© February 2023| IJIRT | Volume 9 Issue 9 | ISSN: 2349-6002

A Study on Analysis of Non -Performing Assets and its Impact onProfitability

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Abstract-In every economy, the banking industry plays an important role of intermediary for both asset and credit creation. Any Bank failure has potential for congagious effects on the economy. Hence, Bank's asset quality must be periodically measured and monitored for general economic health of the country.
The purpose of this research is to determine the extent of non-performing assets (NPA) for five years from April 2014 to March 2018. During the study's time period, both public and private sector banks' Gross and Net NPAs gradually increased. The study discovered a significant positive association between public and private sector banks' gross and net nonperforming assets.
The study also discovered a substantial negative association between NPA and public and private sector bank Returnon Assets (ROA). The impact of ownership (public and private sector banks) on Gross and Net NPA is substantial. Gross nonperforming assets (NPAs) have a considerable negative impact on ROA, whereas net nonperforming assets(NPAs) have a favorable impact on ROA for both public and private sector banks.

1.INTRODUCTION

The Indian Banking industry is currently worth Rs. 81 trillion (US $ 1.31 trillion) and banks are now utilizing the latest technologies like internet and mobile devices to carry out transactions and communicate with the Any degradation of assets or unacceptable levels of NPA would put enormous strain on the economy.
NPA loans are those given out by banks or financial institutions to borrowers who had failed to either or both pay the principal or interest.The flow of funds in the banking business is harmed when a bank is unable to recover a loan or does not receive regular interest on such a loan. Non-Performing Assets (NPAs) have been extensively debated in relation to the global financial system. In fact, the quantity of nonperforming assets in Indian banks is a measure of the industry's and trade's health.
Banking's primary responsibility is to provide credit for economic operations. Lending is often regarded as beneficial since it allows funds to be shifted from the banking system to productive uses, resulting in economic growth. However, lending entails a risk known as credit risk, which emerges from a borrower's failure. Non-recovery of loans, as well as interest, is a major stumbling block in the credit cycle. These loans have a significant impact on the bank's profits.While it is impossible to completely eliminate such losses, banks can always strive to limit losses to a minimum.

2.REVIEW OF LITERATURE

The following are important reviews related to the present study.
Shanabhogara Raghavendra (2018)[1] looked at the impact of nonperforming assets (NPAs), the causes of NPAs, and the repercussions of NPAs in a commercial bank. This study concluded that bank or financial organization restructuring, financial deepening, and modernization of appropriate skills for credit wordiness upgradation, as well as staff efficiency, are the most important factors in resolving the current willful defaulter's system in India and around the world.
Suvitha K Vikram and Gayathri G (2018)[2] focused their research on the sector with the most NPAs (public/privatesector banks), as well as the causes and controls for rising NPAs. It was discovered that the amount of nonperforming assets (NPAs) in public sector banks is higher than in private sector banks. Focused causes, NPA levels, and control measures were also investigated. It was suggested that the nature of bank oversight of credit risk and wilful defaulters is at the base of the issue of rising NPAs
According to Payel Roy and Pradip Kumar Samanta (2017)[3], the overall NPA position of all banks has been deteriorating over time. It was discovered that there is a negative high correlation between GPA and NP, with

profit decreasing as GNPA increases. Also, the majority of the banks' profits have decreased significantly. Some banks have also suffered losses. Losses resulting from an increase in NPA cannot be avoided only by making preparations for NPA. It was indicated that while provisioning can operate as a buffer for NPA losses, it cannot be considered a remedy for expanding NPAs in all PSBs.

The banks advancing loans should be cautious enough to consider the backgrounds of the loan receiver and make therecovery procedure more stringent.

Deeksha Suneja and Raj Kumar Mittal (2017) 4. Their research found that public sector banks have a higher rate of nonperforming assets (NPAs) than private sector banks. It was proposed that while the government is taking various initiatives to address the problem of non-performing assets, banks should also be more aggressive in adopting a structured NPAs strategy to prevent non-performing assets and implement severe recovery strategies. Bankers should also assess the return on investment (ROI) on a planned project and lend to customers with greater creditworthiness. Shiralashetti A.S. and Lata N. Poojari (2016)5 investigated the causes of nonperforming assets (NPAs) and their impact on a bank's profitability. The analysis discovered a moderate association between gross nonperforming assets (NPA) and the syndicate bank's net profit, as well as no significant differences in NPA by sector. The researchers made some recommendations to the regulators. Ombir and Sanjeev Bansal (2016)6 examined current trends in nonperforming assets (NPAs) among various types of Indian banks in their study. The impact of ownership pattern on determining the number of NPAs is explored in light of the belief that public sector banks have a higher proportion of NPAs. However, there was no strong empirical evidence in favor of this theory.

Their findings revealed that public sector banks are as good as or worse than private sector counterparts, but that overseas banks are more profitable than local public and private banks. A higher level of nonperforming assets (NPAs) is also found to have a detrimental impact on a bank's profitability. According to Samir and Deepa Kamra's (2013)7 study, the problem of nonperforming assets is worse in public sector banks in India than in private and foreign banks. Similarly, the problem of nonperforming assets (NPAs) is more prevalent in the nonpriority sector than in the priority and public sectors. Furthermore, the SSI sector accounts for the majority of the overall NPA in the priority sector.

The financial health of banks has been negatively impacted as a result of this. According to the report, banks in India should use basic financial management concepts to handle challenges such as rising NPAs and strengthening recovery management, corporate governance, and technology upgrades, among other things. According to Rama Prasad and Ramachandra Reddy (2012)8, despite massive expansion in advances, there has been a tremendous drop in NPAs of Andhra Bank as well as Public Sector Banks over the study period. As a result, prudential norms were established. According to the survey, the usage of technology such as core banking solutions will revolutionize the way Indian banks handle their non-performing assets.

3.OBJECTIVES OF THE STUDY

The present study has the following objectives

To determine the impact of non-performing assets on profitability and business efficiency and check if there are similar secular trends between Private sector and public sector banks.

4.HYPOTHESES OF THE STUDY

The following two null hypotheses is tested for the study:

- H_o :There is no significant correlation between NPA and ROA of sample banks
- H_1 : There is significant correlation between NPA and ROA of sample banks
- H_o : Non-performing Assets have no significant impact on profitability
- H_1 : Non Performing Assets have significant impact on profitability

5.METHODOLOGY OF THE STUDY

Sample and Sources of data

The present study considers the top 10 banks based on highest Non-performing Assets of both public and private sector banks as on June 2020. The required data were collected from www.moneycontrol.com. The study covers for a period of 5 years from April 2014 to March 2020.

Tools used for Analysis
Following analytics has been used.

Arithmetic Mean

$$m = \frac{x_1 + x_2 + x_3 + \ldots + x_n}{n}$$

(xi are amongst n datapoints)
Standard Deviation
The Standard Deviation is a measure of how spread out numbers are. Its symbol is σ (the Greek letter sigma). The formula is the square root of the Variance.

This is the formula for Standard Deviation: (μ is the mean of data set)

$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \mu)^2}$$

$$= \frac{\sqrt{\sum_{i=1}^{n}(xi = \bar{x})}\,(y_1 - \bar{y})}{\sqrt{\sum_{i=1}^{n}(x_2 = x)}\,2\,\sqrt{\sum_{i=1}^{n}(yi = \bar{y})2}}$$

Pearson Cross-Correlation
The correlation measures the degree of association between the x and y, by using the following formula. The Values of correlation coefficient always lies between -1 to 1, if the values are +1 two variables are highly positively correlated, then the value is -1 the variables are highly negatively correlated. (¯xi and ¬ yi are respective means of x and y datasets.

Linear Regression Model
Regression analyses help to understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. Regression analysis can be used to infer a causal relationship between the independent and dependent variables.

The following two models were run to examine the determinants of Profitability and Non-Performing Assets.

Model (1) explain the Ownership affect non-performing assets:

NPAi, t= β0+ β1pub+ β2 pvti, t+ Ɛit
= 0+-.757+-.788+0
=0.031

Model (2) explain the Non-performing Assets affect Return on Assets: ROAi, t= β0+ β1GNPAit+ β2NNPAi, t+ Ɛit
= 0+-3.36E-+4.29E-0
=-3.36E-+4.29E

This methodology was found to be both simple and efficient.

LIMITATIONS OF THE PRESENT STUDY

The present study has the following limitations

- The study is based on secondary data collected from the money control websites. So the quality of the study depends purely upon the accuracy, reliability, and quality of the secondary data source. Approximation and relative measures with respect to the data source might impact the results.
- The study is limited to covers only for a period of 5 years from 2014 – 2018, therefore, a detailed analysis covering a lengthy period, which may give different results.
- The study considered only 10 Banks both public and private sector based on the highest NPA and ignore the other types of banks like foreign and co-operative banks.

7.RESULTS AND DISCUSSION

Table 1 Results of Net NPA of Public Sector Banks (Rs. in Crore)

PUB	SBI	PNB	BOI	IDBI	BOB	UNION BANK	CANARA BANK	CENTRAL BANK	IOB
2014	31,096.07	9,916.99	7,417.22	4,902.30	6,034.76	5,340.25	5,965.46	6,649.00	5,
2015	27,590.58	15,396.50	13,517.57	5,992.52	8,069.49	6,918.97	8,740.09	6,807.00	9,
2016	55,807.02	35,422.56	27,996.40	14,643.39	19,046.46	14,025.94	20,832.91	13,242.00	19
2017	58,277.38	32,702.10	25,305.03	25,205.80	18,080.00	18,833.00	21,648.98	14,217.83	19
2018	1,10,854.70	48,684.29	28,207.27	28,665.14	23,483.00	24,326.00	28,542.40	17378.54	20
2019	65894.74	30,037.66	19,118.95	14,837.44	15,609.50	20,332.42	22,955.11	11333.24	14
2020	51871.3	27,218.89	14,320.10	5,439.49	21,576.59	17,303.14	18,250.95	11534.46	6,
Total	290,537.09	199,378.99	135,882.54	99,686.08	111,899.80	107,079.72	126,935.90	81,162.07	95
Mean	83,010.60	49,844.75	33,970.64	24,921.52	27,974.95	26,769.93	31,733.98	20,290.52	23
SD	92599.6011	61584.859	41850.354	31509.16	34460.389	33091.632	39180.4	24857.26	29

Source: Collected from moneycontrol.com

Legend:

1) SBI- State Bank of India
2) PNB- Punjab National Bank

Table 2 Results of Net NPA of Private Sector Banks

	ICICI	AXIS	HDFC	J & K	KOTAK	KVB	FEDERAL	YES Bank	LV
2014	3,297.96	1,024.62	820.03	101.99	573.56	139.91	321.56	26.07	443
2015	6,255.53	1,316.71	896.28	1,236.32	609.08	280.97	373.27	29.38	302
2016	12,963.08	2,522.14	1,320.37	2,163.95	1,261.96	216.17	950.01	284.47	231
2017	25,216.81	8,626.60	1,843.99	24,253.70	1,718.07	1,033.46	941.2	1,072.27	418
2018	27,823.56	16,592.00	2,601.02	2,791.12	1,665.10	1,862.83	1,551.96	1,312.75	1,4
2019	13,577.43	11,275.60	3,214.52	3,239.61	4,467.94	2,420.34	1,626.20	4,484.85	418
2020	10,113.86	9,360.41	3,542.36	2,243.82	5,026.89	1,808.65	1,607.17	8,623.78	1,4
Total	99,248.23	50,718.08	14,238.57	36,030.51	15,322.60	7,762.33	7,371.37	15,833.57	4,7
Mean	14,178.32	7,245.44	2,034.08	5,147.22	2,188.94	1,108.90	1,053.05	2,261.94	6
SD	2,449.11	1,354.24	231.82	704.13	395.24	432.53	13.46	2,926.67	735

Source: Collected from moneycontrol.com –

Legend:

1cici – ICICI Bank

Table 3 Results of Gross NPA of Public Sector Banks

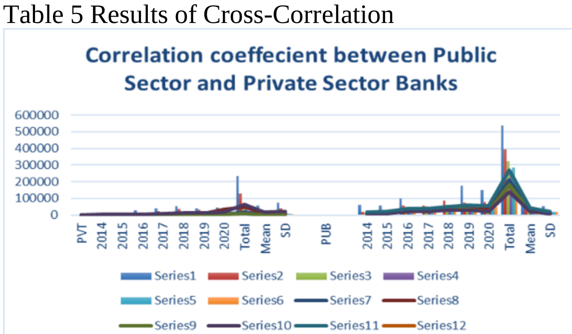
PUB	SBI	PNB	BANK OF INDIA	IDBI	BANK OF BARODA	UNION BANK	CANARA BANK	CENTRA LBANK	IOB
2014	61,605.35	18,880.06	11,868.60	9,960.16	11,875.90	2,563.74	7,570.21	11,500.00	9,02
2015	56,725.34	25,694.86	22,193.24	12,684.97	16,261.44	13,030.87	13,039.96	11,873.00	14,9
2016	98,172.80	55,818.33	49,879.13	24,875.07	40,521.04	24,170.89	31,637.83	22,721.00	30,0
2017	1,12,342.99	55,370.45	52,044.52	44,752.59	42,719.00	33,712.28	34,202.04	27,251.33	35,0
2018	2,23,427.46	86,620.05	62,328.46	55,588.25	56,480.00	33,712.00	47,468.47	38131	38,1
2019	172750.36	73,478.76	60,661.12	50,027.94	48,232.77	48,729.15	39,224.12	32356.04	33,3
2020	149091.85	78,472.70	61,549.93	47,272.37	69,381.43	49,085.30	37,041.15	32589.08	19,9
Total	538,345.70	394,335.21	320,525.00	245,161.35	285,471.58	205,004.23	210,183.78	176,421.45	180,
Mean	107,669.14	56,333.60	45,789.29	35,023.05	40,781.65	29,286.32	30,026.25	25,203.06	25,7
SD	51862.1492	25961.6978	20438.3411	18810.0316	20657.965	17386.31	14438.853	10397.679	1118

Source: Collected from moneycontrol.com

Table 4 Results of Gross NPA of Private Sector Banks

PVT	ICICI	AXIS	HDFC	J and K	KOTAK	KVB	FEDERAL	YES bank
2014	10,505.84	3,146.41	2,989.28	783.42	1,059.44	279.18	1,087.41	174.93
2015	15,094.69	4,110.19	3,438.38	2,464.08	1,237.23	677.78	1,057.73	313.4
2016	26,221.25	6,087.51	4,392.83	4,368.61	2,838.11	511.18	1,667.77	748.98
2017	42,159.38	21,280.48	5,885.66	6,000.01	3,578.60	1,483.81	1,727.05	2,018.56
2018	53,240.18	34,248.64	8,606.97	6,006.70	3,825.38	3,015.76	2,795.62	2,626.80
2019	41,409.16	29,789.44	11,224.16	6,221.35	4,467.94	4,449.57	3,260.68	7,882.56
2020	46,291.63	30,233.82	12,649.97	7,671.63	5,026.89	4,212.77	3,530.83	32,877.59
Total	234,922.13	128,896.49	49,187.25	33,515.80	22,033.59	14,630.05	15,127.09	46,642.82
Mean	58,730.53	32,224.12	12,296.81	8,378.95	5,508.40	3,657.51	3,781.77	11,660.71
SD	72,790.84	41,054.54	15,327.25	10,399.62	6,825.58	4,730.76	4,681.18	17,898.57

Table 5 Results of Cross-Correlation



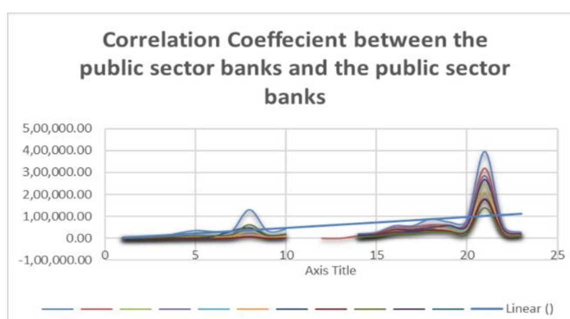


Table 6 Results of Linear regression for Gross and Net NPA		
Variable	Model 1	Model 2
Dependent-variable	Gross NPA	Net NPA
Constant	37588.593	20334.622
Private banks	-31503.599	-17541.697
Beta	-0.757	-0.788
R2	0.573	0.621
F-value	10.74	13.12
p-value	0.011	0.007

Table 7: Results of Linear regression		
Variable	Model	
Dependent-variable	ROA-p	
Constant	0.899	
GNPA	-3.36E-	
NNPA	4.29E-0	
R2	0.996	
F-value	245.58	
p-value	0.004	

Table 7 Resultsof Return on Equity of Public Sector Banks (in %)

PUB	SBI	PNB	BOI	IDBI	BOB	UNIONBANK	CANARABANK	CENTRALBANK
2014	9.20	9.69	-5.06	5.11	3.43	10.30	10.10	-10.24
2015	10.20	8.12	-19.63	3.85	-13.42	9.71	10.21	3.87
2016	6.89	-11.20	5.43	-16.57	8.53	6.65	-10.75	-9.85
2017	6.69	3.47	9.12	-30.08	12.61	2.36	3.96	-14.12
2018	-3.37	-32.85	-20.15	-50.99	-5.60	-20.90	-14.51	-28.38
2019	6.95	0.58	-15.66	-48.94	0.94	-12.15	-6.78	-29.79
2020	0.39	-24.20	-7.88	-46.82	0.76	-9.46	1.16	-6.07
Total	36.95	-46.39	-53.83	-184.44	7.25	-13.49	-6.61	-94.58

Legends

SBI- State bank of India	PNB- Punjab national bank	BOI- Bank of India	IDBI – Industrial Bank of India	BOB- Bank of Baroda	UNION BANK	CANARA BANK	CENTRAL BANK

Table 8 Results of Return on equity of Private Sector Banks (%)

PVT	ICICI	AXIS	HDFC	J & K	KOTAK	KVB	FEDERAL	YES Bank	LVB
2014	13.39	16.26	19.5	20.65	12.23	12.91	12.06	22.71	6.1
2015	13.89	16.46	16.47	8.32	13.19	10.93	12.99	17.16	8.95
2016	11.19	15.46	16.91	6.47	8.72	12.41	5.87	18.41	11.32
2017	10.11	6.59	16.26	-28.75	12.35	12.03	9.29	15.09	13.01
2018	6.63	0.43	16.45	0.00	10.89	5.51	7.20	16.40	-27.07
2019	3.19	7.01	14.12	7.72	11.47	3.28	9.37	6.39	13.01
2020	6.99	1.91	15.35	-21.11	12.25	3.56	10.63	-75.56	-27.07
Total	65.39	64.12	115.06	-6.70	81.10	60.63	67.41	20.60	-1.75

Source: Moneycontrol.com

Cross Correlation between ROA and NPA of Public and Pvt Sector Banks

Legends

PVT	ICICI – Industrial Credit and Investment corporation of India	AXIS BANK	HDFC – Housing development and Finance Corporation	J & K – Jammu and Kashmir bank	KOTAK Bank	KVB Karun Vysya Bank	FEDERAL Bank	YES Bank	LVB Lakshmi Vilas Bank

CONCLUSION

As a result, monitoring and maintaining the asset quality of banks is critical for their growth. The asset quality of banks, particularly Public Sector Banks (PSUs), is constantly degrading, putting the banking sector, regulators, and the Indian economy under undue strain. The purpose of this study is to determine the level of gross and net nonperforming assets (NPAs) as well as profitability of both public and private sector banks. The study used NPA data from 2014 to 2018 for this purpose. During the study period, it was discovered that both public and private sector banks gradually grew their Gross and Net NPA.

The study discovered a substantial positive association between public and private sector banks' gross and net nonperforming assets, as well as a large negative relationship between NPA and ROA. The effect of ownership (public and private sector banks) on Gross and Net NPA is important. That is, public-sector banks' nonperforming assets (NPA) were higher than private-sector banks' NPA. Gross NPA has a negative impact on both public and private sector banks' ROA, while Net NPA has a favorable impact.

As a result, the study advised regulators and bank officials to take the required actions to minimize nonperforming assets (NPAs) and improve the recovery process. The study's scope could extend to the level of non-performing assets (NPA) held by cooperative and international banks, as well as the level of NPA held by each sector, such as priority and non-priority, small-scale industries, agriculture, infrastructure, and so on.

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