Impact of NPAs on Bank Performance

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Abstract

The Indian Banks are considered to be the backbone of Indian financial system. Presently, the Indian financial system is in a process of rapid transformation. There are about 67,000 branches of scheduled banks spread across India. This study examines the perception of loan officers on the impact of NPAs on performance of banking industry and the general economy. Results reveal that the two factors found to be the internal impact of NPAs in both Public and Private sector banks in India are 'Financial Performance' and 'Managerial Performance'. Two factors found to be the external impact of NPAs in both Public and Private sector banks in India are 'Country Performance' and 'Bank Credibility'. Three clusters found from factors on impact of NPAs in the banking industry and in the general economy in India are Sagacious Loan Officers, Passive Loan Officers and Sturdy Loan Officers. The researcher concludes that NPA is a threat to the existence of a bank. Default on account of big borrowers is a major problem for both public and private sector banks though such borrowers are less in number.

Keywords

NPAs, Country Performance, Bank Credibility, Credit Management, Financial Performance and Managerial Performance

Introduction

The term Non-Performing Assets (NPA) figured in the Indian banking sector after introduction of financial sector reforms in 1992. The prudential norms on income recognition, assets classification and provisioning thereon were implemented from the financial year 1992-93, as per the recommendations of the Narsimham committee on the Financial System. A new concept namely 'Non-performing Assets' was introduced by RBI for the purpose of uniformity among banks. A Non-performing Asset is defined "as an asset not contributing to the income of the bank". Before RBI prescribed a system of health code, banks had different modes of classifying assets. While some banks used 'stopped debiting recalled accounts', 'protested accounts' and 'suit-filed accounts', others called them as 'decreed accounts'. The terminology non-performing assets are coined by RBI to provide a uniform prescription for recognition of income from advances.

Review of literature

Yoonhee Tina Chang (2006) analysed the impact of the transition from price-cap regulation (Deposit/ Loan rate control) to rate of return regulation (ROA, NPLs and BIS ratio) on the banking industry structure. The author highlighted that the recent transformation of objectives in the Asian Bank is due to increase in the number of non-performing loans following the global economic crisis. Results are tested empirically by using Vector Auto Regression (VAR) model in order to incorporate endogenous feedback between structure conduct and performance variable. Finally, the author concluded that the concentration rises when deposit market size increases as a consequence of deregulation in the banking structure.

Kevin Greenidge and Tiffany Grosvenor (2010) attempted to forecast non-performing loans and macroeconomic factors through Multivariate model by using quarterly data from specific commercial banks in Barbados for the period from 1996 to 2008. The authors further evaluated that taking classified

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loan data into account would improve the forecasts of future net loan losses. The result of the study is that the non-performing loans are essentially driven by external factors. Finally, the authors concluded that the banks should pay attention to the performance of the real economy when providing loans so as to reduce the magnitude of non-performing loans.

Soumitra K. Mallick et al (2009) pointed out that the NPAs is an important measure of the success of the business. The authors attempted to bring out the dynamic relationship by using historical values of NPAs as an explanatory value for current NPAs in order to develop a model for forecasting the future NPAs. Finally, the author concludes that the banking crisis in emerging economies merit particular attention for two reasons i.e. the serious consequences for local economies and the fallout in other countries as financial markets become more integrated.

Mohd Zaini Abd Karim et al (2010) investigated the relationship between non-performing loans and bank efficiency in Malaysia and Singapore during the period from 1995 to 2000. The authors highlighted that the banking sector plays an important role in the growth of the economy of the country. The result of the study is that there is no significant difference in cost efficiency of banks in Singapore and Malaysia and the regression results show that the higher non-performing loan reduces cost efficiency of banks. The authors conclude that the poor management in the banking institutions results in bad quality loans, and therefore, escalates the level of non-performing loans.

Statement of the Problem

RBI Report on Trends and Progress of Banking in India 2011-12 states that, though Indian banks remained well-capitalised, concerns about the growing non-performing assets (NPAs) loomed large. Eliminating the menace of non-performing assets is an uphill task for the banks. By implementing appropriate techniques including CDR, it would be possible for effectively managing the non-performing assets in banks.

Objectives of the Study

To examine the perception of loan officers on the impact of NPAs on performance of banking industry and the general economy

Research Methodology

The primary data is collected through well framed and structured questionnaire to elicit the perception of loan officers in the banking sector. Simple random sampling has been used to collect responses from the loan officers in both public and private sector banks in India. The geographical limit of the study confined to only one city of Tamil Nadu i.e. Chennai. A heterogeneous sample was adopted to cover a wide variety of demographic group. The prime respondents are loan officers in public and private sector bank branches situated in Chennai city. Since, they have 1059 public sector bank branches and 443 private sector bank branches in Chennai city, care was taken to ensure the selection of loan officers in a fairly proportionate manner. Out 1059 public sector banks branches 62 questionnaire were collected and out 443 private sector banks branches, 37 questionnaire were collected. The total number of questionnaire collected for the study is 99 out of 1502 branches in Chennai city.

Empirical Analysis

This section deals with the empirical research findings. The researcher has employed various statistical tools such as Factor analysis, Cluster Analysis and Chi-Square test to make inferences.

Internal Impact Derivation for NPAs

On reviewing the elaborate literature on NPA the researcher identified fourteen statements pertaining to internal impact of NPAs in banks. Therefore, these fourteen internal impact variables are reduced into predominant factors as shown in the following factor analysis:

From the Table 1 it is found that KMO measure of sampling adequacy is 0.767 and the Bartlett's test of sphericity with approximate chi-square value is 474.423, which is statistically significant at 5 per cent level. Therefore, it can be concluded that the sample size is adequate to reduce the variables into predominant factors. This leads to the communalities of variables for all the fourteen variables.

Table 1: KMO and Bartlett's test for Internal Impact of NPAs

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.767
Bartlett's Test of Sphericity	Approximate Chi-Square	474.423
	Degree of Freedom	0.91
	Significance	.000

Source: Computed Data

From Table 2 it is found that the fourteen variables possess the variance ranging from 0.279 to 0.597. It implies the variance of the variables range from 27.90 per cent to 59.70 per cent. This range is adequate for the factor segmentation. From Table 3 it is found that the fourteen variables are reduced into two predominant factors with total variance of 46.131 per cent. They also possess the individual variance of 29.310 per cent, and 16.822 per cent respectively.

Table 2: Communalities for Internal Impact of NPAs

Sl. No.	Internal Impact	Initial	Extraction
1.	Profitability of the banks is affected by NPAs	1.000	.499
2.	NPA erodes the value of Assets	1.000	.501
3.	Weak asset quality threatens the core capital	1.000	.565
4.	Return on Assets is affected by NPAs	1.000	.597
5.	The capital adequacy ratio is affected by NPAs	1.000	.552
6.	Cost of capital increases due to NPAs	1.000	.509
7.	NPAs affect the recycling of funds	1.000	.459
8.	NPAs cause reduction in the availability of funds for further credit expansion	1.000	.520
9.	Higher NPAs affect the credibility of the banks	1.000	.428
10.	NPAs affect the risk facing ability of individual managers of branches of bank	1.000	.334
11.	Time and efforts of management are an indirect cost caused by NPAs	1.000	.279
12.	Hiring additional employees is required for handling NPAs	1.000	.452
13.	Goodwill and brand image of the banks is affected due to NPAs	1.000	.329
14.	The bank cannot remain competitive due to mounting NPAs	1.000	.435

Source: Computed Data

Table 3: Total Variance Explained for Internal Impact of NPAs

Component	Initial Eigen values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.819	34.424	34.424	4.103	29.310	29.310
2	1.639	11.707	46.131	2.355	16.822	46.131
3	1.308	9.340	55.472			
4	1.005	7.178	62.649			
5	.962	6.874	69.523			
6	.810	5.787	75.310			
7	.669	4.776	80.086			
8	.573	4.093	84.179			
9	.491	3.506	87.685			
10	.455	3.252	90.936			
11	.425	3.037	93.973			
12	.359	2.563	96.536			
13	.295	2.106	98.642			
14	.190	1.358	100.000			

Source: Computed Data

First factor contains eight variables i.e. return on assets is affected by NPAs, the capital adequacy ratio is affected by NPAs, weak asset quality threatens the core capital, profitability of the banks is affected by NPAs, cost of capital increases due to NPAs, NPA erodes the value of assets, NPAs cause reduction in the availability of funds for further credit expansion and NPAs affect the recycling of funds. These eight variables from internal impact on NPAs are labelled as Financial Performance. The factor loadings for financial performance are resulting from rotated component matrix by using Varimax with Kaiser Normalization which are shown in the Table 4. Banks' financial performances basically depend on the performance of the loan officers. Financial performance of banking industry is directly associated with the management and recovery performance of loan officers. The NPAs is a double-edged sword that not only affects the income of the bank but also increases the cost for banks. The NPAs create one of the major impacts on the financial position of the banks. This shows that crisis in the banking industry arises on account of mounting NPAs.

Table 4: Factor I – Financial Performance

Variables	Factor Loading
Return on Assets is affected by NPAs	0.767
The capital adequacy ratio is affected by NPAs	0.738
Weak asset quality threatens the core capital	0.737
Profitability of the banks is affected by NPAs	0.706
Cost of capital increases due to NPAs	0.659
NPA erodes the value of Assets	0.647
NPAs cause reduction in the availability of funds for further credit expansion	0.632
NPAs affect the recycling of funds	0.454

Source: Computed Data

Second factor consists of six variables such as hiring additional employees is required for handling NPAs, the bank cannot remain competitive due to mounting NPAs, goodwill and brand image of the banks is affected due to NPAs, time and efforts of management are an indirect cost caused by NPAs, NPAs affect the risk facing ability of individual managers of branches of bank and hiring additional employees is required for handling NPAs. Hence, these six variables from internal impact on NPAs are described as Managerial Performance. The factor loadings for managerial performance are derived from rotated component matrix by using Varimax with Kaiser Normalization which are exhibited in the Table 5.

Table 5: Factor II – Managerial Performance

Variables	Factor Loading
Hiring additional employees is required for handling NPAs	0.670
The bank cannot remain competitive due to mounting NPAs	0.652
Goodwill and brand image of the banks is affected due to NPAs	0.566
Time and efforts of management are an indirect cost caused by NPAs	0.499
NPAs affect the risk facing ability of individual managers of branches of bank	0.480
Hiring additional employees is required for handling NPAs	0.473

Source: Computed Data

The bank faces various types of risks such as operational risk, credit risk, etc. Of these, credit risk is one of the major issues faced by management team. Managing NPAs is a challenging task for banks. Continuous increase in the NPAs will affect the managerial performance of the banks. Further, managerial performance of the banks is basically depended upon the employee skill. This indicates that increase in loan officer's performance results in increase in the management performance on NPAs in the banking system.

External Impact Derivation for NPAs

On review of extensive literature relating to NPAs the researcher identified eleven statements pertaining to external impact of NPAs in banks. Therefore, these eleven external impact variables are reduced into predominant factors as shown in the following factor analysis. From the Table 6 it is found that KMO measure of sampling adequacy is 0.818. Bartlett's test of sphericity with approximate chi-square value is 459.100 which is statistically significant at 5 per cent level. Therefore, it can be concluded that the sample size is adequate to reduce the variables into predominant factors. This leads to the communalities of variables for all the eleven variables. From Table 7 it is found that the eleven variables possess the variance ranging from 0.154 to 0.756. It implies that the variance of the variables range from 15.40 per cent to 75.60 per cent. This range is adequate for the factor segmentation.

Table 6: KMO and Bartlett's test for External Impact of NPAs

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.818
Bartlett's Test of Sphericity	Approximate Chi-Square	459.100
	Degree of Freedom	55
	Significance	.000

Source: Computed Data

Table 7: Communalities for External Impact of NPAs

Sl. No.	External Impact	Initial	Extraction
1.	Bank credit risk is associated with the financial risk of the country	1.000	.429
2.	NPAs affect the market competitiveness of a bank	1.000	.488
3.	NPAs cause decrease in the value of bank's shares in the capital market	1.000	.429
4.	Higher NPA ratio shakes the confidence of investors	1.000	.756
5.	Higher NPA ratio shakes the confidence of depositors	1.000	.660
6.	Higher NPA ratio shakes the confidence of other lenders	1.000	.646
7.	Higher NPA ratio shakes the trust of general public	1.000	.614
8.	Employment generation is affected due to mounting NPAs	1.000	.622
9.	The living standard of people is affected due to mounting NPAs	1.000	.747
10.	Higher NPAs affect the growth of the economy	1.000	.566
11.	Industrial and agricultural sector growth are affected due to mounting NPAs	1.000	.154

Source: Computed Data

From Table 8, it is found that the eleven variables are reduced into two predominant factors with total variance of 55.563 per cent. They also possess the individual variance of 33.038 per cent, and 22.525 per cent respectively. The individual variable loadings are shown in the tables below.

Table 8: Total Variance Explained for External Impact of NPAs

Component	Initial Eigen Values			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.866	44.240	44.240	3.634	33.038	33.038
2	1.245	11.323	55.563	2.478	22.525	55.563
3	1.099	9.989	65.552			
4	.821	7.464	73.016			
5	.709	6.445	79.461			
6	.591	5.375	84.836			
7	.505	4.594	89.430			
8	.376	3.422	92.852			
9	.327	2.972	95.824			
10	.262	2.381	98.205			
11	.197	1.795	100.000			

Source: Computed Data

First factor contains five variables i.e. the living standard of people is affected due to mounting NPA, higher NPAs affect the growth of the economy, employment generation is affected due to mounting NPAs, bank credit risk is associated with the financial risk of the country and industrial and agricultural sector growth are affected due to mounting NPAs. Therefore, these five variables from external impact on NPAs are described as Country Performance. The factor loadings for country performance are derived from rotated component matrix by using Varimax with Kaiser Normalization which are shown in the Table 9. A country can become a developed country only if they have a strong banking industry. This shows that country performance totally depends on the bank performance. In other words banks work as a pillar for the entire country. As unstable pillars can collapse the entire building, wobbly banking sector will leave the entire country in financial distress.

The global financial crisis 2007-2008 happened because of mounting NPAs. Second factor consists of six variables such as higher NPA ratio shakes the confidence of investors, higher NPA ratio shakes the confidence of depositors, higher NPA ratio shakes the confidence of other lenders, higher NPA ratio shakes the trust of general public, NPAs affect the market competitiveness of a bank and NPAs cause decrease in the value of bank's share in the capital market. Hence, these six variables from external impact on NPAs are named as Bank Credibility. The factor loadings for bank credibility result from rotated component matrix by using Varimax with Kaiser Normalization which are exhibited in the Table 10. Bank Credibility is otherwise called goodwill for banks. To earn goodwill a bank should show superior performance in a gradual manner and win the confidence of the public. Bank credibility is one of the important aspects for functioning of banks. Mounting NPAs

result in erosion of confidence of the society in banking operations. The society includes investor, deposit holders, other lenders, public, etc. The deposit and lending activities constitute the nerve centre for the banking operations.

Table 9: Factor I – Country Performance

Variables	Factor Loading
The living standard of people is affected due to mounting NPA	0.863
Higher NPAs affect the growth of the economy	0.684
Employment generation is affected due to mounting NPAs	0.665
Bank credit risk is associated with the financial risk of the country	0.526
Industrial and agricultural sector growth are affected due mounting NPAs	0.400

Source: Computed Data

Table 10: Factor II – Bank Credibility

Variables	Factor Loading
Higher NPA ratio shakes the confidence of investors	0.858
Higher NPA ratio shakes the confidence of depositors	0.798
Higher NPA ratio shakes the confidence of other lenders	0.781
Higher NPA ratio shakes the trust of general public	0.734
NPAs affect the market competitiveness of a bank	0.609
NPAs cause decrease in the value of bank's shares in the capital market	0.591

Source: Computed Data

Cluster Analysis of Factors Impacting NPAs

The cluster analysis is applied to classify the 99 respondents based on four factors that emerged from the principal component analysis for both internal and external impact of NPAs in India. It has resulted in formation of three clusters on the basis of similar characteristics which is exhibited in Table 11. Table 12 shows the number of respondents classified into three clusters with cluster size ranging from 24 to 39. From Tables 11 and 12, the three clusters are described as follows

Cluster 1

First cluster constitutes 39.40 per cent of the sample with 39 respondents. They strongly agree with one internal impact such as financial performance. Therefore, the first cluster is named as Sagacious Loan Officers. The sagacious loan officers always believe that the NPAs create only finance oriented impact.

Cluster 2

Second cluster constitutes 24.24 per cent of the sample with 24 respondents. They strongly disagree with one external impact such as country performance. Therefore, the second cluster is named as Passive Loan Officers. The passive loan officers always believe that the NPAs do not create impact on both internal as well as external impact.

Cluster 3

Third cluster constitutes 36.36 per cent of the sample with 36 respondents. They strongly agreed for both internal and external impact of NPAs i.e. financial performance, managerial performance, country performance and bank credibility. Therefore, the third cluster is labelled as Sturdy Loan Officers. The sturdy loan officers always believe that the NPAs exercise very severe impact on both the banking industry and in the general economy.

Table 11: Cluster Centres for Impact of NPAs

Impact of NPAs	Cluster		
	1	2	3
Financial performance	4.04	3.83	4.67
Managerial performance	3.61	3.69	4.38
Country performance	3.53	2.70	4.07
Bank credibility	3.93	3.26	4.64

Source: Computed Data

Table 12: Frequency Distribution of Clusters of Factors Impacting NPAs

Cluster	No of Respondents	Percentage
1	39	39.40
2	24	24.24
3	36	36.36
Total	99	100.00

Source: Computed Data

Chi-Square Analysis between Clusters on Impact of NPAs with Demographic Variables

The researcher identified three clusters on impact of NPAs viz., Sagacious Loan Officers, Passive Loan Officers and Sturdy Loan Officers. The clusters are appropriately measured and named with suitable analogy. In this section, the researcher intends to associate the perception of loan officers on impact of NPAs with demographic variables.

Association between NPA Impact and Banking Sector

The impact of NPAs and loan officers in four different banking sectors are considered to test their association. From the Table 13, it is found that 23.1 per cent sagacious loan officers are in both old and new private sector banks, 62.5 per cent passive loan officers are in nationalised banks and 13.9 per cent sturdy loan officers are in the State Bank group. Verification of association has been done in the Table 14.

Table 13: Association between NPA Impact and Banking Sector

| Impact of NPAs - Clusters | Banking Sector | | | | | | | | Total | |
| | Nationalised Bank | | State Bank Group | | Old Private-sector Bank | | New Private-sector Bank | | | |
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	17	43.6	9	23.1	9	23.1	4	10.3	39	100
Passive Loan Officers	15	62.5	1	4.2	5	20.8	3	12.5	24	100
Sturdy Loan Officers	15	41.7	5	13.9	8	22.2	8	22.2	36	100
Total	47	47.5	15	15.2	22	22.2	15	15.2	99	100

Source: Computed Data

From Table 14, it is found that Pearson Chi-Square value = 7.037 and p value = 0.317 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and different types of banking sector. It also implies that loan officers in nationalised banks, State Bank Group, old generation private-sector banks and new generation private-sector banks have same perception towards the impact of NPAs.

Table 14: Chi-Square Test for NPA Impact with Banking Sector

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	7.037	6	.317
Likelihood Ratio	7.438	6	.282
Linear-by-Linear Association	.851	1	.356
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Gender

The impact of NPAs and loan officer gender are considered to test their association.

From the Table 15, it is found that 25.6 per cent sagacious loan officers are males and 83.3 per cent passive loan officers are females. Further, it is found that 80.6 per cent of sturdy loan officers are males.

From Table 16, it is found that Pearson Chi-Square value = 0.822 and p value = 0.663 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and gender. It also implies that male and female loan officers have similar perception towards the impact of NPAs.

Table 15: Association between NPA Impact and Gender

| Impact of NPAs - Clusters | Gender | | | | Total | |
| | Male | | Female | | | |
	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	29	74.4	10	25.6	39	100
Passive Loan Officers	20	83.3	4	16.7	24	100
Sturdy Loan Officers	29	80.6	7	19.4	36	100
Total	78	78.8	21	21.2	99	100

Source: Computed Data

Table 16: Chi-Square Test for NPA Impact with Gender

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	.822	2	.663
Likelihood Ratio	.820	2	.664
Linear-by-Linear Association	.442	1	.506
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Age Group

The impact of NPAs and loan officers in different age group are considered to test their association. From the Table 17, it is found that 28.2 per cent sagacious loan officers are in the age group 41 -50, 54.2 per cent passive loan officers are in the age group more than 51 and 16.7 per cent sturdy loan officers are in the age group 31 - 40. Further, it is found that 12.8 per cent of sagacious loan officers are in the age group of less than 30 years.

Table 17: Association between NPA Impact and Age Group

Impact of NPAs - Clusters	Age Group								Total	
	Less than 30		31 – 40		41 – 50		More than 51			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	5	12.8	6	15.4	11	28.2	17	43.6	39	100
Passive Loan Officers	3	12.5	3	12.5	5	20.8	13	54.2	24	100
Sturdy Loan Officers	3	8.3	6	16.7	8	22.2	19	52.8	36	100
Total	11.1	15	15.2	24.2	24	24.2	49	49.5	99	100

Source: Computed Data

From Table 18, it is found that Pearson Chi-Square value = 1.449 and p value = 0.963 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and age groups. It also implies that loan officers in the age group of less than 30, 31 – 40, 41 – 50 and more than 51 have perceived same type of notion towards the impact of NPAs.

Table 18: Chi-Square Test for NPA Impact with Age Group

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	1.449	6	.963
Likelihood Ratio	1.473	6	.961
Linear-by-Linear Association	.497	1	.481
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Education Qualification

The impact of NPAs and loan officers in different education qualification are considered to test their association.

From the Table 19, it is found that 35.9 per cent sagacious loan officers are CAIIB qualified, 41.7 per cent passive loan officers are post graduates and 13.9 per cent sturdy loan officers are graduate and same percentage of them are professional.

Table 19: Association between NPA Impact and Education Qualification

Impact of NPAs - Clusters	Education Qualification								Total	
	Graduate		CAIIB		Post Graduate		Professional			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	6	15.4	14	35.9	13	33.3	6	15.4	39	100
Passive Loan Officers	3	12.5	4	16.7	10	41.7	7	29.2	24	100
Sturdy Loan Officers	5	13.9	11	30.6	15	41.7	5	13.9	36	100
Total	14	14.1	29	29.3	38	38.4	18	18.2	99	100

Source: Computed Data

From Table 20, it is found that Pearson Chi-Square value = 4.550 and p value = 0.603 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and different types of education qualification. It also implies that loan officers who are Graduates or CAIIBs or Post Graduates or Professionals perceived same type of notion towards the impact of NPAs.

Table 20: Chi-Square Test for NPA Impact with Education Qualification

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	4.550	6	.603
Likelihood Ratio	4.554	6	.602
Linear-by-Linear Association	.119	1	.731
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Monthly Income

The impact of NPAs and loan officers in different monthly income group are considered to test their association.

From the Table 21, it is found that 12.8 per cent sagacious loan officers earn monthly income up to Rs. 30000 and same percentage of them earn above Rs. 90000, 45.8 per cent passive loan officers earn monthly income of Rs. 60001 - 90000 and 47.2 per cent sturdy loan officers earn monthly income of Rs. 30001 – 60000

Table 21: Association between NPA Impact and Monthly Income

Impact of NPAs - Clusters	Monthly Income (Rs)								Total	
	Up to 30000		30001 – 60000		60001 – 90000		Above 90000			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	5	12.8	18	46.2	11	28.2	5	12.8	39	100
Passive Loan Officers	3	12.5	7	29.2	11	45.8	3	12.5	24	100
Sturdy Loan Officers	1	2.8	17	47.2	12	33.3	6	16.7	36	100
Total	9	9.1	42	42.4	34	43.3	14	14.1	99	100

Source: Computed Data

From Table 22, it is found that Pearson Chi-Square value = 5.417 and p value = .492 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and monthly income group. It also implies that loan officers' monthly income up to Rs. 30000, Rs. 30001 – 60000, Rs. 60001 – 90000 and above Rs. 90000 have perceived similarly towards the impact of NPAs.

Table 22: Chi-Square Test for NPA Impact with Monthly Income

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	5.417	6	.492
Likelihood Ratio	5.959	6	.428
Linear-by-Linear Association	1.372	1	.241
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Experience in Banking Sector

The impact of NPAs and loan officers having different experience in banking sectors are considered to test their association.

From the Table 23 it is found that 74.4 per cent sagacious loan officers have 16 or more years of experience in banking sector, 20.8 per cent passive loan officers have 0 – 5 years of banking experience and 19.4 per cent sturdy loan officers have 6 – 10 years of banking experience. Further, it is found that 4.2 per cent of passive loan officers have 11 – 15 years of banking experience.

Table 23: Association between NPA Impact and Experience in Banking Sector

Impact of NPAs - Clusters	Experience in Banking Sector (Years)								Total	
	0 – 5		6 – 10		11 – 15		16 or more			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	7	17.9	2	5.1	1	2.6	29	74.4	39	100
Passive Loan Officers	5	20.8	1	4.2	1	4.2	17	70.8	24	100
Sturdy Loan Officers	4	11.1	7	19.4	1	2.8	24	66.7	36	100
Total	16	16.2	10	10.1	3	3.0	70	70.7	99	100

Source: Computed Data

From Table 24, it is found that Pearson Chi-Square value = 6.167 and p value = 0.405 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and experience in banking sector. It also implies that loan officers in 0 – 5, 6 – 10, 11 – 15, and 16 or more years of banking sector experience have same perception towards the impact of NPAs.

Table 24: Chi-Square Test for NPA Impact with Experience in Banking Sector

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	6.167	6	.405
Likelihood Ratio	5.982	6	.425
Linear-by-Linear Association	.095	1	.757
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Experience in Loan Products

The impact of NPAs and loan officers having different experience in loan products are considered to test their association.

From the Table 25, it is found that 35.9 per cent sagacious loan officers have 0-5 years of experience in loan products, 45.8 per cent passive loan officers have 16 or more years of loan product experience and 22.2 per cent sturdy loan officers have 6-10 years of loan product experience. Further, it is found that 17.9 per cent of sagacious loan officers have 11-15 years of loan product experience.

Table 25: Association between NPA Impact and Experience in Loan Products

Impact of NPAs - Clusters	Experience in Loan Products (Years)								Total	
	0 – 5		6 – 10		11 – 15		16 or more			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	14	35.9	7	17.9	7	17.9	11	28.2	39	100
Passive Loan Officers	8	33.3	3	12.5	2	8.3	11	45.8	24	100
Sturdy Loan Officers	10	27.8	8	22.2	4	11.1	14	38.9	36	100
Total	32	32.3	18	18.2	13	13.1	36	36.4	99	100

Source: Computed Data

From Table 26, it is found that Pearson Chi-Square value = 3.733 and p value = 0.713 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and loan officers experience in loan products. It also implies that loan officers in 0 – 5, 6 – 10, 11 – 15, and 16 or more years of loan product experience have same perception towards the impact of NPAs.

Table 26: Chi-Square Test for NPA Impact with Experience in Loan Products

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	3.733	6	.713
Likelihood Ratio	3.782	6	.706
Linear-by-Linear Association	.603	1	.437
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Home Loan Product Risk Profile

The impact of NPAs and loan officer's perception towards home loan product risk profile are considered to test their association.

From the Table 27, it is found that 15.4 per cent sagacious loan officers agreed that home loans are high risk products, 62.5 per cent passive loan officers agreed that low risk is involved in home loan products and 30.6 per cent sturdy loan officers agreed that moderate risk is involved in home loan products.

Table 27: Association between NPA Impact and Home Loan Product Risk Profile

Impact of NPAs - Clusters	Home Loan Products Risk Profile						Total	
	Low		Moderate		High			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	23	59.0	10	25.6	6	15.4	39	100
Passive Loan Officers	15	62.5	4	16.7	5	20.8	24	100
Sturdy Loan Officers	17	47.2	11	30.6	8	22.2	36	100
Total	55	55.6	25	25.3	19	19.2	99	100

Source: Computed Data

From Table 28, it is found that Pearson Chi-Square value = 2.345 and p value = 0.673 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and home loan products risk profile. It also implies that all clusters of loan officers have same perception about home loan products with low, moderate and high risk towards the impact of NPAs.

Table 28: Chi-Square Test for NPA Impact with Home Loan Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	2.345	4	.673
Likelihood Ratio	2.443	4	.655
Linear-by-Linear Association	1.025	1	.311
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Consumer Loan Product Risk Profile

The impact of NPAs and loan officer's perception towards consumer loan product risk profile are considered to test their association.

From the Table 29, it is found that 15.4 per cent sagacious loan officers agreed that consumer loans are low risk products, 54.2 per cent passive loan officers agreed that moderate risk is involved in consumer loan products and 47.2 per cent sturdy loan officers agreed that high risk is involved in consumer loan products.

Table 29: Association between NPA Impact and Consumer Loan Product Risk Profile

Impact of NPAs - Clusters	Consumer Loan Products Risk Profile						Total	
	Low		Moderate		High			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	6	15.4	19	48.7	14	35.9	39	100
Passive Loan Officers	4	16.7	13	54.2	7	29.2	24	100
Sturdy Loan Officers	10	27.8	9	24.0	17	47.2	36	100
Total	20	20.2	41	41.4	38	38.4	99	100

Source: Computed Data

From Table 30, it is found that Pearson Chi-Square value = 6.733 and p value = 0.151 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and consumer loan products' risk profile. It also implies that all clusters of loan officers have same perception about consumer loan products with low, moderate and high risk towards the impact of NPAs.

Table 30: Chi-Square Test for NPA Impact with Consumer Loan Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	6.733	4	.151
Likelihood Ratio	6.953	4	.138
Linear-by-Linear Association	.005	1	.944
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Jewellery Loan Product Risk Profile

The impact of NPAs and loan officer's perception towards jewellery loan product risk profile are considered to test their association.

From the Table 31, it is found that 17.9 per cent sagacious loan officers agreed that jewellery loans are high risk products, 20.8 per cent passive loan officers agreed that moderate risk is involved in jewellery loan products and 66.7 per cent sturdy loan officers agreed that low risk is involved in jewellery loan products.

Table 31: Association between NPA Impact and Jewellery Loan Product Risk Profile

Impact of NPAs - Clusters	Jewellery Loan Products Risk Profile						Total	
	Low		Moderate		High			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	26	66.7	6	15.4	7	17.9	39	100
Passive Loan Officers	15	62.5	5	20.8	4	16.7	24	100
Sturdy Loan Officers	24	66.7	6	16.7	6	16.7	36	100
Total	65	65.7	17	17.2	17	17.2	99	100

Source: Computed Data

From Table 32, it is found that Pearson Chi-Square value = 0.336 and p value = 0.987 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and jewellery loan products risk profile. It also implies that all clusters of loan officers have same perception about jewellery loan products with low, moderate and high risk towards the impact of NPAs.

Table 32: Chi-Square Test for NPA Impact with Jewellery Loan Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	.336	4	.987
Likelihood Ratio	.327	4	.988
Linear-by-Linear Association	.005	1	.946
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Mortgage Loan Product Risk Profile

The impact of NPAs and loan officer's perception towards mortgage loan product risk profile are considered to test their association.

From the Table 33, it is found that 12.8 per cent sagacious loan officers agreed that mortgage loans are high risk products, 50.0 per cent passive loan officers agreed that low risk is involved in mortgage loan products and 36.1 per cent sturdy loan officers agreed that low risk is involved and same percentage of them agreed that moderate risk is involved in mortgage loan products.

Table 33: Association between NPA Impact and Mortgage Loan Product Risk Profile

| Impact of NPAs - Clusters | Mortgage Loan Products Risk Profile | | | | | | Total | |
| | Low | | Moderate | | High | | | |
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	17	43.6	17	43.6	5	12.8	39	100
Passive Loan Officers	12	50.0	7	29.2	5	20.8	24	100
Sturdy Loan Officers	13	36.1	13	36.1	10	27.8	36	100
Total	42	42.4	37	37.4	20	20.2	99	100

Source: Computed Data

From Table 34, it is found that Pearson Chi-Square value = 3.606 and p value = 0.462 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and mortgage loan products risk profile. It also implies that all clusters of loan officers have same perception about mortgage loan products with low, moderate and high risk towards the impact of NPAs

Table 34: Chi-Square Test for NPA Impact with Mortgage Loan Products Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	3.606	4	.462
Likelihood Ratio	3.671	4	.452
Linear-by-Linear Association	1.591	1	.207
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Business Loan Product Risk Profile

The impact of NPAs and loan officer's perception towards business loan product risk profile are considered to test their association.

From the Table 35, it is found that 59.0 per cent sagacious loan officers agreed that business loans are moderate risk products, 45.8 per cent passive loan officers agreed that moderate risk is involved and same percentage of them agreed that high risk is involved in business loan products and 8.3 per cent sturdy loan officers agreed that low risk is involved in business loan products.

Table 35: Association between NPA Impact and Business Loan Product Risk Profile

| Impact of NPAs - Clusters | Business Loan Products Risk Profile | | | | | | Total | |
| | Low | | Moderate | | High | | | |
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	4	10.3	23	59.0	12	30.8	39	100
Passive Loan Officers	2	8.3	11	45.8	11	45.8	24	100
Sturdy Loan Officers	3	8.3	20	55.6	13	36.1	36	100
Total	9	9.1	54	54.5	36	36.4	99	100

Source: Computed Data

From Table 36, it is found that Pearson Chi-Square value = 1.505 and p value = 0.826 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and business loan products risk profile. It also implies that all clusters of loan officers have same perception about business loan products with low, moderate and high risk towards the impact of NPAs.

Table 36: Chi-Square Test for NPA Impact with Business Loan Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	1.505	4	.826
Likelihood Ratio	1.493	4	.828
Linear-by-Linear Association	.276	1	.599
N of Valid Cases	99		

Source: Computed Data

*Association between NPA Impact and Personal
Loan Product Risk Profile*

The impact of NPAs and loan officer's perception towards personal loan product risk profile are considered to test their association.

From the Table 37, it is found that 76.9 per cent sagacious loan officers agreed that personal loans are high risk products, 12.5 per cent passive loan officers agreed that low risk is involved in personal loan products and 25.0 per cent sturdy loan officers agreed that moderate risk is involved in personal loan products.

Table 37: Association between NPA Impact and Personal Loan Product Risk Profile

| Impact of NPAs - Clusters | Personal Loan Products Risk Profile | | | | | | Total | |
| | Low | | Moderate | | High | | | |
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	1	2.6	8	20.5	30	76.9	39	100
Passive Loan Officers	3	12.5	6	25.0	15	62.5	24	100
Sturdy Loan Officers	3	8.3	9	25.0	24	66.7	36	100
Total	7	7.1	23	23.2	69	69.7	99	100

Source: Computed Data

From Table 38, it is found that Pearson Chi-Square value = 2.925 and p value = 0.570 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and personal loan products risk profile. It also implies that all clusters of loan officers have same perception about personal loan products with low, moderate and high risk towards the impact of NPAs.

Table 38: Chi-Square Test for NPA Impact with Personal Loan Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	2.925	4	.570
Likelihood Ratio	3.099	4	.541
Linear-by-Linear Association	1.319	1	.251
N of Valid Cases	99		

Source: Computed Data

*Association between NPA Impact and Loan against
Deposits, Investments and Insurance Product Risk
Profile*

The impact of NPAs and loan officer's perception towards deposits, investments and insurance loan product risk profile are considered to test their association.

From the Table 39 it is found that 20.5 per cent sagacious loan officers agreed that loans against deposits, investments and insurance are high risk products, 70.8 per cent passive loan officers agreed that low risk is involved in loan against deposits, investments and insurance products and 13.9 per cent sturdy loan officers agreed that moderate risk is involved in loan against deposits, investments and insurance products. Verification of association has been done in the Table 14.

Table 39: Association between NPA Impact and Loan against Deposits, Investments and Insurance Product Risk Profile

| Impact of NPAs - Clusters | Loan against Deposits, Investments and Insurance Products Risk Profile | | | | | | Total | |
| | Low | | Moderate | | High | | | |
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	27	69.2	4	10.3	8	20.5	39	100
Passive Loan Officers	17	70.8	2	8.3	5	20.8	24	100
Sturdy Loan Officers	24	66.7	5	13.9	7	19.4	36	100
Total	68	68.7	11	11.1	20	20.2	99	100

Source: Computed Data

From Table 40, it is found that Pearson Chi-Square value = 0.498 and p value = 0.974 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and loan against deposits, investments and insurance products risk profile. It also implies that all clusters of loan officers have same perception about loan against deposits, investments and insurance product with low, moderate and high risk towards the impact of NPAs.

Table 40: Chi-Square Test for NPA Impact with Loan against Deposits, Investments and Insurance Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	.498	4	.974
Likelihood Ratio	.496	4	.974
Linear-by-Linear Association	.006	1	.938
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Education Loan Product Risk Profile

The impact of NPAs and loan officer's perception towards education loan product risk profile are considered to test their association.

From the Table 41, it is found that 7.7 per cent sagacious loan officers agreed that education loans are low risk products, 66.7 per cent passive loan officers agreed that high risk is involved in education loan products and 30.6 per cent sturdy loan officers agreed that moderate risk is involved in education loan products. From Table 42, it is found that Pearson Chi-Square value = 1.411 and p value = 0.842 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and education loan products risk profile. It also implies that all clusters of loan officers have same perception about education loan product with low, moderate and high risk towards the impact of NPAs.

Table 41: Association between NPA Impact and Education Loan Product Risk Profile

Impact of NPAs - Clusters	Education Loan Products Risk Profile						Total	
	Low		Moderate		High			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	3	7.7	11	28.2	25	64.1	39	100.0
Passive Loan Officers	3	12.5	5	20.8	16	66.7	24	100.0
Sturdy Loan Officers	2	5.6	11	30.6	23	63.9	36	100.0
Total	8	8.1	27	27.3	64	64.6	99	100.0

Source: Computed Data

Table 42: Chi-Square Test for NPA Impact with Education Loan Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	1.411	4	.842
Likelihood Ratio	1.390	4	.846
Linear-by-Linear Association	.016	1	.900
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and NRI Loan Product Risk Profile

The impact of NPAs and loan officer's perception towards NRI loan product risk profile are considered to test their association.

From the Table 43, it is found that 20.5 per cent sagacious loan officers agreed that NRI loans are high risk products, 58.3 per cent passive loan officers agreed that low risk is involved in NRI loan products and 22.2 per cent sturdy loan officers agreed that moderate risk is involved in education loan products. From Table 44, it is found that Pearson Chi-Square value = 0.623 and p value = 0.960 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and NRI loan products risk profile. It also implies that all clusters of loan officers have same perception about NRI loan product with low, moderate and high risk towards the impact of NPAs.

Table 43: Association between NPA Impact and NRI Loan Product Risk Profile

Impact of NPAs - Clusters	NRI Loan Products Risk Profile						Total	
	Low		Moderate		High			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	22	56.4	9	23.1	8	20.5	39	100.0
Passive Loan Officers	14	58.3	6	25.0	4	16.7	24	100.0
Sturdy Loan Officers	19	52.8	8	22.2	9	25.0	36	100.0
Total	55	55.6	23	23.2	21	21.2	99	100.0

Source: Computed Data

Table 44: Chi-Square Test for NPA Impact with NRI Loan Product Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	.623	4	.960
Likelihood Ratio	.628	4	.960
Linear-by-Linear Association	.179	1	.672
N of Valid Cases	99		

Source: Computed Data

Association between NPA Impact and Other Loan Products Risk Profile

The impact of NPAs and loan officer's perception towards other loan products risk profile are considered to test their association.

From the Table 45, it is found that 82.1 per cent sagacious loan officers agreed that other loan products are not available, 12.5 per cent passive loan officers agreed that high risk is involved in other loan products and 8.3 per cent sturdy loan officers agreed that moderate risk is involved in other loan products. Further, it is found that 5.1 per cent of sagacious loan officers agreed that low risk is involved in other loan products risk profile.

Table 45: Association between NPA Impact and Other Loan Products Risk Profile

Impact of NPAs - Clusters	Other Loan Products Risk Profile								Total	
	Nil		Low		Moderate		High			
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Sagacious Loan Officers	32	82.1	2	5.1	3	7.7	2	5.1	39	100
Passive Loan Officers	19	79.2	1	4.2	1	4.2	3	12.5	24	100
Sturdy Loan Officers	29	80.6	1	2.8	3	8.3	3	8.3	36	100
Total	80	80.8	4	4.0	7	7.1	8	8.1	99	100

Source: Computed Data

From Table 46 (Appendix), it is found that Pearson Chi-Square value = 1.665 and p value = 0.948 are statistically insignificant. Therefore, it can be concluded that there is no association between impact of NPAs and other loan products risk profile. It also implies that all clusters of loan officers have same perception about other loan products with low, moderate and high risk towards the impact of NPAs.

Table 46: Chi-Square Test for NPA Impact with Other Loan Products Risk Profile

Particulars	Value	Degrees of freedom	Significant
Pearson Chi-Square	1.665	6	.948
Likelihood Ratio	1.698	6	.945
Linear-by-Linear Association	.163	1	.687
N of Valid Cases	99		

Source: Computed Data

Conclusion

The Indian banking sector is facing a serious problem of mounting NPAs. In fact, NPA serves as an indicator of the performance of banks and financial institutions. Banks and financial institutions face various risks viz., operational risk, credit risk, management risk etc. Of these, credit risk is chiefly responsible for causing the problem of NPAs in the financial system of a country. Eliminating the menace of non-performing assets remains an uphill task. By implementing appropriate techniques including Corporate Debt Restructuring (CDR), it would be possible for banks and financial institutions to effectively manage the non-performing assets. This would contribute to the reduction in NPAs resulting in the enhancement of profitability position of banks and financial institutions.

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