

An Assessment of the Impact of Numerous Macroeconomic and Bank-Specific Factors on the Performance of Indian Banks with Higher NPA

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Abstract: The prime objective of this paper is to study the relationship and impact of various bank-specific and macro-economic factors on the performance of banks with higher NPA in India. Dependent variables are Return on Asset and Return on Equity and independent variables are size, capital adequacy, liquidity, credit risk, operational efficiency, asset utilization, loans, deposit, expenses GDP, Inflation, and FDI. The correlation and Regression method have been used to investigate the relationship and influence of size, loans, capital, deposits, liquidity, credit risk, expenses, economic growth, inflation and foreign direct investment on major performance indicators (ROA & ROE). The empirical results have explicitly stated that both bank-specific factors and macroeconomic factors have a compelling influence on the performance of the banks with higher NPA in India.

Keywords: ROA, ROE, Commercial banks, credit risk, and operational efficiency

I. INTRODUCTION

Financial institutions (Banking sector) are the backbone of any economy and play a vital role in a nation's economic well-being and sustainable development. Finance is the basic nucleus of the development of a nation. It leverages capital formation and capital accumulation, both of which are integral to economic growth. For leveraging capital formation, the financial resources of a country need to be channelized in such a way that they are put into productive life cycles. A robust financial sector facilitates efficient intermediation of financial resources of a nation. The better the financial system is in resource generation and allocation, the more significant its contributions to sustainable economic development are. Commercial banks are responsible for accepting the fund deposits from the citizens and disbursing advance loans. In the wake of liberalization, privatization, and globalization, a lot of roadblocks were faced by commercial banks. Since nationalization and in the early 1990s, the core area of banking operations was on social banking, which has emphasised enhancing the branch network in rural and semi-urban areas and across all terrains of the country. Added responsibilities were provided to banks to undertake financing the fiscal deficit and facilitating the development of designated sectors as reflected in ever-increasing prescriptions of SLR and directed lending. The banking sector expanded under public ownership in a highly regulated environment. All this ensured that profit earning was not identified as the core objective of banking. A bank's profitability has assumed a significant role along with social objectives, which continue to be important from the socio-economic perspective even today. Reforms in the financial sector have resulted in increased competition to enhance efficiency/productivity and position stringent supervisory norms in the same manner as in international best practices to ensure healthy banking.

II. LITERATURE REVIEW

Many studies conducted by individuals and institutions analyzed the factors affecting the profitability and productivity of banks in India and other countries. Some of the studies are reviewed as follows:

Kantawala (2001) attempted to examine the financial performance of different groups of Non-Banking Finance Companies in India for the period 1985-86 to 1994-95 in terms of profitability, leverage, and liquidity. An attempt was made to find the groups for which most ratios were the same. Ratio analysis was

used to achieve the objectives of the study. To examine whether these ratios differ significantly between different categories of NBFCs, a One-way Analysis of Variance (ANOVA) was applied to test the hypothesis. She concluded that there existed a significant difference in the profitability, leverage, and liquidity ratios of various categories of NBFCs.

Aladwan, Mohammad Suleiman (2015) did an empirical study on the profitability of listed Jordanian Commercial Banks. In this research, the impact of the size of a bank is studied on the bank's profitability. The study explained that the size of a bank significantly affects the bank's profitability. The researcher has emphasized that small and medium-sized banks exhibit higher overall performance as compared to large banks. These results support the initial hypothesis that the smaller the bank's assets, the higher its profitability. Finally, further research could be conducted to classify banks in the current size in proportion to their differences in profitability, liquidity, or capital adequacy.

R. Alton Gilbert and David C. Wheelock (2007) analysed the difference in the tax treatment of S-banks and other banks, which greatly impacts measures of U.S. banking system profitability. They also showed the adjustment of S-bank earnings by estimates of federal income taxes to make them comparable with the earnings of other banks; this comparison can markedly affect the conclusions of studies that use net income as a measure of performance.

Yüksel Serhat. et al. (2018) researched to diagnose the determinants of bank profitability in 13 post-Soviet countries. For this study, annual data between 1996 and 2016 has been included and analysed with the help of panel regression and the Generalized Method of Moments (GMM) tools. The conclusion suggests that loan amount, non-interest income and economic growth are significant profitability indicators. However, the 2008 global mortgage crisis has negatively influenced the profitability of the banks in post-Soviet countries. The researcher has also concluded that non-interest income and economic growth positively affect bank profitability. This result also concluded that higher GDP comes with higher bank profitability for post-Soviet countries. In addition, there is a negative relationship between loan-to-GDP ratio and the profitability of the banks in post-Soviet countries. This means that when the ratio of total loans to GDP increases, it negatively affects the banks' financial performance.

Etienne Bordeleau and Christopher Graham (2010) analyzed the impact of liquid asset holdings on bank profitability for a sample of large U.S. and Canadian banks. They suggested that profitability was improved for banks that hold some liquid assets, however, there was a point at which holding further liquid assets diminished a bank's profitability, and all else remains equal.

Imad Z. Ramadan et al. (2011) took apart the determinants of profitability of 10 Jordan banks for the period of 2001-2010. They used return on equity (ROE) and return on assets (ROA) as dependent variables, and internal and external factors were used as independent variables, and the type of data of Jordan banks was panel data. Results indicated that the Jordan banks' profitability depends upon the well-capitalized banks, high loaning activities, less credit risk and cost management efficiency. Findings also expressed that size did not increase the profitability of Jordan banks.

Debaprosanna (2011) studied various factors affecting the banks' profit performance. He identified the factors and examined whether they significantly influenced the profitability of banks in India. He found that Interest Expenses were the only good predictor for Net Profit of all different bank groups taken together during the years 2004-05 to 2006-07 with the given data set.

AniW.U. et al. (2012) investigated the determinants of profitability of commercial banks in Nigeria for the period of ten years from 2001 to 2010, including the observation of 147 banks. Pooled ordinary least square was used to estimate the coefficient. The study found that bank size did not increase the profit of any commercial banks in Nigeria. A greater capital-asset ratio increased the profitability of banks.

C. Dhanapal and G. Ganesan (2012) examined banks' input and output variables, which affect the banks' efficiency and profitability. They used multiple regression analysis to find the relationship between operating profit and other variables. DEA (Data Envelopment Analysis) was also incorporated into the study to find the relationship between the variables.

Syafri (2012) checked the profitability of the commercial banks of Indonesia listed on the stock exchange for the period 2002 to 2011 using pooling data from commercial banks. He applied the pooling data regression model in which return on assets was a dependent variable, and internal and external determinants were used as independent variables. He concluded in his research that loans to total assets and total equity to total assets positively affected. On the other hand, bank size and cost-to-income ratio had a negative effect and economic growth and noninterest income to total assets had a negative effect.

Dawood Usman (2014) undertook the Ordinary Least Square Method to check the impact of various internal factors that affect the profitability of the banks. He also used descriptive statistics in his study. He concluded that cost efficiency, liquidity, and capital adequacy were those factors that decide the profitability of commercial banks in Pakistan.

III. RESEARCH DESIGN

The study is based on secondary data. Secondary data for this study has been collected from various sources like reports on currency and finance (Annual reports), RBI bulletins, reports published by the National Institute of Bank Management, Annual reports of various banks, publications and notifications of RBI, reports of Indian bank Association, reports of S&P, CRISIL, ICRA and various consulting firms like Arthur Anderson, Price warehouse, etc. Time series data from 2001 to 2018 has been collected. A total of 5 banks having high NPA has been taken. Various statistical tools such as correlation, regression analysis, and ANOVA have been used. Durbin Watson test and various post-hoc test has also been used to overcome the problems of autocorrelation and further analysis of results obtained through ANOVA.

IV. RESEARCH OBJECTIVE

The objective of this study is to find out the relationship and impact of bank-specific and macroeconomic factors on the performance of banks with higher NPA. Based on the objective, the present study seeks to test the following hypothesis:

- H₀₁: There is no direct relationship between Size and Bank's Performance.
- H₀₂: There is no direct relationship between Capital and Bank's Performance.
- H₀₃: There is no direct relationship between Liquidity and Bank's Performance.
- H₀₄: There is no direct relationship between Credit Risk and Bank's Performance.
- H₀₅: There is no direct relationship between Operational Efficiency and Bank's Performance.
- H₀₆: There is no direct relationship between Asset Utilization and Bank's Performance.
- H₀₇: There is no direct relationship between Loan and Bank's Performance.
- H₀₈: There is no direct relationship between Deposits and Bank's Performance.
- H₀₉: There is no direct relationship between Expenses and Bank's Performance.
- H₀₁₀: There is no direct relationship between Inflation and Bank's Performance.
- H₀₁₁: There is no direct relationship between GDP and Bank's Performance.
- H₀₁₂: There is no direct relationship between FDI and Bank's Performance.

V. DATA ANALYSIS AND INTERPRETATION

Dependent Variables: The profitability variable is represented by two alternative measures: the ratio of profits to assets, i.e., the return on assets (ROA), and the profits to equity ratio, i.e., the return on equity (ROE). In principle, ROA reflects the ability of a bank's management to generate profits from the bank's assets, although it may be biased due to off-balance-sheet activities. ROE indicates the return to shareholders on their equity and equals ROA times the total assets-to-equity ratio. The latter is often referred to as the bank's equity multiplier, which measures financial leverage. Banks with lower leverage (higher equity) will generally report higher ROA, but lower ROE. Since an analysis of ROE disregards the greater risks associated with high leverage and financial leverage is often determined by regulation, ROA emerges as the key ratio for the evaluation of bank profitability (Gracia et al., 2009) The Return on Asset and Return on Equity taken as dependent variable in order to measures the performance with respect to the bank specific factors and Macroeconomic Indicators.

Table 1		
Dependent Variables	Notation	Assessment
Return on Asset	ROA	Net Income / Total Asset
Return on Equity	ROE	Net Income / Total Equity

Independent Variable: In this study, independent variables are categorized into 2 parts. In the first category of banks, -specific factors such as size, capital adequacy, liquidity, credit risk, operational efficiency, asset utilization, loans, deposit, and expenses have been included. In the second category GDP, Inflation and FDI have been considered. The definitions of these variables are explained below:

1. **Size:** Pasiouras and Kosmidou (2007) [20] explained that a bank with a significantly big size has a higher degree of production and loans diversification in comparison to smaller banks. On the contrary, if the size is extremely big, the bank might demonstrate a negative relationship. This happens due to agency costs, bureaucratic processes, and other administrative costs incurred in to managing large firms.
2. **Capital:** Capital represents the net worth of a bank. It is usually been understood as the difference between the assets and liabilities of a bank or financial institution. To measure the strength of a bank the ratio of its equity and total asset is calculated. This factor expresses the sustainability and vitality of a financial institution.
3. **Liquidity:** Liquidity (LIQ) simply means a bank's capability to pay off its debts. It is an eminent element to understand an institute's risk management framework. This factor depicts the possibility of cash in the hand to meet the demand of deposit holders.
4. **Credit Risk:** Here, provisions for doubtful loans-to-loan ratio have been used as a proxy for Credit Risk (CR). This factor is very crucial to measuring the bank's longevity. If a bank has a high CR ratio, then the chances of default increase in the coming future.
5. **Operational efficiency:** This is also one of the most eminent factors for the bank. This factor reflects the capacity of a bank to reduce, minimize or manage its expenses to produce output without hampering the quality.
6. **Assets Utilization:** This ratio exhibits that the management of a particular bank is managing the assets in the best possible way. This factor also reflects that a bank will earn more profits if the assets are utilised wisely.
7. **Loan:** Various studies have proved that if the bank's loan volume is increasing, it positively impacts its performance and profitability. Garcia et al., (2009) also stated that the better-capitalized bank seems more profitable.
8. **Deposits:** These are the prime source of bank's funding. These are usually converted into loans, the larger the deposits larger will be the bank's margin and profit. Hence Deposits is considered to positively influence the profitability of the banks. Naceur and Goaid (2005) stated that a bank's profits are meticulously related to the amount of cash a bank holds.
9. **Expenses:** Direct relationship between cost and quality improvement that which banks keep expenses low can make higher profits. In all businesses, profit is lower by higher cost and profit is higher by lower cost. The study conducted by Bourke (2013) revealed that reduction in costs and improvement in efficiency increases the profitability of financial institutions. There is a negative relationship between the ratio of operating expenses and profitability.

Part 1 Correlation Analysis

Correlation between Bank specific factors and Bank's performance: In this section the correlation had been measured between the various bank specific factors and bank's performance. The bank specific factors are size, capital adequacy, liquidity, credit risk, operational efficiency, asset utilization, loans, deposit, and expenses.

H_{01} : There is no direct relationship between size and a bank's performance.

Table 2		
Correlation between ROA & Size of banks and ROE & Size of bank with higher NPA		
Return On Asset	Pearson Correlation	-.671 **
	Sig. (2 tailed)	.002
	N	19
Return On Equity	Pearson Correlation	-.761 **
	Sig. (2 tailed)	.000

Table no 1 depicts that value of $r = -0.671$, which shows that the size of a bank has a moderate negative correlation with ROA. The value of $p = 0.002$, which is less than 0.05. This means that a bank's size and ROA have a significant relationship. Hence, null hypothesis will be rejected.

Likewise, the correlation value amidst ROE and the size of bank is, $r = -0.761$, which shows that the size of a bank has a moderate negative correlation with ROE. The value of $p = 0.000$ which is less than 0.05. This means that the size of a bank and ROE has significant relationship. So, we will accept the alternate hypothesis i.e., there is direct relationship between Size and Bank's Performance.

H_{02} : There is no direct relationship between capital adequacy and bank's performance

Table 3		
Correlation between ROA & Capital Adequacy and ROE & Capital Adequacy of bank with higher NPA		
Return On Asset	Pearson Correlation	-.142
	Sig. (2 tailed)	.562
	N	19
Return On Equity	Pearson Correlation	-.395
	Sig. (2 tailed)	.094
	N	19

Table 3 represents that value of $r = -0.142$, which shows that a bank's capital adequacy has a moderate negative correlation with ROA. The value of $p = 0.562$, which is more than 0.05. This means that a bank's ROA and capital adequacy do not have a significant relationship. So, null hypothesis will be accepted.

Likewise, the correlation value amidst ROE and capital adequacy of a bank is $r = -0.395$, which shows that a bank's capital adequacy has a moderate negative correlation with ROE. The value of $p = 0.094$ which is more than 0.05. This means that a bank's capital adequacy and ROE have an insignificant relationship. Therefore, the null hypothesis will be accepted i.e. there is no direct relationship among capital adequacy and bank's performance.

H_{03} : There is no direct relationship between Liquidity and Bank's Performance.

Table 4		
Correlation between ROA & Liquidity and ROE & Liquidity of bank with higher NPA		
Return On Asset	Pearson Correlation	.028
	Sig. (2 tailed)	.910
	N	19
Return On Equity	Pearson Correlation	-.030
	Sig. (2 tailed)	.904
	N	19

Table 4 represents that value of $r = 0.028$, which shows that a bank's liquidity has a low positive correlation with ROA. The value of $p = 0.910$, which is more than 0.05. This means that a bank's ROA and liquidity do not have a significant relationship. Therefore, Null hypothesis is accepted

Likewise, the correlation value between ROE and liquidity of a bank is, $r = -0.030$, which shows that a bank's liquidity has a low negative correlation with ROE. The value of $p = 0.904$, which is more than 0.05. This means that the liquidity of a bank and ROE has insignificant relationship. Therefore, the null hypothesis will be accepted that there is no direct relationship among liquidity and bank's performance.

H_{04} : There is no direct relationship between credit risk and bank's performance.

Table 5		
Correlation between ROA & credit risk and ROE & credit risk of bank with higher NPA		
Return On Asset	Pearson Correlation	-.695**
	Sig. (2 tailed)	.001
	N	19
Return On Equity	Pearson Correlation	-.629**
	Sig. (2 tailed)	.004
	N	19

Table no 5 represents that value of $r = -0.695$, which shows that a bank's liquidity has a moderate negative correlation with ROA. The value of $p = 0.001$, which is less than 0.05. This means that a bank's ROA and credit risk have a significant relationship. So, the null hypothesis will be rejected.

Likewise, the correlation value between ROE and liquidity of a bank is $r = -0.629$, which shows that a bank's liquidity has a moderate negative correlation with ROE. The value of $p = 0.004$, which is less than 0.05. This means that the credit risk of a bank and ROE have a significant relationship. Therefore, the null hypothesis will be rejected and the alternative hypothesis that there is a direct relationship between credit risk and bank performance for the banks with higher NPA.

H_{05} : There is no direct relationship between operational efficiency and bank performance.

Table 6		
Correlation between ROA & operational efficiency and ROE & operational efficiency of bank with higher NPA		
Return On Asset	Pearson Correlation	.238
	Sig. (2 tailed)	.325
	N	19
Return On Equity	Pearson Correlation	.266
	Sig. (2 tailed)	.271
	N	19

The table no 6 illustrates that value of $r = 0.238$, which shows that the operational efficiency of a bank has a low positive correlation with ROA. The value of $p = 0.325$, which is more than 0.05. This means that a bank's ROA and operational efficiency do not have a significant relationship. Hence, null hypothesis will be accepted.

Likewise, the correlation value amidst ROE and operational efficiency of a bank is, $r = 0.266$, which shows that the operational efficiency of a bank has a low positive correlation with ROE. The value of $p = 0.271$, which is more than 0.05. This means that a bank's operational efficiency and ROE have an insignificant relationship. Therefore, the null hypothesis will be accepted that there is no direct relationship among operational efficiency and bank's performance.

H_{06} : There is no direct relationship between Asset Utilization and Bank's Performance.

Table 7		
Correlation between ROA & Asset Utilization and ROE & Asset Utilization of bank with higher NPA		
Return On Asset	Pearson Correlation	.726**
	Sig. (2 tailed)	.000
	N	19
Return On Equity	Pearson Correlation	.733**
	Sig. (2 tailed)	.000
	N	19

The table no 7 illustrates that value of $r = 0.726$, which shows that the asset utilization of a bank has a moderate positive correlation with ROE. The value of $p = 0.000$, which is less than 0.05. This means that a bank's ROE and asset utilization have a significant relationship. So, null hypothesis will be rejected.

Likewise, the correlation value amidst ROE and asset utilization of a bank is $r = 0.733$, which shows that the asset utilization of a bank has a moderate positive correlation with ROE. The value of $p = 0.000$, which is less than 0.05. This means that a bank's asset utilisation and ROE have a significant relationship. Therefore, the null hypothesis will be rejected i.e., there is direct relationship among asset utilization and bank's performance.

H_{07} : There is no direct relationship between loan and bank's performance.

Table 8		
Correlation between ROA & Loan and ROE & Loan of bank with higher NPA		
Return On Asset	Pearson Correlation	.113
	Sig. (2 tailed)	.645
	N	19
Return On Equity	Pearson Correlation	.001
	Sig. (2 tailed)	.996
	N	19

The table no 8 illustrates that value of $r = 0.113$, which shows that a bank loan has a low positive correlation with ROA. The value of $p = 0.645$, which is more than 0.05. This means that the ROE and loan of a bank have an insignificant relationship. So, null hypothesis will be accepted.

Likewise, the correlation value amidst ROE and bank loan is $r = 0.001$, which shows that a bank loan has a low positive correlation with ROE. The value of $p = 0.996$, which is more than 0.05. This means that a bank loan and ROE do not have a significant relationship. Therefore, the null hypothesis will be accepted i.e., there is no direct relationship between loan and bank's performance.

H_{08} : There is no direct relationship between deposits and bank's performance.

Table 9		
Correlation between ROE & deposit and ROE & deposit of bank with higher NPA		
Return On Asset	Pearson Correlation	.209
	Sig. (2 tailed)	.390
	N	19
Return On Equity	Pearson Correlation	.224
	Sig. (2 tailed)	.357
	N	19

The table no 9 illustrates that value of $r = -0.209$, which shows that the deposit of a bank has a low positive correlation with ROA. The value of $p = 0.390$, which is more than 0.05. This means that the ROA and deposit of a bank have insignificant relationship. Hence, null hypothesis will be accepted.

Likewise, the correlation value amidst ROE and deposit of a bank is $r = 0.224$, which shows that the deposit of a bank has a low positive correlation with ROE. The value of $p = 0.357$, which is more than 0.05. This means that a bank loan and ROE do not have a significant relationship. Therefore, the null hypothesis will be accepted i.e., there is no direct relationship among deposit and bank's performance.

H_{09} : There is no direct relationship between expenses and bank's performance

Table 10		
Correlation between ROA & Expenses and ROE & Expenses of bank with higher NPA		
Return On Asset	Pearson Correlation	.382
	Sig. (2 tailed)	.106
	N	19
Return On Equity	Pearson Correlation	.460*
	Sig. (2 tailed)	.048
	N	19

The table no 10 exhibits that the value of $r = 0.382$, which shows that the expenses of a bank have a low positive correlation with ROA. The value of $p = 0.106$, which is more than 0.05. This means that the ROA and expenses of a bank have insignificant relationship. Therefore, null hypothesis will be accepted.

Likewise, the correlation value amidst ROE and expense of a bank is $r = 0.460$, which shows that the expenses of a bank has a low positive correlation with ROE. The value of $p = 0.048$, which is less than 0.05. This means that the deposit of a bank and ROE have significant relationship. Therefore, the null hypothesis will be rejected i.e. there is direct relationship among expenses and bank's performance.

Correlation between Macroeconomic factors and Bank's performance: In this section the correlation had been measured among the various macroeconomic factors and bank's performance. The macroeconomic factors are Inflation, GDP and FDI.

H_{010} : There is no direct relationship between Inflation and Bank's Performance.

Table 11		
Correlation between Inflation & ROA and Inflation & ROE on banks with higher NPA		
Return On Asset	Pearson Correlation	.224
	Sig. (2 tailed)	.357
	N	19
Return On Equity	Pearson Correlation	.182
	Sig. (2 tailed)	.457
	N	19

The table no 11 depicts that value of $r = 0.224$, which shows that the inflation has a low positive correlation with ROA of a bank. The value of $p = 0.357$ which is more than 0.05. This means that the ROE of a bank and inflation have insignificant relationship. Hence, null hypothesis will be accepted.

Likewise, the correlation value amidst ROE of a bank and inflation is $r = 0.182$, which shows that the inflation has a low positive correlation with ROE. The value of $p = 0.457$, which is more than 0.05. This means that a bank's inflation and ROE do not have a significant relationship. Therefore, the null hypothesis will be accepted i.e., there is no direct relationship among Inflation and bank's performance.

H_{011} : There is no direct relationship between GDP and Bank's Performance.

Table 12		
Correlation between ROE & GDP and ROE & GDP on banks with higher NPA		
Return On Asset	Pearson Correlation	.131
	Sig. (2 tailed)	.593
	N	19
Return On Equity	Pearson Correlation	.073
	Sig. (2 tailed)	.767
	N	19

Table no 12 depicts the value of $r = 0.131$, which shows that the GDP has a low positive correlation with ROE of a bank. The value of $p = 0.593$ is more than 0.05. This means that the ROE of a bank and GDP have an insignificant relationship. Therefore, the null hypothesis will be accepted.

Likewise, the correlation value between ROE of a bank and GDP is $r = 0.073$, which shows that the GDP has a low positive correlation with ROE. The value of $p = 0.767$, which is more than 0.05. This means that a bank's GDP and ROE do not have a significant relationship. Therefore, the null hypothesis will be accepted, i.e.; there is no direct relationship between GDP and bank's performance.

H_{012} : There is no direct relationship between FDI and Bank's Performance.

Table 13		
Correlation between FDI & ROE and FDI & ROE of banks with higher NPA		
Return On Asset	Pearson Correlation	-.657**
	Sig. (2 tailed)	.002
	N	19
Return On Equity	Pearson Correlation	-.733**
	Sig. (2 tailed)	.000
	N	19

The above table shows that the value of $r = -0.657$, which shows that the GDP has a moderate negative correlation with ROA of a bank. The value of $p = 0.002$ is less than 0.05. This means that the ROA of a bank and FDI have a significant relationship. Hence, null hypothesis will be rejected.

Likewise, the correlation value amidst ROE of a bank and GDP is $r = -0.733$, which shows that the GDP has a moderate negative correlation with ROE. The value of $p = 0.000$, which is less than 0.05. This means that the GDP and FDI of a bank have a significant relationship. Therefore, the null hypothesis will be rejected, and an alternate will be accepted i.e., there is direct relationship among FDI and bank's performance.

Part II Regression Analysis

Regression analysis amidst bank specific factors on bank's performance

Table 14						
Regression Analysis between Bank specific factors and ROA (Banks with higher NPA)						
Model Summary ^b						
Model	R	R Square	Adjusted R Square	Durbin-Watson	F	Sig.
1	.984 ^a	.969	.938	1.863	31.042	0.000

Above table represents the summary of the applied model and its fitness level. R-value reflects that the performance of the banks and various macroeconomic factors such as size, capital, loan, deposits, expenses, credit risk and liquidity are correlated. For bank-specific variables, the value of R is .984 which shows a correlation between performance and bank-specific factors. R Square value is 0.969 which shows that bank specific factors explain 96% variation in performance. 4 % variation in dependent variable is unexplained. The adjusted R square value is 0.938 this value is adjusted for extraneous predictor used in the model. Adjusted R square value shows that 93.8% variation in dependent variable is explained by independent variable. Further the value of F statistics from ANOVA table is 31.042 and the p value is 0.000. As the p value is less than 0.05, the model used is significant. Also the Durbin –Watson value is 1.863 which is within the limits of 1.5 – 2.5, this show that there is no autocorrelation in the variables.

Table 15						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.768	2.468		3.147	.012
	Size	-.569	.180	-.889	-3.159	.012
	Capital adequacy	.234	.062	.324	3.751	.005
	Liquidity	-.018	.011	-.664	-1.662	.131
	Credit risk	-.100	.051	-.376	-1.953	.083
	Operational efficiency	.002	.001	.268	2.185	.057
	Asset utilization	.500	.219	.274	2.280	.049
	Loan	.033	.029	.446	1.163	.275
	Deposits	-.032	.020	-.948	-1.601	.144
	Expenses	.065	.121	.159	.540	.603

The values of unstandardized coefficients beta values are the regression equation values which help to predict dependent variable performance from independent variables (size, capital, loan, deposits, expenses, credit risk and liquidity).

Performance (ROE) $Y = a + b_1 X \text{ Size} + b_2 * \text{Capital} + b_3 * \text{Liquidity} + b_4 * \text{Credit risk} + b_5 * \text{Operational efficiency} + b_6 * \text{Assets utilization} + b_7 * \text{Loan} + b_8 * \text{Deposit} + b_9 * \text{Expenses} + E$

Performance (ROE) = 7.768 + (-0.889) * size + 0.324 * Capital + (-0.664) * liquidity + (-0.376) * credit risk + 0.268 * operational efficiency + 0.274 * asset utilization + 0.446 * loan + (-0.948) * deposit + 0.159*expenses + E

The above equation exhibits that value of intercept $a = 7.768$, this value represents that if the values of all predictors are zero than value of profitability would be 7.768. The value of $b_1 = -0.889$ which reveals that if size variable changes by 1%, there would be -0.889 unit change in ROA, by holding the other predictors constant. Here $p = 0.012$ which is less than 0.05, so there is significant relationship between Size and ROA. So, alternative hypothesis will be accepted.

The value of $b_2 = 0.324$ reflects that if capital changes by 1%, there would be 0.324 unit change in ROA, by holding the other predictors constant. Here $p = 0.005$ which is less than 0.05, so there is significant relationship between Capital and ROA. So, alternative hypothesis will be accepted.

Likewise, the value of $b_3 = -0.664$ it shows that if the liquidity changes by 1%, there would be -0.664 unit change in ROA, by holding the other predictors constant. Here $p = 0.131$, which is greater than 0.05 so there is insignificant relationship between liquidity and ROE. So, null hypothesis will be accepted.

Moreover the value of $b_4 = -0.376$, which reveals that if credit risk changes by 1%, there would be -0.376 unit change in ROA, by holding the other predictors constant. Here, the $p = .083$ which is greater than 0.05, means that there is an insignificant relation between credit risk and ROA. So, the null hypothesis will be accepted.

Similarly, the value of $b_5 = 0.268$ reveals that if operational efficiency changes by 1%, there would be 0.268 unit change in ROA, by holding the other predictors constant. Here the value of $p = 0.57$ which is greater than 0.05, means that there is an insignificant relation between operational efficiency and ROE. So, the null hypothesis will be accepted.

In addition to the value of $b_6 = 0.274$, which reveals that if asset utilization changes by 1%, there would be 0.274 unit change in ROA, by holding the other predictors constant. Here the value of $p = 0.049$ which is less than 0.05, means that there is a significant relation between asset utilization and ROE. So, the alternative hypothesis will be accepted.

Furthermore, the value of $b_7 = 0.446$ reveals that if loan changes by 1%, there would be 0.446 unit change in ROA, by holding the other predictors constant. Here the value of $p = 0.275$ which is greater than 0.05, means that there is an insignificant relationship between loan and ROE. So, the null hypothesis will be accepted.

Also, the value of $b_8 = -0.948$, which reveals that if deposit changes by 1%, there would be -0.948 unit change in ROA, by holding the other predictors constant. Here the value of $p = 0.144$ which is greater than 0.05, means that there is an insignificant relation between deposits and ROE. So, the null hypothesis will be accepted.

Thus, the value of $b_9 = 0.159$ which reveals that if expenses change by 1%, there would be 0.159 unit change in ROA, by holding the other predictors constant. Here the value of $p = 0.603$ which is greater than 0.05, means that there is an insignificant relation between expenses and ROE. So, the null hypothesis will be accepted.

Regression amidst Macroeconomic Factors and ROA

Table 16						
Regression Analysis between Macroeconomic Factors and ROA (Banks with higher NPA)						
Model Summary ^b						
Model	R	R Square	Adjusted R Square	Durbin-Watson	F	Sig

1	0.810 ^a	0.656	0.587	1.667	9.541	0.001 ^b
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The above table represents the summary of the applied model and its fitness level. R-value reflects that the performance of the banks and various macroeconomic factors such as GDP, Inflation and FDI are correlated. For bank-specific variables, the value of R is 0.810 which shows a correlation between performance and macroeconomic factors. R Square value is .656, which shows that macroeconomic factors explain 65.6% variation in performance. 34.4% variation in the dependent variable is unexplained. The adjusted R square value is 0.587. This value is adjusted for the extraneous predictor used in the model. The adjusted R square value shows that the independent variable's 58.7% variation in dependent variable is explained.

Further, the value of F statistics from the ANOVA table is 9.541, and the p-value is 0.001. As the p value is less than 0.05, the model used is significant.

Further, the value of F statistics from the ANOVA table is 9.541, and the p-value is 0.001. As the p value is less than 0.05, the model used is significant. Also, the Durbin –Watson value is 1.667, which is within the limits of 1.5 – 2.5; this shows that there is no autocorrelation in the variables.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.298	.418		.714	.486
	GDP	.056	.051	.166	1.091	.292
	Inflation	.095	.032	.478	3.000	.009
	FDI	-2.231E-05	.000	-.803	-5.053	.000

The values of unstandardized coefficients beta values are the regression equation values which help to predict dependent variable performance from independent variables (GDP, Inflation and FDI).

$$\text{Performance (ROA) } Y = a + b_1 X \text{ GDP} + b_2 * \text{Inflation} + b_3 * \text{FDI} + E$$

$$\text{Performance (ROA)} = 0.298 + (0.166) * \text{GDP} + (0.478) * \text{Inflation} + (-0.803) * \text{FDI} + E$$

The above equation exhibits that value of intercept $a = 0.298$, this value represents that if the values of all predictors are zero than value of profitability would be 29.8. The value of $b_1 = 0.166$ reveals that if GDP variable changes by 1%, there would be a 0.166 unit change in ROA, by holding the other predictors constant. Here $p = 0.292$, which is greater than 0.05, so there is an insignificant relationship between GDP and ROA. So, null hypothesis will be accepted.

The value of $b_2 = 0.478$; this reflects that if inflation variable changes by 1%, there would be 0.478 unit change in ROA, by holding the other predictors constant. Here $p = 0.009$ which is less than 0.05, so there is significant relationship between Inflation and ROA. So, null hypothesis will be rejected.

Likewise, the value of $b_3 = (-0.803)$ shows that if the FDI variable changes by 1%, there would be -0.803 unit change in ROA, holding the other predictors constant. Here $p = 0.000$, which is less than 0.05, so there is a significant relationship between FDI and ROA. So, the null hypothesis will be rejected.

Regression analysis amidst bank-specific factors on Return on Equity

Table 18						
Regression Analysis between Bank Specific Factors and ROE (Banks with higher NPA)						
Model Summary ^b						
Model	R	R Square	Adjusted R Square	Durbin-Watson	F	Sig
1	0.990 ^a	0.980	0.960	2.026	48.764	0.000 ^b

Above table represents the summary of the applied model and its fitness level. R value reflects that the performance of the banks and various bank specific factors such as size, capital, loan, deposits, expenses, credit risk and liquidity are correlated. For bank specific variables, the value of R is .990 which shows a correlation between performance and bank-specific factors. R Square value is .980 which shows that bank specific factors explain 98% variation in performance. 2% variation in dependent variable is unexplained. The adjusted R square value is 0.960 this value is adjusted for extraneous predictor used in the model. Adjusted R square value shows that the independent variable explains 96% variation in dependent variable. Further, the value of F statistics from the ANOVA table is 48.764, and the p-value is 0.000. As the p value is less than 0.05, the model used is significant. Also, the Durbin –Watson value is 2.026, which is within the limits of 1.5 – 2.5; this shows that there is no autocorrelation in the variables.

Table 19						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	126.331	36.001		3.509	.007
	Size	-8.059	2.628	-.692	-3.066	.013
	Capital adequacy	-.016	.910	-.001	-0.018	.986
	Liquidity	-.243	.154	-.504	-1.570	.151
	Credit risk	-1.966	.748	-.406	-2.628	.027
	Operational efficiency	.035	.015	.232	2.357	.043
	Asset utilization	9.113	3.197	.275	2.851	.019
	Loan	0.424	0.417	0.313	1.016	0.336
	Deposits	-.437	.290	-.717	-1.508	.166
	Expenses	1.277	1.762	.172	.725	.487

The values of unstandardized coefficients beta values are the regression equation values that help predict dependent variable performance from independent variables (size, capital, loan, deposits, expenses, credit risk and liquidity).

Performance (ROE) $Y = a + b_1 X \text{ Size} + b_2 * \text{Capital} + b_3 * \text{Liquidity} + b_4 * \text{Credit risk} + b_5 * \text{Operational efficiency} + b_6 * \text{Assets utilization} + b_7 * \text{Loan} + b_8 * \text{Deposit} + b_9 * \text{Expenses} + E$

Performance (ROE) = 126.331 + (-0.692) * size + (-0.001) * Capital + (-0.504) * liquidity + (-0.406) * credit risk + 0.232 * operational efficiency + 0.275 * asset utilization + 0.313 * loan + (-0.717) * deposit + (0.172)*expenses + E

The above equation exhibits that value of intercept $a = 126.331$, this value represents that if the values of all predictors are zero than value of profitability would be 126.331. The value of $b_1 = (-0.692)$ which reveals that if size variable changes by 1%, there would be -0.692 unit change in ROE, by holding the other predictors constant. Here $p = 0.013$ which is less than 0.05, so there is significant relationship between size and ROE. So, alternative hypothesis will be accepted.

The value of $b_2 = (-0.001)$ reflects that if capital changes by 1%, there would be -0.001 unit change in ROE, by holding the other predictors constant. Here $p = 0.986$ which is greater than 0.05, so there is insignificant relationship between capital and ROE. So, null hypothesis will be accepted.

Likewise, the value of $b_3 = (-0.504)$ shows that if the liquidity changes by 1%, there would be -0.504 unit change in ROE, by holding the other predictors constant. Here $p = 0.151$, which is greater than 0.05, so there is an insignificant relationship between liquidity and ROE. So, null hypothesis will be accepted.

Moreover the value of $b_4 = (-0.406)$, which reveals that if credit risk changes by 1%, there would be -0.406 unit change in ROE, by holding the other predictors constant. Here, the value of $p = .027$ is less than 0.05, which means that there is a significant relationship between credit risk and ROE. So, the null hypothesis will be rejected.

Similarly, the value of $b_5 = 0.232$, which reveals that if operational efficiency changes by 1%, there would be 0.232 unit change in ROE, by holding the other predictors constant. Here the value of $p = 0.043$ which is less than 0.05, means that there is a significant relation between operational efficiency and ROE. So, the null hypothesis will be rejected.

In addition to the value of $b_6 = (0.275)$, which reveals that if asset utilization changes by 1%, there would be 0.275 unit change in ROE, by holding the other predictors constant. Here the value of $p = 0.019$ which is less than 0.05, which means that there is significant relation amidst asset utilization and ROE. So, the null hypothesis will be rejected.

Furthermore, the value of $b_7 = 0.313$ reveals that if loan changes by 1%, there would be 0.313 unit change in ROE, by holding the other predictors constant. Here the value of $p = 0.336$, which is greater than 0.05, means that there is an insignificant relationship between loan and ROE. So, the null hypothesis will be accepted.

Also, the value of $b_8 = (-0.717)$ reveals that if deposit changes by 1%, there would be -0.717 unit change in ROE, by holding the other predictors constant. Here the value of $p = 0.166$ which is greater than 0.05, means that there is an insignificant relation between deposits and ROE. So, the null hypothesis will be accepted.

Thus, the value of $b_9 = (0.172)$ reveals that if expenses change by 1%, there would be 0.172 unit change in ROE, by holding the other predictors constant. Here the value of $p = 0.487$ which is greater than 0.05, means that there is an insignificant relation between expenses and ROE. So, the null hypothesis will be accepted.

Regression amidst Macroeconomics factors and ROE

Table 38						
Regression Analysis between Macroeconomics factors and ROE Group 1 (Banks with higher NPA)						
Model Summary ^b						
Model	R	R Square	Adjusted R Square	Durbin-Watson	F	Sig.
1	.854 ^a	.729	.675	1.292	13.456	.000 ^b

Above table represents the summary of the applied model and its fitness level. R value reflects that the performance of the banks and various macroeconomic factors such as GDP, Inflation and FDI are correlated. For bank specific variables, the value of R is 0.854 which shows a correlation between performance and macroeconomic factors. R Square value is .729 which shows that macroeconomic factors explain 72.9% variation in performance. 27.1% variation in the dependent variable is unexplained. The adjusted R square value is 0.675. This value is adjusted for extraneous predictor used in the model. The adjusted R square value shows that the independent variable's 67.5% variation in dependent variable is explained.

Further, the value of F statistics from the ANOVA table is 13.456, and the p-value is 0.000. As the value of p-value is less than 0.05 hence the model used is significant. Also, the Durbin –Watson value is 1.292, which is within the limits of 1.5 – 2.5; this show that there is no autocorrelation in the variables.

Table 35						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.362	6.746		1.536	.145
	GDP	.657	.830	.107	.792	.441
	Inflation	1.631	.509	.453	3.205	.006
	FDI	.000	.000	-.872	-6.177	.000

The values of unstandardized coefficients beta values are the regression equation values that help predict dependent variable performance from independent variables (GDP, Inflation and FDI).

$$\text{Performance (ROE) } Y = a + b_1 X \text{ GDP} + b_2 * \text{Inflation} + b_3 * \text{FDI} + E$$

$$\text{Performance (ROE)} = 10.362 + (0.107) * \text{GDP} + (0.453) * \text{Inflation} + (-0.872) * \text{FDI} + E$$

The above equation exhibits that value of intercept $a = 10.362$, this value represents that if the values of all predictors are zero than value of profitability would be 10.362. The value of $b_1 = 0.107$ which reveals that if GDP variable changes by 1%, there would be .107 unit change in ROE, by holding the other predictors constant. Here $p = 0.441$, which is greater than 0.05, so there is insignificant relationship between GDP and ROE. So, null hypothesis will be accepted.

The value of $b_2 = 0.453$, this reflects that if the inflation variable changes by 1%, there would be a 0.453 unit change in ROE by holding the other predictors constant. Here $p = 0.006$, which is less than 0.05, so there is a significant relationship between Inflation and ROE. So, the null hypothesis will be rejected.

Likewise, the value of $b_3 = (-0.872)$ shows that if the FDI variable changes by 1%, there would be -0.872 unit change in ROE, holding the other predictors constant. Here $p = 0.000$, which is less than 0.05, so there is a significant relationship between FDI and ROE. So, the null hypothesis will be rejected.

VI. FINDINGS

The above analysis has concluded the following results:

Correlation results amidst ROA & bank-specific factors And ROE & bank-specific factors		
Hypothesis	Accepted / Rejected	
	ROA	ROE
H ₁ Size	H ₀ Rejected	H ₀ Rejected
H ₂ Capital adequacy	H ₀ Accepted	H ₀ Accepted
H ₃ Liquidity	H ₀ Accepted	H ₀ Accepted
H ₄ Credit Risk	H ₀ Rejected	H ₀ Rejected
H ₅ Operational Efficiency	H ₀ Accepted	H ₀ Accepted
H ₆ Asset Utilization	H ₀ Rejected	H ₀ Accepted
H ₇ Loan	H ₀ Accepted	H ₀ Accepted
H ₈ Deposits	H ₀ Accepted	H ₀ Accepted
H ₉ Expenses	H ₀ Accepted	H ₀ Rejected

This result specifies that the size, credit risk, and asset utilization are the main bank-specific factors that have a significant and direct relation with the overall performance of the banks with higher NPA. These results are consistent with the previous studies conducted by Mohammad Suleiman Aladwan, Sabina Yasmine, Mohammad Saif Uddin Bhuiyah. Thus we will accept our alternate hypothesis that there is a direct relation between size, credit risk, and asset utilization, and bank performance.

Correlation results between ROA & Macroeconomic factors And ROE & Macroeconomic factors		
Hypothesis	Accepted / Rejected	
	ROA	ROE
H ₁₀ Inflation	H ₀ Accepted	H ₀ Accepted
H ₁₁ GDP	H ₀ Accepted	H ₀ Accepted
H ₁₂ FDI	H ₀ Rejected	H ₀ Rejected

The above table explicitly shows that FDI has a direct and significant relation with ROA and ROE of banks with higher NPA. These results are consistent with the previous studies by Mohammad Suleiman Aladwan, Sabina Yasmine, Mohammad Saif Uddin Bhuiyah. Thus, we will accept our alternate hypothesis that there is a direct relation between FDI and bank performance.

Regression results amidst ROA & bank-specific factors And ROE & bank-specific factors		
Hypothesis	Accepted / Rejected	
	ROA	ROE
H ₁ Size	H ₀ Rejected	H ₀ Rejected
H ₂ Capital adequacy	H ₀ Rejected	H ₀ Accepted
H ₃ Liquidity	H ₀ Accepted	H ₀ Accepted
H ₄ Credit Risk	H ₀ Accepted	H ₀ Rejected

H ₅ Operational Efficiency	H ₀ Accepted	H ₀ Rejected
H ₆ Asset Utilization	H ₀ Rejected	H ₀ Rejected
H ₇ Loan	H ₀ Accepted	H ₀ Accepted
H ₈ Deposits	H ₀ Accepted	H ₀ Accepted
H ₉ Expenses	H ₀ Accepted	H ₀ Accepted

This result specifies that the size, capital adequacy, credit risk, operational efficiency and asset utilization are the bank-specific factors influencing the performance of banks with higher NPA.

Regression results amidst ROA & Macroeconomic factors And ROE & Macroeconomic factors		
Hypothesis	Accepted / Rejected	
	ROA	ROE
H ₁₀ Inflation	H ₀ Accepted	H ₀ Accepted
H ₁₁ GDP	H ₀ Rejected	H ₀ Rejected
H ₁₂ FDI	H ₀ Rejected	H ₀ Rejected

The finding from the regression reflects that macroeconomic factors such as GDP and FDI influence the performance of banks with higher NPA.

Conclusion: The study investigated that there are some bank-specific factors, such as size, capital adequacy, credit risk, operational efficiency and asset utilization which have significantly impacted the performance of banks having higher NPA. Along with the above factor, macroeconomic factors such as GDP and FDI also impact the bank's performance. These results will benefit the stakeholder of the banks to make wise investment decisions. The authorities should also review these determinants which are affecting the bank's performance so as to be able to deal with the upcoming contingencies. For future research, this study can also be studied on banks with moderate NPA and lower NPA. Other factors such as comparative ratios and industry-specific factors can also be included.

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