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## **NPAs and its Impact on Profitability A Empirical Study on Selected Indian Commercial Banks**

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### **ABSTRACT:**

Financial institutions will become engaged in the loan process with the intention of creating positive returns; nevertheless, they will end up with negative returns when borrowers fail to make periodic payments. This has a knock-on effect on financial institutions. This results in banks having a positive increase of NPAs and a negative growth of profit; hence, NPAs have a greater influence on bank profit, capital insufficiency, loss of shareholders' interests, and liquidity issues, which lead to the firm's collapse. In light of this, a research has been done to better understand the increase of non-performing assets (NPAs) in both public and private sector banks, as well as their effect. SBI, Punjab National Bank and Canara Bank were chosen as public sector samples. Secondary data has been gathered, and a comparison analysis has been performed.

**Key words:** NPAs, Profitability, Bank Performance.

## 1 Introduction:

Growing nonperforming loans or advances could impact banks' profits. Loans and advances that default are NPAs. NPAs render assets unproductive and obstruct bank capital recovery. The bank's interest rate is falling, but principle may be recovered. Decreased interest revenue affects a bank's profitability, but if primary capital isn't restored, its capital base may collapse. Each can affect a bank's stability above a certain extent. The RBI defines non-performing assets (NPAs) as assets having principal or interest payments past 90 days. The RBI considers standard, questionable, and lost assets NPAs. Poor assets are NPA for less than 12 months. Dubious assets are NPA assets over 12 months. Asset losses are known and not written off. Three asset classes make up bank NPAs. NPAs increase operating costs and lower interest margins, lowering bank profitability. Research demonstrates that high NPA banks have "carrying costs" that hurt profitability. Banks may lose money as non-performing assets (NPA) rise and drain operating profits. Thus, NPA carrying and provisioning expenses lower bank profits. Berger and Young examined bank efficiency and bad loans.

## 2 Literature Review:

**Rahim Rekha Bhuyan, Ashok Rath (2013)**, The research "Management Perspective of Non-Performing Assets: A Challenge for Indian Banking Sector in the Post Economic Reform Era" examined NPA causes, size, and management in India. NPA ratios' public and private effects were examined. Secondary data, questionnaires, and in-person interviews were used to write the study. The report reveals Indian banks assess clients' creditworthiness to decrease NPAs. The paper recommends creditworthiness to reduce NPAs. **Yeruva Priyanka and Ch. Rajesh Kumar (2019)** examined Scheduled Commercial Bank NPA patterns, growth, and reasons in "Non-performing Assets of Commercial Banks and its Recovery in India". The descriptive research used only secondary sources. To boost bank earnings, the research suggested the government to improve recovery management and NPA reduction. **Amit Kumar (2014)** investigated NPA management and bank measures. Six years of RBI Website secondary data were utilised. Standard deviation, mean, t-test. Research suggests major advances may boost NPAs. "Non-Performing Assets Recovery Channel: An Assessment of Securitization Act 2002"

by **Divya Jain and Ravindra Kumar Saini (2015)** evaluated the Act's recovery efficiency. The research investigated secondary data from many sources utilising standard deviation, ratio analysis, graphs, and tables. The investigation indicated Indian and global banks struggle to recover NPAs. Increased NPAs harm lending, profitability, solvency, and liquidity. RBI must intervene forcefully to stop this. "Non-Performing Assets: A Serious Challenge to Indian Banks" studied NPA causes and profitability in 2019.

### 3 Research Methodology

#### Objectives of the study:

- ❖ To assess the level of NPAs in selected banks.
- ❖ To analyse the impact of NPA on profitability of selected banks.

#### RESEARCH HYPOTHESIS:

- ❖ **Ho:** There is no significant impact of NPA on profitability.

**PERIOD OF STUDY:** Annual financial statement for five years of selected banks from 2019-2023 were selected for study.

**SOURCES OF DATA:** Data from Reserve Bank of India, Moneycontrol.com, and company annual reports.

❖ **SAMPLE SIZE:** The research examines how NPAs affect commercial banks including State Bank of India, Punjab National Bank, Canara Bank, HDFC Bank, and AXIS Bank.

❖ **Analytical tools:** Two approaches for assessing two variables' connection are correlation and regression. Simple regression is used to determine how NPA ratios impact commercial bank profitability.

**4 DATA ANALYSIS :****Table 1: Descriptive statistics of Profitability and NPA of SBI BANK & CANARA BANK.**

|                       | ROA_SB<br>I | ROCE_SB<br>I | ROE_SB<br>I | NET<br>NPA -<br>SBI | GROSS<br>NPA_SBI | ROA_CANB<br>K | ROCE_CANB<br>K | ROE_<br>CANB<br>K | NET<br>NPA<br>_CANB<br>K | GROSS<br>NPA_CANB<br>K |
|-----------------------|-------------|--------------|-------------|---------------------|------------------|---------------|----------------|-------------------|--------------------------|------------------------|
| <b>Observations</b>   | 5           | 5            | 5           | 5                   | 5                | 5             | 5              | 5                 | 5                        | 5                      |
| <b>Mean</b>           | 0.5875      | 1.61         | 11.2225     | 1.355               | 4.47             | 0.24          | 6.764          | 3.062             | 3.558                    | 7.766                  |
| <b>Median</b>         | 0.54        | 1.615        | 10.595      | 1.26                | 4.475            | 0.22          | 7.09           | 5.05              | 3.82                     | 8.21                   |
| <b>Std. deviation</b> | 0.2425      | 0.1525       | 4.3056      | 0.6753              | 1.4363           | 0.4099        | 6.288          | 6.3111            | 1.4103                   | 1.4652                 |
| <b>Skewness</b>       | 0.8992      | -0.1894      | 0.6604      | 0.6796              | -0.0174          | 0.016         | 0.1576         | -1.0168           | -0.089                   | -1.4903                |
| <b>Kurtosis</b>       | 0.4242      | 0.9946       | -0.8973     | 0.3666              | -0.7685          | -0.2936       | -2.0862        | 1.1496            | -0.7892                  | 2.0992                 |
| <b>Jarque-Bera</b>    | 0.7114      | 0.236        | 0.5311      | 0.4129              | 0.1233           | 0.0182        | 0.9274         | 1.1369            | 0.1364                   | 2.769                  |

**Table 2: Descriptive statistics of Profitability and NPA of Punjab National Bank & HDFC Bank.**

|                       | ROA_PNB | ROCE_PNB | ROE_PNB | NET NPA_PNB | GROSS NPA_PNB | ROA_HDFC | ROCE_HDFC | ROE_HDFC | NET NPA_HDFC | GROSS NPA_HDFC |
|-----------------------|---------|----------|---------|-------------|---------------|----------|-----------|----------|--------------|----------------|
| <b>Observations</b>   | 5       | 5        | 5       | 5           | 5             | 5        | 5         | 5        | 5            | 5              |
| <b>Mean</b>           | 0.1967  | 1.6767   | 3.0167  | 4.4167      | 11.5333       | 0.965    | 1.885     | 9.465    | 0.56         | 1.145          |
| <b>Median</b>         | 0.17    | 1.61     | 2.74    | 4.8         | 11.78         | 0.965    | 1.885     | 9.465    | 0.56         | 1.145          |
| <b>Std. deviation</b> | 0.0551  | 0.1514   | 0.7826  | 1.5412      | 2.7184        | 0.6086   | 1.133     | 5.7645   | 0.3653       | 0.6615         |
| <b>Skeweness</b>      | 1.668   | 1.5971   | 1.3921  | -1.05       | -0.405        | 0.2857   | -1.2435   | -0.3775  | 0.3801       | -0.2264        |
| <b>Kurtosis</b>       | 4.7074  | -2.3079  | 4.7996  | 1.8712      | 0.5453        | 1.4008   | -0.2015   | 1.1343   | -0.2613      | 2.677          |
| <b>Jarque-Bera</b>    | 6.9352  | 3.2353   | 6.414   | 1.6482      | 0.1986        | 0.4768   | 1.297     | 0.3868   | 0.1346       | 1.5356         |

**Table 3: Descriptive statistics of Profitability and NPA of ICICI BANK & AXIS Bank.**

|                       | ROA_ICICI | ROCE_ICICI | ROE_ICICI | NET NPA_ICICI | GROSS NPA_ICICI | ROA_AXIS | ROCE_AXIS | ROE_AXIS | NET NPA_AXIS | GROSS NPA_AXIS |
|-----------------------|-----------|------------|-----------|---------------|-----------------|----------|-----------|----------|--------------|----------------|
| <b>Observations</b>   | 5         | 5          | 5         | 5             | 5               | 5        | 5         | 5        | 5            | 5              |
| <b>Mean</b>           | 1.4225    | 2.99       | 12.0675   | 0.9475        | 4.225           | 1.04     | 2.1633    | 8.47     | 0.7233       | 2.8467         |
| <b>Median</b>         | 1.48      | 3.01       | 12.575    | 0.95          | 4.28            | 1.11     | 2.22      | 7.63     | 0.73         | 2.82           |
| <b>Std. deviation</b> | 0.5487    | 0.2568     | 3.9381    | 0.4102        | 1.2431          | 0.2138   | 0.5671    | 2.5174   | 0.3301       | 0.8403         |

|                    |         |         |         |         |         |         |         |        |         |         |
|--------------------|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|
| <b>Skeweness</b>   | -0.5391 | -0.387  | -0.6322 | -0.0261 | -0.1589 | -1.3155 | -0.4451 | 1.3344 | -0.0909 | 0.1427  |
| <b>Kurtosis</b>    | -2.6969 | -2.4382 | -1.8776 | 0.6531  | 0.5816  | -0.3251 | 1.6784  | 1.7901 | -1.0927 | -1.9803 |
| <b>Jarque-Bera</b> | 1.7574  | 1.3633  | 1.0675  | 0.0894  | 0.0915  | 1.4642  | 0.752   | 2.1514 | 0.2556  | 0.834   |

**Table 4: Cross Correlation between profitability and NPA of All banks.**

| <b>PARTICULARS</b> | <b>NET NPA</b> | <b>Gross NPA</b> | <b>PARTICULARS</b> | <b>NET NPA</b> | <b>Gross NPA</b> |
|--------------------|----------------|------------------|--------------------|----------------|------------------|
| <b>PROA_SBI</b>    | -0.9243        | -0.9747          | <b>ROA_HDFC</b>    | 1              | 1                |
| <b>ROCE_SBI</b>    | 0.7741         | 0.6794           | <b>ROCE_HDFC</b>   | 1              | 1                |
| <b>ROE_SBI</b>     | -0.9445        | -0.9852          | <b>ROE_HDFC</b>    | 1              | 1                |
| <b>ROA_CANBK</b>   | -0.8269        | -0.7647          | <b>ROA_ICICI</b>   | -0.9834        | -0.9642          |
| <b>ROCE_CANBK</b>  | -0.9601        | -0.8025          | <b>ROCE_ICICI</b>  | -0.7742        | -0.7197          |
| <b>ROE_CANBK</b>   | -0.5907        | -0.3511          | <b>ROE_ICICI</b>   | -0.9831        | -0.9652          |
| <b>ROA_PNB</b>     | 0.1259         | -0.0122          | <b>ROA_AXIS</b>    | 0.737          | 0.7059           |
| <b>ROCE_PNB</b>    | 0.8206         | 0.8917           | <b>ROCE_AXIS</b>   | 0.9976         | 0.9935           |
| <b>ROE_PNB</b>     | 0.0047         | -0.1334          | <b>ROE_AXIS</b>    | -0.2113        | -0.2551          |

**Table (4)** Shows the correlation profitability ratios with Net NPA and Gross NPA with profitability ratios: SBI Bank has negative correlations for gross, net, and profitability ratios but positive correlations for return on capital used. Net and Gross NPA hurt Canara Bank earnings. Net, Gross, and Return on Capital Employed are positively connected at Punjab National Bank. Low positive association between ROA, ROE, and Net NPA. Low negative association between gross NPA, ROA, ROE. Net, Gross, and profitability ratios connect favourably for HDFC Bank. At ICICI Bank, net, gross, and profitability ratios are substantially adversely connected. Axis Bank. Except for ROE, Net and Gross NPA hurt profitability.

**Table 5: Regression results of ROA and NET NPA of SBI:**

| <i>Regression Statistics</i> |                     |                       |               |                |                       |                  |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| Multiple R                   | 0.9698              |                       |               |                |                       |                  |                    |                    |
| R Square                     | 0.9405              |                       |               |                |                       |                  |                    |                    |
| Adjusted R Square            | 0.9207              |                       |               |                |                       |                  |                    |                    |
| Standard Error               | 0.0928              |                       |               |                |                       |                  |                    |                    |
| Observations                 | 5                   |                       |               |                |                       |                  |                    |                    |
| ANOVA                        |                     |                       |               |                |                       |                  |                    |                    |
|                              | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| <b>Regression</b>            | 1                   | 0.4083                | 0.4083        | 47.4444        | 0.0063                |                  |                    |                    |
| <b>Residual</b>              | 3                   | 0.0258                | 0.0086        |                |                       |                  |                    |                    |
| <b>Total</b>                 | 4                   | 0.4341                |               |                |                       |                  |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| <b>Intercept</b>             | 1.0450              | 0.0927                | 11.2728       | 0.0015         | 0.7500                | 1.3401           | 0.7500             | 1.3401             |
| <b>X Variable 1</b>          | -0.3387             | 0.0492                | -6.8880       | 0.0063         | -0.4952               | -0.1822          | -0.4952            | -0.1822            |

**Table 6: Regression results of ROA and NET NPA of Canara Bank:**

| <i>Regression Statistics</i> |                     |                       |               |                |                       |                  |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| Multiple R                   | 0.8269              |                       |               |                |                       |                  |                    |                    |
| R Square                     | 0.6837              |                       |               |                |                       |                  |                    |                    |
| Adjusted R Square            | 0.5783              |                       |               |                |                       |                  |                    |                    |
| Standard Error               | 0.2662              |                       |               |                |                       |                  |                    |                    |
| Observations                 | 5                   |                       |               |                |                       |                  |                    |                    |
| <i>ANOVA</i>                 |                     |                       |               |                |                       |                  |                    |                    |
|                              | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| Regression                   | 1.0000              | 0.4595                | 0.4595        | 6.4861         | 0.0842                |                  |                    |                    |
| Residual                     | 3.0000              | 0.2125                | 0.0708        |                |                       |                  |                    |                    |
| Total                        | 4                   | 0.672                 |               |                |                       |                  |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept                    | 1.0950              | 0.3562                | 3.0742        | 0.0544         | -0.0386               | 2.2286           | -0.0386            | 2.2286             |
| X Variable 1                 | -0.2403             | 0.0944                | -2.5468       | 0.0842         | -0.5406               | 0.0600           | -0.5406            | 0.0600             |

**Table 7: Regression results of ROA and NET NPA of Punjab National Bank:**

| <i>Regression Statistics</i> |           |           |           |          |                       |
|------------------------------|-----------|-----------|-----------|----------|-----------------------|
| Multiple R                   | 0.5775    |           |           |          |                       |
| R Square                     | 0.3335    |           |           |          |                       |
| Adjusted R Square            | 0.1113    |           |           |          |                       |
| Standard Error               | 0.6105    |           |           |          |                       |
| Observations                 | 5         |           |           |          |                       |
| <i>ANOVA</i>                 |           |           |           |          |                       |
|                              | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
| Regression                   | 1         | 0.5594    | 0.5594    | 1.5010   | 0.3079                |
| Residual                     | 3         | 1.1182    | 0.3727    |          |                       |
| Total                        | 4         | 1.6776    |           |          |                       |



|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept    | 1.1646              | 1.0914                | 1.0671        | 0.3642         | -2.3087          | 4.6379           | -2.3087            | 4.6379             |
| X Variable 1 | -0.2529             | 0.2065                | -1.2251       | 0.3079         | -0.9100          | 0.4041           | -0.9100            | 0.4041             |

**Table 8: Regression results of ROA and NET NPA of HDFC Bank:**

| <i>Regression Statistics</i> |        |
|------------------------------|--------|
| Multiple R                   | 0.5585 |
| R Square                     | 0.3119 |
| Adjusted R Square            | 0.0826 |
| Standard Error               | 0.3559 |
| Observations                 | 5      |

  

| <i>ANOVA</i> |           |           |           |          |                       |
|--------------|-----------|-----------|-----------|----------|-----------------------|
|              | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
| Regression   | 1         | 0.1723    | 0.1723    | 1.3600   | 0.3278                |
| Residual     | 3         | 0.3800    | 0.1267    |          |                       |
| Total        | 4         | 0.5523    |           |          |                       |

  

|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept    | 1.0303              | 0.3491                | 2.9516        | 0.0599         | -0.0806          | 2.1412           | -0.0806            | 2.1412             |
| X Variable 1 | -0.3129             | 0.2683                | -1.1662       | 0.3278         | -1.1667          | 0.5409           | -1.1667            | 0.5409             |

**Table 9: Regression results of ROA and NET NPA of ICICI Bank:**

| <i>Regression Statistics</i> |                     |                       |               |                |                  |                       |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|------------------|-----------------------|--------------------|--------------------|
| Multiple R                   | 0.9811              |                       |               |                |                  |                       |                    |                    |
| R Square                     | 0.9625              |                       |               |                |                  |                       |                    |                    |
| Adjusted R Square            | 0.9500              |                       |               |                |                  |                       |                    |                    |
| Standard Error               | 0.1516              |                       |               |                |                  |                       |                    |                    |
| Observations                 | 5                   |                       |               |                |                  |                       |                    |                    |
| ANOVA                        |                     | <i>df</i>             | <i>SS</i>     | <i>MS</i>      | <i>F</i>         | <i>Significance F</i> |                    |                    |
| Regression                   | 1                   | 1.7715                | 1.7715        | 77.0515        | 0.0031           |                       |                    |                    |
| Residual                     | 3                   | 0.0690                | 0.0230        |                |                  |                       |                    |                    |
| Total                        | 4                   | 1.8405                |               |                |                  |                       |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i>      | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept                    | 2.4797              | 0.1602                | 15.4820       | 0.0006         | 1.9700           | 2.9894                | 1.9700             | 2.9894             |
| X Variable 1                 | -1.0886             | 0.1240                | -8.7779       | 0.0031         | -1.4833          | -0.6940               | -1.4833            | -0.6940            |

**Table 10: Regression results of ROA and NET NPA of AXIS Bank:**

| <i>Regression Statistics</i> |        |           |           |           |          |                       |  |  |
|------------------------------|--------|-----------|-----------|-----------|----------|-----------------------|--|--|
| Multiple R                   | 0.5631 |           |           |           |          |                       |  |  |
| R Square                     | 0.3171 |           |           |           |          |                       |  |  |
| Adjusted R Square            | 0.0895 |           |           |           |          |                       |  |  |
| Standard Error               | 0.3854 |           |           |           |          |                       |  |  |
| Observations                 | 5      |           |           |           |          |                       |  |  |
| ANOVA                        |        | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |  |  |
| Regression                   | 1      | 0.2070    | 0.2070    | 1.3932    | 0.3229   |                       |  |  |
| Residual                     | 3      | 0.4456    | 0.1485    |           |          |                       |  |  |

|              |                     |                       |               |                |                  |                  |                    |                    |  |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|--|
| Total        |                     | 4                     | 0.6526        |                |                  |                  |                    |                    |  |
|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |  |
| Intercept    | 1.1871              | 0.3780                | 3.1403        | 0.0517         | -0.0159          | 2.3901           | -0.0159            | 2.3901             |  |
| X Variable 1 | -0.3429             | 0.2905                | -1.1803       | 0.3229         | -1.2675          | 0.5817           | -1.2675            | 0.5817             |  |

**Table 11: Regression results of ROCE and NET NPA of SBI Bank:**

| <i>Regression Statistics</i> |        |
|------------------------------|--------|
| Multiple R                   | 0.6851 |
| R Square                     | 0.4694 |
| Adjusted R Square            | 0.2926 |
| Standard Error               | 0.6157 |
| Observations                 | 5      |

  

| <i>ANOVA</i> |           |           |           |          |                       |
|--------------|-----------|-----------|-----------|----------|-----------------------|
|              | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
| Regression   | 1         | 1.0062    | 1.0062    | 2.6541   | 0.2018                |
| Residual     | 3         | 1.1373    | 0.3791    |          |                       |
| Total        | 4         | 2.1435    |           |          |                       |

  

|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept    | 2.1844              | 0.6153                | 3.5502        | 0.0381         | 0.2263           | 4.1425           | 0.2263             | 4.1425             |
| X Variable 1 | -0.5317             | 0.3264                | -1.6292       | 0.2018         | -1.5703          | 0.5069           | -1.5703            | 0.5069             |

**Table 12: Regression results of ROCE and NET NPA of CANARA Bank:**

| <i>Regression Statistics</i> |                     |                       |               |                |                       |                  |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| Multiple R                   | 0.9601              |                       |               |                |                       |                  |                    |                    |
| R Square                     | 0.9217              |                       |               |                |                       |                  |                    |                    |
| Adjusted R Square            | 0.8956              |                       |               |                |                       |                  |                    |                    |
| Standard Error               | 2.0314              |                       |               |                |                       |                  |                    |                    |
| Observations                 | 5                   |                       |               |                |                       |                  |                    |                    |
| ANOVA                        |                     |                       |               |                |                       |                  |                    |                    |
|                              | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| Regression                   | 1                   | 145.7778              | 145.7778      | 35.3279        | 0.0095                |                  |                    |                    |
| Residual                     | 3                   | 12.3793               | 4.1264        |                |                       |                  |                    |                    |
| Total                        | 4                   | 158.1571              |               |                |                       |                  |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept                    | 21.9939             | 2.7186                | 8.0901        | 0.0039         | 13.3420               | 30.6458          | 13.3420            | 30.6458            |
| X Variable 1                 | -4.2805             | 0.7202                | -5.9437       | 0.0095         | -6.5723               | -1.9886          | -6.5723            | -1.9886            |

**Table 13: Regression results of ROCE and NET NPA of PUNJAB NATIONAL Bank:**

| <i>Regression Statistics</i> |           |           |           |          |                       |  |  |  |
|------------------------------|-----------|-----------|-----------|----------|-----------------------|--|--|--|
| Multiple R                   | 0.7040    |           |           |          |                       |  |  |  |
| R Square                     | 0.4955    |           |           |          |                       |  |  |  |
| Adjusted R Square            | 0.3274    |           |           |          |                       |  |  |  |
| Standard Error               | 0.0982    |           |           |          |                       |  |  |  |
| Observations                 | 5         |           |           |          |                       |  |  |  |
| ANOVA                        |           |           |           |          |                       |  |  |  |
|                              | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |  |  |  |
| Regression                   | 1         | 0.0284    | 0.0284    | 2.9471   | 0.1845                |  |  |  |

|              |                     |                       |               |                |                  |                  |                    |                    |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Residual     | 3                   | 0.0289                | 0.0096        |                |                  |                  |                    |                    |
| Total        | 4                   | 0.0573                |               |                |                  |                  |                    |                    |
|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept    | 1.4143              | 0.1755                | 8.0584        | 0.0040         | 0.8558           | 1.9728           | 0.8558             | 1.9728             |
| X Variable 1 | 0.0570              | 0.0332                | 1.7167        | 0.1845         | -0.0487          | 0.1627           | -0.0487            | 0.1627             |

**Table 14: Regression results of ROCE and NET NPA of HDFC Bank:**

| <i>Regression Statistics</i> |                     |                       |               |                |                       |                  |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| Multiple R                   |                     | 0.6541                |               |                |                       |                  |                    |                    |
| R Square                     |                     | 0.4278                |               |                |                       |                  |                    |                    |
| Adjusted R Square            |                     | 0.2371                |               |                |                       |                  |                    |                    |
| Standard Error               |                     | 0.4042                |               |                |                       |                  |                    |                    |
| Observations                 |                     | 5                     |               |                |                       |                  |                    |                    |
| <i>ANOVA</i>                 |                     |                       |               |                |                       |                  |                    |                    |
|                              | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| Regression                   | 1                   | 0.3666                | 0.3666        | 2.2433         | 0.2311                |                  |                    |                    |
| Residual                     | 3                   | 0.4902                | 0.1634        |                |                       |                  |                    |                    |
| Total                        | 4                   | 0.8568                |               |                |                       |                  |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept                    | 1.7815              | 0.3965                | 4.4933        | 0.0206         | 0.5197                | 3.0433           | 0.5197             | 3.0433             |
| X Variable 1                 | 0.4564              | 0.3047                | 1.4978        | 0.2311         | -0.5133               | 1.4261           | -0.5133            | 1.4261             |

**Table 15: Regression results of ROCE and NET NPA of ICICI Bank:**

| <i>Regression Statistics</i> |                     |                       |               |                |                       |                  |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| Multiple R                   | 0.8860              |                       |               |                |                       |                  |                    |                    |
| R Square                     | 0.7849              |                       |               |                |                       |                  |                    |                    |
| Adjusted R Square            | 0.7133              |                       |               |                |                       |                  |                    |                    |
| Standard Error               | 0.1639              |                       |               |                |                       |                  |                    |                    |
| Observations                 | 5                   |                       |               |                |                       |                  |                    |                    |
| ANOVA                        |                     |                       |               |                |                       |                  |                    |                    |
|                              | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| Regression                   | 1                   | 0.2940                | 0.2940        | 10.9498        | 0.0454                |                  |                    |                    |
| Residual                     | 3                   | 0.0805                | 0.0268        |                |                       |                  |                    |                    |
| Total                        | 4                   | 0.3745                |               |                |                       |                  |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept                    | 3.4149              | 0.1731                | 19.7302       | 0.0003         | 2.8640                | 3.9657           | 2.8640             | 3.9657             |
| X Variable 1                 | -0.4435             | 0.1340                | -3.3090       | 0.0454         | -0.8700               | -0.0170          | -0.8700            | -0.0170            |

**Table 16: Regression results of ROCE and NET NPA of AXIS Bank:**

| <i>Regression Statistics</i> |        |
|------------------------------|--------|
| Multiple R                   | 0.6938 |
| R Square                     | 0.4813 |
| Adjusted R Square            | 0.3084 |
| Standard Error               | 0.3876 |
| Observations                 | 5      |
| ANOVA                        |        |

|            | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance</i> |  |  |  |
|------------|-----------|-----------|-----------|----------|---------------------|--|--|--|
|            |           |           |           |          | <i>F</i>            |  |  |  |
| Regression | 1         | 0.4181    | 0.4181    | 2.7836   | 0.1938              |  |  |  |
| Residual   | 3         | 0.4506    | 0.1502    |          |                     |  |  |  |
| Total      | 4         | 0.8687    |           |          |                     |  |  |  |

  

|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept    | 1.7636              | 0.3801                | 4.6397        | 0.0189         | 0.5539           | 2.9733           | 0.5539             | 2.9733             |
| X Variable 1 | 0.4874              | 0.2921                | 1.6684        | 0.1938         | -0.4423          | 1.4171           | -0.4423            | 1.4171             |

**Table 17: Regression results of ROE and NET NPA of SBI Bank:**

| <i>Regression Statistics</i> |        |
|------------------------------|--------|
| Multiple R                   | 0.9789 |
| R Square                     | 0.9583 |
| Adjusted R Square            | 0.9444 |
| Standard Error               | 1.4419 |
| Observations                 | 5      |

  

| <i>ANOVA</i> |           |           |           |          |          | <i>Significance</i> |  |  |
|--------------|-----------|-----------|-----------|----------|----------|---------------------|--|--|
|              | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>F</i> |                     |  |  |
| Regression   | 1         | 143.2528  | 143.2528  | 68.9035  | 0.0037   |                     |  |  |
| Residual     | 3         | 6.2371    | 2.0790    |          |          |                     |  |  |
| Total        | 4         | 149.4899  |           |          |          |                     |  |  |

  

|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
| Intercept    | 19.7521             | 1.4409                | 13.7082       | 0.0008         | 15.1665          | 24.3377          | 15.1665            | 24.3377            |
| X Variable 1 | -6.3441             | 0.7643                | -8.3008       | 0.0037         | -8.7763          | -3.9118          | -8.7763            | -3.9118            |

**Table 18: Regression results of ROE and NET NPA of CANARA Bank:**

| <i>Regression Statistics</i> |                     |                       |               |                |                       |                  |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| Multiple R                   | 0.5907              |                       |               |                |                       |                  |                    |                    |
| R Square                     | 0.3489              |                       |               |                |                       |                  |                    |                    |
| Adjusted R Square            | 0.1319              |                       |               |                |                       |                  |                    |                    |
| Standard Error               | 5.8803              |                       |               |                |                       |                  |                    |                    |
| Observations                 | 5                   |                       |               |                |                       |                  |                    |                    |
| <i>ANOVA</i>                 |                     |                       |               |                |                       |                  |                    |                    |
|                              | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| Regression                   | 1                   | 55.5863               | 55.5863       | 1.6076         | 0.2943                |                  |                    |                    |
| Residual                     | 3                   | 103.7344              | 34.5781       |                |                       |                  |                    |                    |
| Total                        | 4                   | 159.3207              |               |                |                       |                  |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept                    | 12.4665             | 7.8698                | 1.5841        | 0.2113         | -12.5787              | 37.5116          | -12.5787           | 37.5116            |
| X Variable 1                 | -2.6432             | 2.0847                | -1.2679       | 0.2943         | -9.2777               | 3.9913           | -9.2777            | 3.9913             |

**Table 19: Regression results of ROE and NET NPA of Punjab National Bank:**

| <i>Regression Statistics</i> |           |           |           |          |                       |
|------------------------------|-----------|-----------|-----------|----------|-----------------------|
| Multiple R                   | 0.5776    |           |           |          |                       |
| R Square                     | 0.3336    |           |           |          |                       |
| Adjusted R Square            | 0.1115    |           |           |          |                       |
| Standard Error               | 11.2726   |           |           |          |                       |
| Observations                 | 5         |           |           |          |                       |
| <i>ANOVA</i>                 |           |           |           |          |                       |
|                              | <i>df</i> | <i>SS</i> | <i>MS</i> | <i>F</i> | <i>Significance F</i> |
| Regression                   | 1         | 190.8325  | 190.8325  | 1.5018   | 0.3078                |
| Residual                     | 3         | 381.2126  | 127.0709  |          |                       |



| Total        | 4                   | 572.0451              |               |                |                  |                  |                    |                    |
|--------------|---------------------|-----------------------|---------------|----------------|------------------|------------------|--------------------|--------------------|
|              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept    | 20.9960             | 20.1516               | 1.0419        | 0.3740         | -43.1354         | 85.1274          | -43.1354           | 85.1274            |
| X Variable 1 | -4.6717             | 3.8122                | -1.2255       | 0.3078         | -16.8039         | 7.4604           | -16.8039           | 7.4604             |

**Table 20: Regression results of ROE and NET NPA of HDFC BANK:**

| <i>Regression Statistics</i> |                     |                       |               |                |                  |                       |                    |                    |  |
|------------------------------|---------------------|-----------------------|---------------|----------------|------------------|-----------------------|--------------------|--------------------|--|
| Multiple R                   | 0.4839              |                       |               |                |                  |                       |                    |                    |  |
| R Square                     | 0.2342              |                       |               |                |                  |                       |                    |                    |  |
| Adjusted R Square            | -0.0211             |                       |               |                |                  |                       |                    |                    |  |
| Standard Error               | 3.3884              |                       |               |                |                  |                       |                    |                    |  |
| Observations                 | 5                   |                       |               |                |                  |                       |                    |                    |  |
| <i>ANOVA</i>                 |                     | <i>df</i>             | <i>SS</i>     | <i>MS</i>      | <i>F</i>         | <i>Significance F</i> |                    |                    |  |
| Regression                   | 1                   | 10.5320               | 10.5320       | 0.9173         | 0.4088           |                       |                    |                    |  |
| Residual                     | 3                   | 34.4437               | 11.4812       |                |                  |                       |                    |                    |  |
| Total                        | 4                   | 44.9757               |               |                |                  |                       |                    |                    |  |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i> | <i>Upper 95%</i>      | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |  |
| Intercept                    | 9.6988              | 3.3233                | 2.9184        | 0.0616         | -0.8775          | 20.2752               | -0.8775            | 20.2752            |  |
| X Variable 1                 | -2.4463             | 2.5542                | -0.9578       | 0.4088         | -10.5749         | 5.6822                | -10.5749           | 5.6822             |  |

**Table 21: Regression results of ROE and NET NPA of ICICI BANK:**

| <i>Regression Statistics</i> |        |
|------------------------------|--------|
| Multiple R                   | 0.9896 |
| R Square                     | 0.9793 |
| Adjusted R Square            | 0.9723 |

|                |                     |                       |               |                |                       |                  |                    |                    |
|----------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| Standard Error | 0.8704              |                       |               |                |                       |                  |                    |                    |
| Observations   | 5                   |                       |               |                |                       |                  |                    |                    |
| <b>ANOVA</b>   |                     |                       |               |                |                       |                  |                    |                    |
|                | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| Regression     | 1                   | 107.3017              | 107.3017      | 141.6369       | 0.0013                |                  |                    |                    |
| Residual       | 3                   | 2.2727                | 0.7576        |                |                       |                  |                    |                    |
| Total          | 4                   | 109.5745              |               |                |                       |                  |                    |                    |
|                | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept      | 20.2048             | 0.9194                | 21.9762       | 0.0002         | 17.2789               | 23.1308          | 17.2789            | 23.1308            |
| X Variable 1   | -8.4725             | 0.7119                | -11.9011      | 0.0013         | -10.7381              | -6.2069          | -10.7381           | -6.2069            |

**Table 22: Regression results of ROE and NET NPA of AXIS BANK:**

|                              |                     |                       |               |                |                       |                  |                    |                    |
|------------------------------|---------------------|-----------------------|---------------|----------------|-----------------------|------------------|--------------------|--------------------|
| <i>Regression Statistics</i> |                     |                       |               |                |                       |                  |                    |                    |
| Multiple R                   | 0.4839              |                       |               |                |                       |                  |                    |                    |
| R Square                     | 0.2342              |                       |               |                |                       |                  |                    |                    |
| Adjusted R Square            | -0.0211             |                       |               |                |                       |                  |                    |                    |
| Standard Error               | 3.3884              |                       |               |                |                       |                  |                    |                    |
| Observations                 | 5                   |                       |               |                |                       |                  |                    |                    |
| <b>ANOVA</b>                 |                     |                       |               |                |                       |                  |                    |                    |
|                              | <i>df</i>           | <i>SS</i>             | <i>MS</i>     | <i>F</i>       | <i>Significance F</i> |                  |                    |                    |
| Regression                   | 1                   | 10.5320               | 10.5320       | 0.9173         | 0.4088                |                  |                    |                    |
| Residual                     | 3                   | 34.4437               | 11.4812       |                |                       |                  |                    |                    |
| Total                        | 4                   | 44.9757               |               |                |                       |                  |                    |                    |
|                              | <i>Coefficients</i> | <i>Standard Error</i> | <i>t Stat</i> | <i>P-value</i> | <i>Lower 95%</i>      | <i>Upper 95%</i> | <i>Lower 95.0%</i> | <i>Upper 95.0%</i> |
| Intercept                    | 9.6988              | 3.3233                | 2.9184        | 0.0616         | -0.8775               | 20.2752          | -0.8775            | 20.2752            |
| X Variable 1                 | -2.4463             | 2.5542                | -0.9578       | 0.4088         | -10.5749              | 5.6822           | -10.5749           | 5.6822             |

## 5. Findings :

### ❖ Return on Assets on Net NPA :

Table 5 illustrates that SBI's below-0.05 NET NPA hurts ROA. Net NPA reductions increase ROA. Table 6: Canara Bank's NET NPA improves ROA, although not much. Net NPA lowers ROA. Table 7 shows that Punjab National Bank's NET NPA boosts ROA, hence they are unrelated. Net NPA lowers ROA. Table 8 demonstrates no correlation between HDFC Bank's ROA and NET NPA, which exceeds 0.05. Net NPA lowers ROA. Table 9 reveals that ICICI Bank's NET NPA is below 0.05, hurting ROA. Net NPA reductions increase ROA. Table 10: ROA is above 0.05, hence AXIS Bank's NET NPA is unrelated. Net NPA lowers ROA.

### ❖ Return on Capital Employed on Net NPA :

Table 11: SBI's NET NPA raises ROCE insignificantly. A smaller Net NPA suggests lesser ROCE. Table 12 shows Canara Bank's NET NPA below 0.05, decreasing ROCE. Net NPA decrease boosts ROCE. Table 13: Punjab National Bank's low NET NPA boosts ROCE. A smaller Net

NPA suggests lesser ROCE. Table 14: Uncorrelated HDFC Bank NET NPA increases ROCE. A smaller Net NPA suggests lesser ROCE. Table 15 shows ICICI Bank's NET NPA below 0.05, affecting ROCE. Net NPA decrease boosts ROCE. Table 16 shows AXIS Bank's above-0.05 NET NPA increases ROCE. A smaller Net NPA suggests lesser ROCE.

### ❖ Return on Equity on Net NPA :

Table 17 shows SBI Bank's NET NPA below 0.05, affecting ROE. Lowering Net NPA enhances ROE. Table 18 shows Canara Bank's ROE and NET NPA are unrelated since both are over 0.05. A smaller Net NPA means poorer ROE. Table 19: Punjab National Bank's NET NPA reaches 0.05, boosting ROE. A smaller Net NPA means poorer ROE. Table 20 shows HDFC Bank's above-0.05 NET NPA increases ROE. A smaller Net NPA means poorer ROE. Table 21 shows that ICICI Bank's NET NPA is below 0.05, affecting ROE. Lowering Net NPA enhances ROE. Table 22 shows ROE increases since AXIS Bank's NET

NPA is above 0.05. A smaller Net NPA means poorer ROE.

**6. Conclusion :** A study has been carried out in order to evaluate the effects that nonperforming assets have on commercial banks. A key cause for concern for the Indian economy is the growing non-performing assets (NPA) in Indian banks. Both the correlation and regression analyses revealed that the net nonperforming assets (NPA) of commercial banks have a detrimental effect on their profitability. Therefore, lower levels of net nonperforming assets (NPA) lead to higher levels of profitability (ROA, ROCE, and ROE) for commercial banks over the course of the research period. According to the findings of the study, regulatory authorities should implement severe regulations in order to prevent the ongoing rise in non-performing assets (NPA) of banks. This will protect the money of Indian taxpayers from being lost.

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