.67 in 2011 to Rs. 412,325.80 in 2016 and jumped up to Rs. 674,230.08 in 2021 that is 178.48% approximate increase in advances from 2011 to 2021.

At the same time, the recovery of SBI has been increased from Rs. 744,372.55 in the year 2011 *to Rs.* 1,407,893.40 *in the year 2016 which again surged to Rs.* 2,412,688.07 *in 2021 which is approx 224.12% increase from 2011 to 2021. Similarly, recovery made by Canara Bank has been lifted up from Rs.* 208920.96 *in 2011 to Rs.* 303881.91 in *2016 which further jumped up to Rs.* 614606.99 *in 2021 i.e. 194.18% approx. increase in recovery from 2011 to 2021 and in case of PNB recovery amount has been increased from Rs.* 240,068.04 *in 2011 to Rs.* 376,903.24 *in 2016 and thereafter puffed up to Rs.* 635,654.38 *in 2021 which is showing a boom of 164.78% approx. from the year 2011 -2021.*

From the above analysis it has been discovered that the percentage increase in advances of SBI, Canara Bank and PNB came out to be 223.69%, 202.48% and 178.48% respectively from 2011 to 2021*. Synchronously, the percentage increase in recovery made by SBI, Canara bank and PNB is 224.12%, 194.18% and 164.78% sequentially* from the year 2011 to 2021*.*

The percentage increase in advances made by SBI is 223.69% whereas that of Canara bank and PNB is 202.48% and 178.48% respectively which is less in comparison to the advances made by SBI over a decade and clearly exposes irrational lending and deficiencies in evaluation on the part of Canara bank and PNB.

It is quite noticeable that it is only with the SBI bank that the proportionate change in recovery is more than the proportionate change in loan issued which is an indicator of bank's good financial health. In addition to this, the Recovery to Advance ratio of selected banks from the year 2011 to 2021 is put to display in Table no.3.1.

Table 3.1: Recovery to Advance Ratio (%) of Selected Public Sector Banks

	SBI	**Canara Bank**	**PNB**
2011	98.37%	98.89%	99.15%
2012	98.18%	98.54%	98.48%
2013	97.90%	97.82%	97.65%
2014	97.43%	98.02%	97.15%
2015	97.88%	97.35%	95.94%
2016	96.19%	93.58%	91.39%
2017	96.29%	93.67%	92.19%
2018	94.27%	92.52%	88.76%
2019	96.99%	94.63%	93.44%
2020	97.77%	95.78%	94.22%
2021	98.50%	96.18%	94.27%
Mean	**97.25%**	**96.09%**	**94.79%**

Source: Compiled from various Annual Reports of selected banks [(Recovery/Advances)*100]

The Recovery to Advance ratio is the portion of advances which has been duly recovered by banks. A higher recovery to advance ratio is always desirable for the banks on the grounds that the higher the recovery ratio, the lesser will be the risk of NPAs.

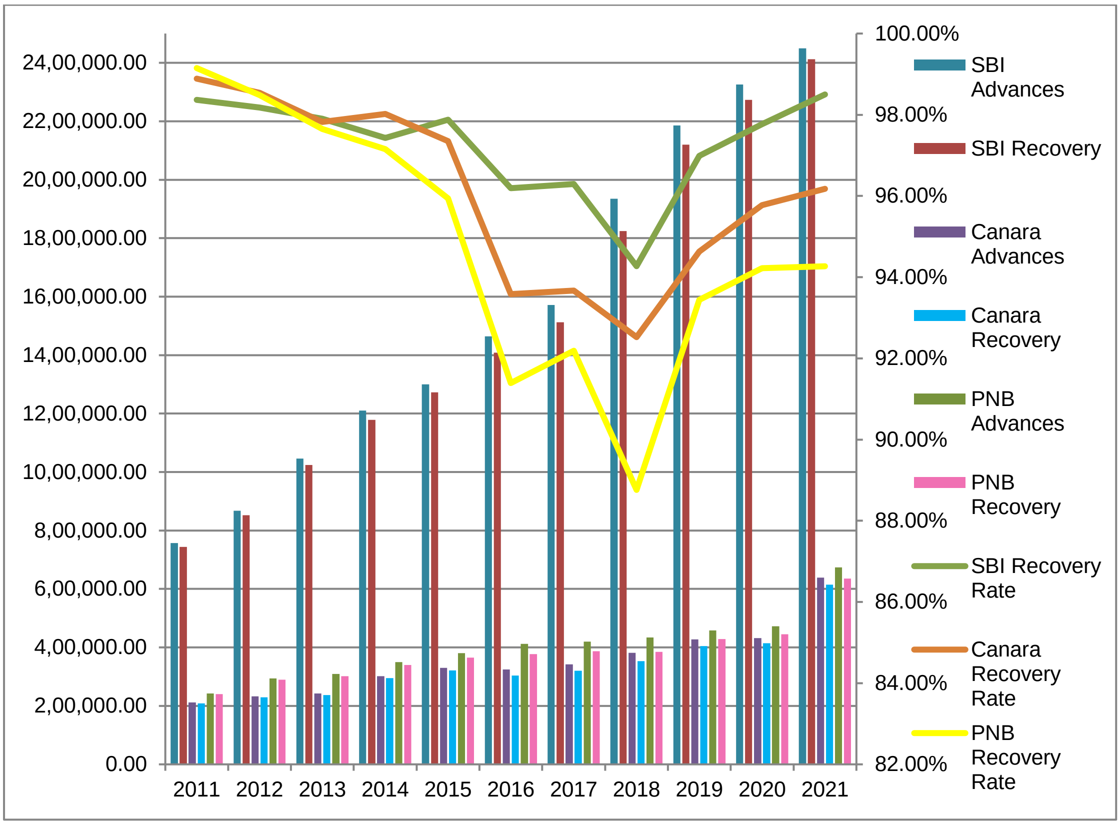
The recovery to advance ratio of SBI is continuously sinking from 98.37% in 2011 to 96.19% in 2016 and further dropped to 94.27% in 2018 thereafter it showed a slight improvement since 2019 and finally settled at 98.50% in 2021.

In case of Canara Bank, the recovery to advance ratio is wavering between 97% and 98% as of 2015 then it slashed to 93.58% in 2016 and further came down to 92.52% in 2018 thereafter it started improving since 2019 and slightly raised up to 96.18% in 2021.

In the context of PNB it has been noticed that the recovery to advance ratio has diminished considerably from 99.15% in 2011 to 91.39% in 2016 which again lowered to 88.76% in 2018. This ratio is gradually getting better all over again from 2019 and moved up to 94.27% in 2021.

It is noteworthy here that in 2018 all the selected banks had seen a crash in advance to recovery ratio which may be due to relaxed lending norms, improper analysis of financial status and credit rating. Besides, this, implementation of GST in India has a significant impact on the banks to such a degree that the operations, transactions, accounting and compliance need to be reconsidered entirely. The above discussion can be made clear by checking out the Chart no. 3 below.

Chart 3: Advances and Recovery of Selected Public Sector Banks



Graphical Representation of Table 3 and 3.1

Advance and Recovery of the selected banks has been illustrated with the help of bars of different colors. The advances of SBI, Canara bank and PNB have sequentially been shown by Dark Blue, Purple and Dark Green colors and the recovery of selected banks have been shown by Brown, Light blue and Pink color respectively. At the same time, the Recovery pattern of SBI, Canara bank and PNB has been depicted in Chart no. 3 with Green, Orange and Yellow lines respectively. Despite the fact that different colored lines are portraying the recovery to advance ratio of different banks, the movement of these lines over the period under study is quite noticeable. All these lines are showing a diminishing trend up to 2016, a slight rise in 2017, touching it minimum point in 2018 and thereafter moving upwards until the end of 2021.

In the year 2011 the yellow line is on the top, orange line is in the middle and then the green line at the bottom which evidently shows that PNB has highest recovery to advance ratio among all the 3 banks. With the passage of time a significant shift can be noticed in these lines. By the end of 2015 and in subsequent years, the green line is on the top, signifying high recovery ratio for SBI bank and yellow line at the bottom indicating a lower recovery to advance ratio for PNB. So far as recovery ratio of canara bank is considered, most of the time for the period under study the orange line is between Green and yellow lines which clearly shows that the recovery to advance ratio of canara bank is better than that of PNB but not from SBI.

Table 4: Net NPA and Net NPA to Advances Ratio of Selected Public Sector Banks

	SBI		Canara Bank		PNB	
	Amount (in crores)	**Ratio (%)**	**Amount (in crores)**	**Ratio (%)**	**Amount (in crores)**	**Ratio (%)**
2011	12,346.90	1.63%	2,347.33	1.11%	2,038.63	0.85%
2012	15,818.85	1.82%	3,386.31	1.46%	4,454.23	1.52%
2013	21,956.48	2.10%	5,278.07	2.18%	7,236.50	2.35%

2014	31,096.07	2.57%	5,965.46	1.98%	9,916.99	2.85%
2015	27,590.58	2.12%	8,740.09	2.65%	15,396.50	4.06%
2016	55,807.02	3.81%	20,832.91	6.42%	35,422.56	8.61%
2017	58,277.38	5.71%	21,648.98	6.33%	32,702.10	7.81%
2018	110,854.70	5.73%	28,542.40	7.48%	48,684.29	11.24%
2019	65,894.74	3.01%	22,955.11	5.37%	30,037.66	6.56%
2020	51,871.30	2.23%	18,250.95	4.22%	27,218.90	5.78%
2021	36,809.72	1.48%	24,442.00	3.82%	38,575.70	5.73%
Mean		**2.76%**		**3.91%**		**5.26%**

Source: Compiled from various Annual Reports of selected banks

Net NPA amount and Net NPA to Advance ratio of the selected banks for the year 2011 to 2021 has been outlined in Table no. 4. NPA is a classification used by banks for loans and advances on which the payment of principal amount or interest remained overdue for a period of 90 days or more. So far as Net NPA to Advance ratio is considered, the lower the ratio, the better it is since lower net NPA ratio is a symptom of higher recovery rate.

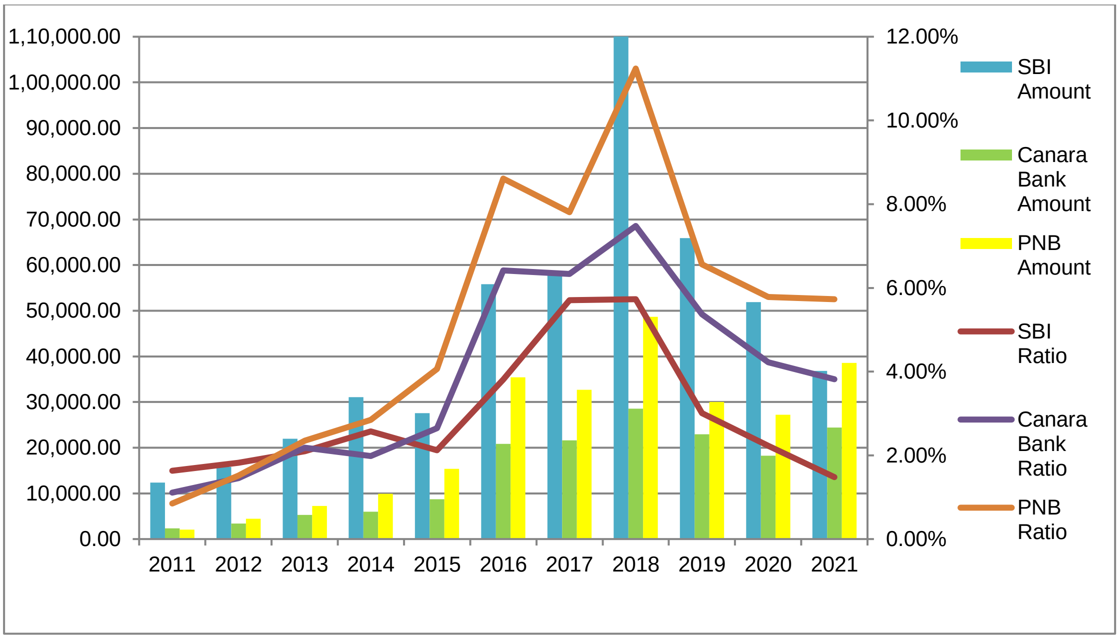
The net NPA to advance ratio of SBI is constantly increasing from 1.63% in 2011 to 3.81% in 2016 and further lifted up to 5.73% in 2018 thereafter it slipped off slightly and settled at 1.48% in 2021.

In case of Canara bank, the net NPA to advance ratio is oscillating between 1% and 2% as of 2015 then it puffed up to 7.48% in 2018 and subsequently it started improving since 2019 and plunged down to 3.82% in 2021.

In the context of PNB it has been noticed that the net NPA to advance ratio has ramped from 0.85% in 2011 to 8.61% in 2016 which further hiked up to 11.24% in 2018. The ratio is getting a little better from the year 2019 and dropped to 5.73% for the year 2021.

The net NPA to advance ratio of SBI, Canara bank and PNB is 5.73%, 7.48% and 11.24% for the year ending 2018 which is the highest among the 10 years taken into consideration. The significant reasons for emergence NPA in Indian public sector banks can be absence of structured monitoring mechanisms, intentional misuse of settlement policy of RBI, defaulter friendly legal system, improper discharge of duties, delay in disbursement, lack of proper payment culture, improper networking, to name a few. The above discussion can be better understood by looking carefully at the Chart 4.

Chart 4: Net NPA and Net NPA (%) to Advances Ratio of Selected Public Sector Banks



Graphical Representation of Table 4

Net NPA of SBI, Canara bank and PNB have been illustrated by Blue, Green and Yellow colored bars respectively. Simultaneously, the net NPA to advance ratio of SBI, Canara bank and PNB have been depicted by Brown, Purple and Orange lines respectively. There is a significant movement in these lines during the time interval under study. Initially, for the period between 2011 -2017, the NPA lines are increasing more or less at an Increasing rate, reaching its maximum for the year ending 2017 and 2018 and hereafter from 2019 onwards these lines are diminishing at an increasing rate. In the year 2011 the orange line is at the bottom, purple line in the middle and then the brown line on the top which evidently shows that PNB has the lowest net NPA to advances ratio among all the 3 banks. In subsequent years a significant movement can be noticed and by the end of 2015 and in the years thereafter, the orange line is on the top revealing a high net NPA to advance ratio for PNB, and brown line at the bottom indicating low-level of net NPA to advance ratio for SBI. So far as net NPA ratio of Canara bank is taken into consideration, most of the time for the period under study the purple line is in between Orange and Brown lines signaling that net NPA ratio of canara bank is better than that of PNB but not from SBI.

Table 5: Capital Adequacy Ratio (CAR) of Selected Public Sector Banks

	SBI	**Canara Bank**	**PNB**
2011	11.98%	15.38%	12.42%
2012	13.86%	13.76%	12.63%
2013	12.92%	12.40%	12.72%
2014	12.94%	10.63%	11.52%
2015	12.00%	10.56%	12.21%
2016	13.12%	11.08%	11.28%
2017	13.11%	12.86%	11.66%
2018	12.60%	13.22%	9.20%
2019	12.72%	11.90%	9.73%
2020	13.13%	13.65%	14.14%
2021	13.74%	13.18%	14.32%
Mean	**12.92%**	**12.60%**	**11.98%**

Source: Compiled from various Annual Reports of selected banks

The CAR of selected banks has been summarized in Table no. 5. Capital Adequacy Ratio (CAR) is the ratio of a bank's capital in relation to its risk weighted assets and current liabilities. It is decided by central banks and bank regulators to prevent commercial banks from taking excess leverage and becoming insolvent in the process. As per RBI norms, Indian scheduled commercial banks are required to maintain a CAR of 9% while Indian public sector banks are emphasized to maintain a CAR of 12%. Generally, a bank with a high capital adequacy ratio is considered safe and likely to meet its financial obligations.

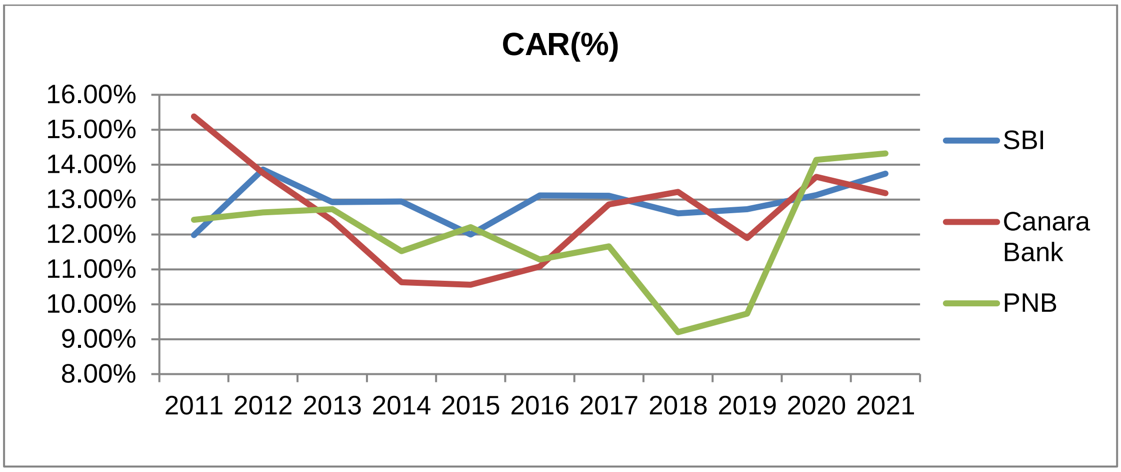
The CAR of SBI is roughly moving up and down between12% and 13% for the period under study. The CAR increased from 11.98% in 2011 to 13.12% in 2016 and further lifted up to 13.74% in 2021.

In case of Canara bank, for the first five years under study there has been a steady decline in CAR as it dropped from 15.38% in 2011 to 10.56% in 2015. For the next three years CAR got a little better and sequentially recorded at 11.08%, 12.86% and 13.22% for the year 2017, 2018 and 2019. The CAR once again slipped to 11.90% in 2020 and thereafter showed a slight improvement and finally settled at 13.18% for the year ending 2021.

So far as PNB is considered, CAR of the bank is persistently moving up and down from the year 2011 to 2017. The CAR for the year ending 2018 is 9.20% which is the minimum recorded CAR of the bank for the period under study. The ratio gradually started getting better all over again from 2019 and recorded a significant growth at 14.32% for the financial year ending 2021.

The above discussion can be understood to a great degree with the help of Chart 5.

Chart 5: Capital Adequacy Ratio (CAR) of Selected Public Sector Banks



Graphical Representation of Table 5

The Capital Adequacy Ratio (CAR) of SBI, Canara bank and PNB have been shown by Blue, Red and Green color lines respectively. These trend lines clearly depict the shifts and fluctuations in the CAR of the said banks.

The average Capital Adequacy Ratio of SBI, Canara bank and PNB for the period under study is 12.92%, 12.60% and 11.98% respectively.

Hypotheses Testing

H_0: There is no significant relationship between Credit Risk Management and Bank's performance.

It has been observed that the CAR for selected banks are- SBI (Mean = 12.92 %), Canara bank (Mean = 12.60%) and PNB (Mean = 11.98%) and on the flip side the net NPA ratios sequentially are SBI (Mean = 2.76%), Canara bank (Mean = 3.91%) and PNB (Mean = 5.26%). This is a clear indication that the selected banks are maintaining adequate CAR and the Net NPA are also within the considerable range for the period under study. Thus, banks are in better financial position. Hence, *null hypothesis (H_0) is rejected* and it has been established that there is a significant relationship b/w CRM and bank's performance.

H_0: There is no significant relationship between Net NPA and Recovery of selected banks.

The Pearson Coefficient of correlation (r) for the sampled banks are SBI (r = **-**0.9242), Canara bank (r = **-** 0.9999) and PNB (r = **-** 0.9999). It has been observed that there is a high degree of negative correlation between the recovery ratio and net NPA ratio of the selected banks. Hence, *null hypothesis (H_0) is rejected* and it has been established that there is a significant relationship b/w net NPA and recovery pattern of selected banks.

Findings and Suggestions

Findings

The Advance to Deposits ratio of SBI (Mean= 78.78%), Canara bank (Mean= 69.60%) and PNB (Mean = 72.02%) clearly implies that the banks are issuing less loans and thereby earning less interest income.

The Recovery to Advances ratio of SBI (Mean = 97.25%), Canara bank (Mean = 96.90%) and PNB (Mean = 94.79%) which purports that the selected banks are in a position to manage their credit effectively. It is noticeable here that the recovery rate of PNB is less than that of SBI and Canara bank.

The net Non-Performing Asset (NPA) ratio of SBI (Mean = 2.76%), Canara bank (Mean = 3.91%) and PNB (Mean = 5.26%) gives a clear indication that NPA level of SBI and Canara bank is quite satisfactory where it quite alarming in case of PNB.

The Capital Adequacy Ratio (CAR) of SBI (Mean = 12.92%), Canara bank (Mean = 12.60%) and PNB (Mean = 11.98%) is an indication that the banks have enough capital in reserve to handle a certain amount of losses before being at risk of becoming insolvent.

Suggestions

- Before granting loans, the bank management must consult with the specialized credit rating agencies to determine the creditworthiness of potential borrowers.
- The banks should conduct comprehensive pre-approval checks along with the post-approval control, monitoring and management.
- The banks should strive to keep their Non-Performing Assets (NPAs) as low as possible in order to improve the asset quality.
- RBI should endeavor to raise the mandated capital adequacy criteria in order to boost the risk-taking ability of public sector banks.
- Loan recovery camps should be held by the banks within a specific time-frame.
- Credit staff should be given regular training in areas such as credit appraisal, risk management, and financial analysis, as knowledge and technology in these areas are rapidly evolving.

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