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An Analysis of Non-Performing Assets andits Impact on the Profitability of Public and Private Sector Banks

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ABSTRACT:
The banking sector is one of the well-structured sector in the Indian economy. It is not only in India but also in the entire world. The imagination of this modern world is not possible without the banking services, so proper care should be taken by the regulators and managementto protect the banking sectors from the various risk and threats. Indian banks are passing from three bigger risks i.e. Credit Risk, Interest rate Risk, and Risk of Default. These risks are lead to increasing in Non-performing assets of the banks. Non-performing assets are the credit facility in respect of which the interest and/ or installment of principal has remained 'past due' for a specified period (90 Days). The purpose of the study is to examine the non-performing assets,profitability, and impact of NPAs on the profitability of Public and Private Sector banks in India.In part one, part researchersstudiedGross NPAs to advances ratio, Net NPAs to advances ratio, and credit to deposit ratio, which indicates the level of NPAs in the bank. In the second part Net profit ratio, return on assets ratio (ROA), return on equity ratio (ROE) andnet interest margin (NIM) have been analyzed across the Public sector and Private sector banks during the study period. How NPAs affected the profitability. Authors have gathered all relevant data from a secondary data sources, like RBI database, banks published report, journals and other for the period of the financial year 2004-05 to 2018-19. It found that there was asignificant difference in the NPA ratios among the group of Public and Private sector banks. From the regression analysis, it inferred that there would be an impact of non-performing assets on the profitability of banks. In recent days banks are going in a way of managing non-performing assets by using different models and techniques to allow credit to individuals, commercial and industrial loans.

KEYWORDS:*Non-Performing Assets, Credit to Deposit ratio,Net profit ratio, Net interest Margin, Non-interest Income to total Income Ratio, Public & Private Sector Banks.*

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I. INTRODUCTION

Banking Sector is one of the most regulatedsectors in the world, and the rules and regulations on bank capital are one of the important aspects of such regulation. This importance results from the important role that banks play in financial intermarries, the importance of bank capital for bank soundness, and the efforts of the international community to adopt common bank capital standards.The historical perspective of the banking sector is concerned, banking in India started during the 18th century. The Bank of Hindustan was the First bank was started in1770, later on, it was liquidated in 1829-32; and the General Bank of India, established in 1786 but failed in 1791. There was a made tremendous progress in the banking sector after 1991, to provide varieties of products and services to the customers.

There different categories of banks were permitted by the Reserve bank of India to operate in India, which classified as a a) Scheduled Banks and b) Non-scheduled banks. Scheduled banks are all Nationalized Banks, State Banks and Its Associates, Private Sector Banks, Regional Rural Banks, and Foreign Banks, While Non-Scheduled Banks are Non Comes under the second Scheduled of the Reserve Bank of India Act-1934.

The bigger challenge is facing by the banking sector is the non-performing assets. Day by day it's going increase from many years. There are varieties of reasons for that, but it was very hard to take strict action on them. Here researcher has described what reasons for Non-performing assets are and how to manage it.

Indian Banking System

The banking sector is one of the most growing and large sectors of the economy. It is difficult to imagine a healthy corporate world without a well-structured banking system. Today the banking is not limited to accept deposit and lend it to others, but it works as an advisor for customers and Clients for their financial planning and investment.

As of December 2020, the Indian banking sector consists of following scheduled banks 12public sector banks, 41 private banks (including Local Area banks, Small finance banks & Payment banks), 44 foreign banks, 43 regional rural banks, 23 scheduled state co-operatives, 53 urban cooperative banks. In addition to that many non-scheduled and rural-operative operating in India.

About Non-performing Assets (NPA)

A non-performing assets (NPA) is a credit facility in respect of which the interest and/ or installment of principal has remained past due for a specified period.

II. LITERATURE

Biplab Kumar Dey (2013) have studied comparative analysis of nonperforming assets of selected public and private sector banks in India and its effect on profitability. They found that there was a significant difference in net NPAs and gross NPAs ratio of sixteen banks. Finally, the study concludes that NPAs has a significant impact on banking profitability. **Prof. Arvind Kumar and UsmanGhani (2015)**haveattempted to analyze the trend of the NPA of the schedule commercial banks in the recent decade. The results of the study indicate that there was a diminishing trend in the ratios of non-performing assets as GNPAs and NNPAs. There was a high degree of negative correlation between NPA Ratios with ROA. **Dr. S. Sivakumar(2018)** did a study on NPAs, its magnitude, classification, the impact on priority sector &non-priority sector lending, the impact of NPA on profit. It was found that there were reducing NPAs on year on year basis and Bankalso performed well in controlling NPAs in the early years of the decade and increase the provision to avoid net NPA and to avoid risk. There has been zero NPA been reported in the last eight years.**Bezawada Brahmaiah, Ranajee(2018)** have examines the factors influencing the profitability of Indian commercial banks. Study found that various internal and external factors like credit risk, cost of funds, non-performing assets ratio and consumer price index were affecting profitability of banks and other variables bank size and ratio of priority loans to total loans do not have any impact on the profitability.**Dhananjay Bapat (2017)**studiedhow various factors (Bank specific factors, banking industry factors and macroeconomic) affects the profitability of banks in India. Result indicate that bank specific factors, non-performing loans and cost to income ratio negatively related to the profitability of banks. **Nilesh P. Movalia and Prof.(Dr.) Viralkumar M. Shilu(2019)**made attempts to study Non-performing assets and recovery management by Public, Private and Foreign banks. It has been found that there was Increase in NPA to advances ratio and significance difference in NPA toadvances ratio among the three classes of banks.

OBJECTIVES OF THE STUDY:

1. To know the non-performing assets of Public & Private Banks.
2. To know the relation between non-performing assets and profitability of the Banks.

III. METHODOLOGY

A research Methodology is a processthrough which the study was conducted. Whichincludes the design and structure of the study, datacollection, analysis, and testing of hypothesis to conclude. This study is on Non-performing assets and its impact on the Profitability of Public and Private sector banks. A descriptive research designhas been used to carry out the study. The authors have used secondary sources of data for testing the hypothesis and analysis. Data collected from various sources like published reports and websites of RBI during 2006-07 to 2016-17. Here ANOVA, Regression, andt-test applied to know the mean difference between the non-performing assets and its impact on Profitability between Public sector and Private Sector Banks at 5% Level of Significance.

Measures:

In this study, authors have studied various financial ratios of Public and Private sector banks for the period of the financial year 2004-05 to 2018-19. Which includes Net Profit ratio, return on assets ratio, return on equity ratios, Net Interest Margin ratio, and non-Interest income to other income ratios, and Non-performing assets toadvances ratio NPAs. Here study was carried out on the public sector (including SBI and Its associate banks and IDBI Bank) and Private Sector Banks (including IDBI Bank) operating in India during the study period. Looking at the first variable is non-performing assets;it is the biggest issue that the Indian banking sector facing today.

IV. DATA ANALYSIS AND INTERPRETATION

Data analysis and interpretation is the heart of the study, which says a clear picture of the results of the study. Therefore, by analyzing data based on the table no significant difference in return. Profitability ratio and non-performing assets ratios have been studied to conclude the study.

Table 1 Financial Ratios of Public Sector Banks

	Profitability Ratios					Credit and NPAs Ratios		
	1	2	3	4	5	6	7	8
Year	Net Profit Ratio (%)	Net Interest Margin (%)	The ratio of non-Interest Income to total income (%)	Return on Assets (%)	Return on Equity (%)	Credit to Deposit Ratio (%)	Gross NPAs / Total Advances (%)	Net NPAs/ Total Advances (%)
2005	10.67	2.91	16.74	0.87	15.45	59.46	5.67	1.98
2006	10.35	2.85	13.71	0.82	14.38	68.18	3.74	1.32
2007	10.73	2.55	12.61	0.83	14.86	72.22	2.71	1.06
2008	10.82	2.12	13.34	0.88	15.21	73.25	2.25	0.99
2009	10.89	2.11	13.46	0.91	16.50	72.58	1.99	0.94
2010	11.06	2.12	13.78	0.88	16.29	73.16	2.22	1.10
2011	10.84	2.55	11.58	0.85	15.47	75.57	2.26	1.09
2012	9.25	2.59	9.42	0.82	13.93	77.51	3.04	1.53
2013	8.27	2.40	9.28	0.73	12.38	77.85	3.69	2.01
2014	5.40	2.30	9.50	0.46	7.95	77.42	4.47	2.56
2015	4.99	2.25	10.06	0.43	7.47	76.12	5.09	2.92
2016	-2.33	2.17	10.60	-0.20	-3.37	74.72	9.65	5.73
2017	-1.43	2.06	14.33	-0.12	-1.97	68.81	12.32	6.89
2018	-11.01	2.04	14.81	-0.85	-14.49	68.96	15.72	7.98
2019	-8.59	2.27	12.12	-0.66	-11.15	69.83	12.48	4.81

Source: Ratios were computed by Authors based on the data available at "https://dbie.rbi.org.in/DBIE/dbie.rbi?site=publications"
STRBI_Table_No._02___Earnings_and_Expenses_of_Scheduled_Commercial_Banks
STRBI_Table_No._01__Liabilities_and_Assets_of_Scheduled_Commercial_Banks

Table 2 Financial Ratios of Private Sector Banks

	Profitability Ratios					Credit and NPAs Ratios		
	1	2	3	4	5	6	7	8
Year	Net Profit Ratio (%)	Net Interest Margin (%)	The ratio of non-Interest Income to total income (%)	Return on Assets (%)	Return on Equity (%)	Credit to Deposit Ratio (%)	Gross NPAs/ Total Advances (%)	Net NPAs/ Total Advances (%)
2005	10.83	2.34	19.51	0.83	11.50	70.34	3.97	1.90
2006	11.48	2.40	18.68	0.87	11.35	73.04	2.50	1.01
2007	10.45	2.24	19.90	0.87	12.81	75.14	2.23	0.97
2008	10.82	2.39	19.33	1.01	10.42	76.80	2.51	1.09
2009	10.56	2.74	17.35	1.06	10.90	78.13	2.94	1.29
2010	12.70	2.75	19.78	1.14	10.93	76.86	2.79	1.03
2011	15.06	2.83	17.75	1.27	12.78	79.53	2.29	0.56
2012	14.23	2.82	15.69	1.34	14.26	82.28	1.94	0.46
2013	14.77	2.98	15.18	1.46	15.03	81.90	1.84	0.52
2014	15.03	3.11	15.79	1.49	15.12	84.37	1.83	0.66
2015	15.13	3.15	16.35	1.49	14.39	86.36	2.15	0.89
2016	13.88	3.12	16.68	1.31	12.55	90.30	2.90	1.38

2017	12.32	3.17	18.52	1.17	11.05	86.53	4.20	2.15
2018	11.23	3.05	17.96	0.97	9.42	88.36	4.86	2.42
2019	5.91	3.07	15.72	0.52	5.03	88.26	5.52	2.02

Source: Ratios(if not given)were computed by Authors based on the data available at "https://dbie.rbi.org.in/DBIE/dbie.rbi?site=publications" STRBI_Table_No._02___Earnings_and_Expenses_of_Scheduled_Commercial_Banks STRBI_Table_No._01__Liabilities_and_Assets_of_Scheduled_Commercial_Banks

Above Table-1 and Table-2 shows financial ratios of Public and Private sector banks respectively. Looking to those ratios following interpretation inferred.

Part-1 Non-Performing Assets Measures:

1. Gross NPA Ratio:

Gross NPA is the amount outstanding in the borrower account, in books of the bank other than the interest, which had recorded and not debited, to the borrower account.

The Gross NPA ratio is the ratio of NPA (Gross) Divided by the advances. The borrower has not repaid which measures how much advances (loans) so banks can take further action.

H_{01}: There is no significant difference in Gross NPAs to Advances ratio among the public and private sector banks

Table-3 ANOVA (Gross NPA to Advances Ratio)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	4640.302	61	76.07053	3.052172	0.00	1.337606
Within Groups	15427.59	619	24.9234			
Total	**20067.89**	**680**				

Table -3 shows that the significance value is 0.00 which is less than the 0.0.5 so the null hypothesis is failed to accepted hence alternate hypothesis accepted and we can say that there would be a significant difference in the gross NPA to advances ratio among the public and private sector banks(Dey, B. K. 2013)(Movalia N. P., Shilu V. M. 2019).

2. Net NPA Ratio:

Net NPA is Gross NPA - (Balance in Interest Suspense account + DICGC/ECGC claims received and held pending adjustment + Part-payment received and kept in suspense account + Total provisions held).

Net NPA ratio is the ratio of NPA (Net) Divided by the advances. The borrower has not repaid which measures how much advances (loans) so banks can take further action (Collection and recovery).

H_{02}: There is no significant difference in Net NPAs to Advances ratio among the public and private sector banks

Table-4 ANOVA (Net NPA to Advances Ratio)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	1094.074	61	17.93564	2.963738	0.00	1.337606
Within Groups	3745.999	619	6.051695			
Total	4840.074	680				

Table -4 of ANOVA tells that the P-value is 0.00 which is less than the 0.0.5 so the null hypothesis is failed to accepted hence alternate hypothesis accepted and we can say that there would be a significant difference in the Net NPA to advances ratio among the public and private sector banks(Dey, B. K. 2013)(Movalia N. P., Shilu V. M. 2019).

Credit to Deposit Ratio[1]:

The credit to deposit ratio is the ratio of total advances (loans) to total deposit (Demand Deposit + Time Deposit). Which measures how many portions of the deposits have been lend to the other borrower so that bank can able to generate an additional return on that deposit. If the deposit remains unused then the bank has to bear the cost interest they eventually have to pay to the depositors.

[1]https://m.rbi.org.in/Scripts/PublicationsView.aspx?id=17618

Part-2 Profitability Indicators:

1. Net Profit Ratio:

Net Profit Ratio is a ratio of net profit divided by the total revenues. Which helps to identify how many rupees earned will remain with the bank for the other use like distributed as dividend among the shareholders or further expansion of the banks. Table-1 shows a significant decrease in net profit YOY of public sector banks after 2011 and in the year 2018, it reaches in double-digit Net loss, which is not good for the banks in long run. Looking at the data of private sector banks, they have quit managed the net profit ratio (Table-2) though it is reducing year-on-year basis but at a lower rate during this period.

H_{03}: There is no significant difference in net profit among the public and private sector banks

Table-5 ANOVA(Net Profit Ratio)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	67175.08	61	1101.231	6.647021	0.00	1.337606
Within Groups	102551.5	619	165.6728			
Total	169726.6	680				

Table-5 shows that the p-value is 0.00 at a 5% level of significance therefore null hypothesis is failed to accept hence there would be a significant difference in net profit among the public and private sector banks.

2. Return on Assets:

Return on assets is the ratio of how many rupees earned on assets in percentage term. It also measures the efficiency of banks to utilize its assets. It is determined by Net profit divided by total assets. Looking to describe the return on assets ratio of public sector banks in the Table-1. This ratio is below one and in later years, it went to negative like a net profit ratio. ROA of private sector banks looks stable around 0.8% to 1.5% (Table-2).

H_{04}: There is no significance difference in return on assets among the public and private sector banks

Table-6 ANOVA (Return on Assets)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	401.99	61	6.589999	6.871211	0.00	1.337606
Within Groups	593.6668	619	0.959074			
Total	995.6567	680				

Looking to the Table-6 of ANOVA. P-value is 0.00, which is less than the 0.05 so the null hypothesis is rejected hence there would be a significant difference in the return on assets ratio among the public and private sector banks.

3. Return on Equity:

This ratio measures the profit generated on equity capital of the bank in percentage term. This ratio helps shareholders for the decision of staying with the banks and further investment in the bank. Public sector banks managed a double-digit ratio of return on equity until 2013, but after that, it rapidly went down and then negative. Which seems to have some serious problems with the banks. See the ROE of private sector banks it is too good in double-digit until 2017 and fall below 10% in 2018 and 2019. So overall after 2018 banking sector as a whole facing some common issues which lead to affect their profitability.

H_{05}: There is no significant difference in return on equity among the public and private sector banks

Table-7 ANOVA (Return on Equity)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	76997.56	61	1262.255	4.494667	0.00	1.337606
Within Groups	173836.2	619	280.8339			
Total	250833.8	680				

Table-7 indicated that the significance value (P-value) is 0.00, which is, less than the 0.05 therefore alternate hypothesis is fail to reject hence we can say that there is a significant difference in the return on equity ratio among the public and private sector banks.

4. Net Interest Margin:

The net interest margin is the ratio of net interest income to total assets. Which measures how much interest earned on the total assets of the bank. Looking at the above tables, NIM of the public sector is raging between 2% to 2.9% during the period. Looking to the private sector banks, NIM is 2.34% to 3.17% which quite better. They maintained this above the other industry players, which helps in sustainable growth in the future.

H_{06}: There is no significance difference in Net Interest Margin among the public and private sector banks

Table-8 ANOVA (Net Interest Margin)

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	506.2131	61	8.298575	38.53391	0.00	1.337606
Within Groups	133.3064	619	0.215358			
Total	639.5195	680				

Here p-value is 0.00(Given in Table-8) is below 0.05 so the null hypothesis is rejected hence alternate hypothesis is accepted and we conclude that there would be a significant difference in the net interest margin among the public and private sector banks.

5. Non-interest Income to other Income ratios:

In common, term non-interest incomes are the income other than interest income for example annual fee, late fee, servicing fees, etc. charge by the bank. Higher non-interest income will help the banks to divert the risk income. Public sector banks earned around 9% to 16.74%during the study period. Except for a few year, this ratio was in double-digit. Private sector banks have earned 15.8% to 19.18% of the non-interest income of total income, which is significantly good. In case of any loans become bad that time non-interest income helps banks to maintain the smooth flow of operation.

H_{07}: There is no significance impact of NPA to advances ratio on Net Profit Ratio of public and private sector banks

Table-9 Coefficient Correlations

	NPM	*NPA*	*NIM*	Non-interest income ratio
NPM	1.0			
NPA	-0.628	1.0		
NIM	0.214	-0.463	1.0	
Non-interest income ratio	0.466	-0.483	0.442	1.0

Table-10 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	12.334	7.877		1.566	0.123		
	NPA	-6.687	1.348	-0.581	-4.960	0.000	0.689	1.451
	NIM	-1.870	1.254	-0.171	-1.492	0.141	0.724	1.382
	Non-interest income ratio	10.909	4.851	0.261	2.249	0.028	0.705	1.418

a. Dependent Variable: NPM

Table-9 shows that the coefficient of correlations between the net profit ratio and non-performing assets ratio is -0.628 hence there was a negative relationship between the variables. There would be a slightly positive relationship between net profit ratio and net interest margin and non-interest income to total income ratio.Therefore, from the above regression table, it can be concluded that there was a significant impact of non-performing assets on the profitability of the public and private sector banks (Dey, B. K. 2013).

$$NPM_{it} = \alpha_{it} + \beta_1\, NPA_{it} + \beta_2\, NIM_{it} + \beta_3\, NIIR_{it} + \epsilon_{it}$$

Where,NPM istends to Net Profit Ratio, β1 is coefficient for NPM, NPA is Gross Non-performing assets to advances ratio, NIM is Net interest margin, β2 is coefficient for NIM, NIIR: Non-Interest income to total income ratio, β3 is coefficient for NIIR and ε_{it} is error term.

V. FINDINGS AND RESULTS

Following are some findings that can be obtained:
Looking to the profitability measures Net profit ratio, Return on Assets, Return on Equity, Net interest margin, profit per employee, Gross NPA ratio, net NPA ratio, and credit to deposit ratio are concerned there would be a significance difference among the public and private sector banks. There was a significant impact of Non-performing assets on the profitability of the banks.

SUGGESTIONS:
Public sector banks have scope for improvements in profitability as the non-performing ratio was increased in the last few years. Improvement in the quality of advances will also help banks to improve the overall performance of the banks.

SCOPE
There is scope for further study bay taking into account the priority sector NPA and Non-priority sector NPA which helps to banks and financial institutions for managing in NPAs.

VI. CONCLUSION

The Indian banking sector has been passing from the various challenges since 2013-14. After that many financial and banking sector reforms have taken place it might have pushed the challenges further, which may lead to stress among the banks. This study covered the long horizon of 2005-06 to 2018-19. During this time, financial crises-2008 have affected the banking sector, and then after many domestic events and reforms press the banking sector into more trouble. This study infers that non-performing assets have an impact on the profitability of the public and private sector banks. By Looking at the overall profitability indicators, it has been found that profitability was significantly reducing year on year basis after the year 2011 onwards.

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ABBREVIATIONS

DICGC	: Deposit Insurance and Credit Guarantee Corporation
ECGC	: Export Credit Guarantee Corporation of India
IDBI	: Industrial Development of Bank of India
NIM	: Net Interest Margin
NPA	: Non-Performing Assets
NPM	: Net Profit Margin

PSBs	: Public Sector Banks
RBI	: Reserve Bank of India
ROA	: Return on Assets
ROE	: Return on Equity
YOY	: Year on Year

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