Business, Management and Economics Engineering
ISSN: 2669-2481 / eISSN: 2669-249X
2023 Volume 21 Issue 01

AN ANALYTICAL STUDY OF NON-PERFORMING ASSETS AND PROFITABILITY OF GRAMIN BANK OF ARYAVART

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ABSTRACT
From 1976 onwards, Regional Rural Banks, after coming into existence, sprayed banking services in regional areas and states like Uttar Pradesh. A large number of people are staying in rural areas also benefited from its banking services. In the year 2005 onwards, Regional Rural Banks are going through the merging phase. Gramin Bank of Aryavart constituted on 1st April 2013 after the amalgamation of Aryavart Kshetriya Gramin Bank and Shreyas Gramin Bank. This paper analyses the Non-Performing Assets and how they affected bank profitability from 2018 to 2022. Data analysis based on both parametric and non-parametric tools like ANOVA Test, Friedman Test.
Keywords: Regional Rural Banks, Gramin Bank of Aryavart, Non-Performing Assets, ANOVA and Friedman Test.

INTRODUCTION
Gramin Bank of Aryavart
Gramin Bank of Aryavart, a Regional Rural Bank, was constituted on 1st April 2013 after the amalgamation of two Regional Rural Banks (RRBs), namely Aryavart Kshetriya Gramin Bank sponsored by Bank of India and Shreyas Gramin Bank funding by Canara Bank. The capital sharing ratio is Government of India (50%), Bank of India (35%), and the concerned State Government (15%). It is operating in 15 districts of Uttar Pradesh area like Lucknow, Barabanki, Farrukhabad, Hardoi, Kannauj, Unnao, Faizabad, Mainpuri, Firozabad, Aligarh, Etah, Hathras, KashiRam Nagar, Mathura& Agra with several branches and regional offices mentioned in the table below:

	2017-18	2018-19	2019-20	2020-21	2021-22
Branches	651	651	651	704	706
Regional	12	12	12	6	6

office					

The Concept of NPAs

A non-Performing Asset loan has failed to generate interest and principal repayment income in the last 90 days as per the banking regulation Act 1949. The concept of non-performing assets comes from the loan that the bank gives to its customers. It is considered assets of the bank that later classified in various classes like standard assets, substandard assets, doubtful assets, and loss assets. There is a provision to maintain all types of assets as per banking regulations. When an asset converted to a loss category, where there is hardly any provision for recovery of both principal and interest, banks removed such loans from banking books and cleaned them, although the legal recovery process continues.

REVIEW OF LITERATURE

NPA is a burning topic for the banking sector, and many authors study the reasons for NPA, the problems of NPA, and the impact of NPA on the banking sector and come to a solution or remedies for the growing problem of NPA. This research reviews some articles on non-performing assets of the various banks.

Goyal & Kaur (2011) studied management control of non-performing assets of the private sector and foreign banks in India from 2005 to 2009. Data analysis correlation test, ANOVA, and Post- Hoc Tukey HSD test. The relationship finds out GNPAs & gross advances, NNPAs & Net advances, and various assets classes.

Rao & Patel (2015) defines various banks' assets as per Narasimham Committee Report in 1991. From the year 2009 to 2013 five-year data analysis based on the ANOVA test, there is no significant relationship between Gross NPA to Gross Advances of Public sector, Private Sector, and Foreign Banks.

Shetty & Sandesha (2016) study the relationship between Net profit and Net NPA of SBI. Comparative analysis based on correlation coefficient from the period 2010 to 2014. There was a positive co-relation between Net Profits and the NPA of SBI. It simply means that as net profits increases NPA also increases.

Khan & Ansari (2016) study the trend of NPA's in RRBs in India post-transformation era.
This paper focuses on various internal and external factors for creating NPAs in RRBs. It also highlights the problems of Regional Rural Banks of India and suggestions given for improvement of RRRs.

The previous research papers have seen how total advances, non-performing assets, and profitability are related. This research paper focuses on the non-performing assets and profitability of Gramin Bank of Aryavart, Uttar Pradesh based Regional Rural Bank.

Research Objectives

1. To find out the Gross Non-Performing Assets of the bank affects the gross profitability of the Gramin Bank of Aryavart.

2. To Net Non-Performing Assets of a bank affects the net profitability of the Gramin Bank of Aryavart.

RESEARCH METHODOLOGY

Research Design

This study planned to be carried out based on secondary data collected from audit reports of the Gramin Bank of Aryavart and data analyses with the parametric and non-parametric tests.

Hypothesis

1. Ho - There is no significant association between Gross Non-Performing Assets and Gross Profits of Gramin Bank of Aryavart
2. Ho - There is no significant association between Net Non-Performing Assets and Net Profits of Gramin Bank of Aryavart

Data Collection:

The secondary data collected from the annual reports of Gramin Bank of Aryavart. Annual Audit reports information collected through RTI Applications.

Data Analysis Tools

Correlation, Coefficient of determination, ANOVA and Friedman Test.

Period of the Study

Five-year data during the period 2013 to 2018 considered for the study.

DATA ANALYSIS

Table 1: Gross Non-Performing Assets and Gross Profits of Gramin Bank of Aryavart (Rs. Crore)

Time	Gross NPA	Gross Profit
2017-18	1132.64	272.79
2018-19	654.92	220.16
2019-20	672.51	182.23
2020-21	1454.65	9.99
2021-22	107.05	110

Table 1A: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.179	.032	-.291	116.18

Data analysis of the five years gross NPA and gross profit found that adjusted R Square is negative -.291, which indicates a need for further study of data by some other test.

Table 1B: ANOVA Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1336.54	1	1336.54	.099	.774

	Residual	40496.77	3	13498.92		
	Total	41833.31	4			

a. Predictors: (Constant), Gross NPA
b. Dependent Variable: Gross Profit

The results of one way ANOVA in case P-value is 0.774 at which is more than .05. ANOVA is a parametric test. Data will analyse the non-parametric test as the significance value is higher than 0.05, which renders the model unfit for the data considered. The alternative non-parametric test of ANOVA is Friedman Test. Gross NPA & Gross Profit both are variable and Gross NPA is independent. We have to find out, due to Gross NPA changes, Gross Profit which is the dependent variable, is affecting or not or is any significant relation between Gross NPA and Gross Profit?

FRIEDMAN TEST

It is a non-parametric alternative test of one-way ANOVA when data is in continuous or ordinal mode and violated one-way ANOVA with deviations from its normality. Although this is not one of the best methods to be data analysis because it does not give a clear idea of which groups, in particular, differ from each other.

Table 1C: Friedman Test Ranks

	Mean Rank
Gross Profit	1.0
Gross NPA	2.0

The Friedman test compares the mean ranks between the related groups Gross NPA & Gross Profit and indicates how the groups differed.

Table1D: Friedman Test Statistics[a]

N	5
Chi-squared	5.000
df	1
Asymp. Sig.	.025

a. Friedman Test

Table 1D provides the test statistic ($\chi 2$) value 5.000, degrees of freedom 1, and the significance level

.025. P-value .025, which is less than .05. So we can reject the null hypothesis and say that there is a significant relation between Gross NPA and Gross Profit.

Relationship between Gross NPA and Gross Profit: Correlation to determine the association between Gross NPA and Gross Profit.

Formula: $r = \frac{N\Sigma dxdy - \Sigma dx\Sigma dy}{\sqrt{[n(\Sigma dx^2) - (\Sigma dx)^2]} \times \sqrt{[n(\Sigma dy^2) - (\Sigma dy)^2]}}$

Table 1E: Calculation of Correlation between Gross NPA and Gross Profit

Year	Gross NPA (X)	dx = X-A A=1132.64	dx2	Gross Profit (Y)	dy = Y–A A=	dy2	dxdy
2018	1132.64	0.00	0.00	272.79	0.00	0.00	0
2019	654.92	-477.72	2,28,216.40	220.16	-52.63	2769.92	25142.40
2020	672.51	-460.13	2,11,719.62	182.23	-90.56	8201.11	41669.37
2021	1454.65	322.01	1,03,690.44	9.99	-262.80	69063.84	-84624.23
2022	107.05	-1,025.59	10,51,834.85	110.00	-162.79	26500.58	166955.80
	ΣX= 4,021.77	Σdx= -1,641.43	Σdx2= 15,95,461.31	ΣY= 795.17	Σdy= -568.78	Σdy2= 106535.45	Σdxdy= 149143.34

Therefore $r = \frac{5 \times 149143.34 - (-1641.43 \times -568.78)}{\sqrt{[5 \times 15,95,461.31 - (4021.77)^2]} \times \sqrt{[5 \times 106535.45 - (795.17)^2]}}$

r = -.21

The correlation coefficient is -.21. It means there is a negative correlation between Gross NPA and Gross Profit. When Gross NPA increases, Gross Profit decreases, or we can say Gross Non-performing assets adversely affect the bank's profitability.

Table 2: Net Non-Performing Assets and Net Profits of Gramin Bank of Aryavart (Rs. Crore)

Time	Net NPA	Net Profit
2017-18	198.48	173.15
2018-19	102.61	220.16
2019-20	286.08	182.23
2020-21	962.68	10.00
2021-22	478.20	110.00

Table 2A: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.987	.975	.967	15.05

Data analysis of the five years gross NPA and gross profit found that R Square is .975.

Table 2B: ANOVA Test						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26425.704	1	26425.704	116.598	.002
	Residual	679.916	3	226.639		
	Total	27105.620	4			

a. Predictors: (Constant), Net NPA
b. Dependent Variable: Net Profit

The result of one-way ANOVA in case P-value is 0.002, which is less than .05. So we reject the null hypothesis and state there is a relationship between Net NPA and Net Profit. ANOVA is a parametric test now; it will analyse data on the non-parametric Friedman test.

FRIEDMAN TEST

Table 2C: Friedman Test Ranks	
	Mean Rank
Net Profit	1.0
Net NPA	2.0

The Friedman test compares the mean ranks between the related groups Net NPA & Net Profit and indicates how the groups differed.

Table 2D: Friedman Test Statistics

Table 2D: Friedman Test Statistics	
N	5
Chi-squaredf	5.000
	1
Asymp. Sig.	.025

P-value .025, which is less than .05. So we reject the null hypothesis and say a significant relation between Net NPA and Net Profit.

Relationship between NET NPA & NET Profits of Gramin Bank of Aryavart: Correlation use to determine the degree of association between Gross NPA and Gross Profit.

Table 2E: Calculation of Correlation between Net NPA and Net Profit

Year	Net NPA (X)	dx = X-A A=1132.64	dx2	Net Profit (Y)	dy = Y–A A=	dy2	dxdy
2018	198.48	0	0	173.15	0	0	0

2019	102.61	-95.87	9191.06	220.16	47.01	2209.94	-4506.85
2020	286.08	87.6	7673.76	182.23	9.08	82.45	795.41
2021	962.68	764.2	584001.64	10.00	-163.15	26617.92	-124679.23
2022	478.20	279.72	78243.28	110.00	-63.15	3987.92	-17664.32
	ΣX= 2028.05	Σdx= 1035.65	Σdx2= 679109.74	ΣY= 695.54	Σdy= -170.21	Σdy2= 32898.23	Σdxdy= -146054.99

Therefore r = $\frac{5x-146054.99 - (1035.65x-170.21)}{\sqrt{[5 \times 679109.74 - (2028.05)^2]} \times \sqrt{[5 \times 32898.23 - (695.54)^2]}}$

r = -2.25

The correlation coefficient is -2.25. It means there is a negative correlation between Net NPA and Net Profit. When Net NPA increases, Net Profit decreases, or we can say Net Non-performing assets adversely affect the Net Profit of the Gramin Bank of Aryavart.

CONCLUSIONS

There is a significant association between Gross NPA and Gross Profit and between Net NPA and Net Profit. In case of correlation of Gross NPA and Gross Profit is negative, which indicates that increase in Gross NPA decreases in Gross Profit so increase in Gross NPA adversely affected Gross Profit of Gramin Bank of Aryavart. Net NPA and Net Profit of the bank are related to each other. The correlation of Net NPA and Net Profit is also harmful to the bank during the study period. So from this study, it has been found that Net Performing Assets affects the profitability of Gramin Bank of Aryavart.

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