

# Impact of bank-specific internal factors on the profitability of state-owned commercial banks in Bangladesh

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## ABSTRACT

**Purpose:** The aim of this study is to identify the bank-specific internal factors that affect the profitability of state owned commercial banks of Bangladesh. **Methodology:** The study applied explanatory research design and carried out based on secondary data only. The main source of data is annual reports (Audited Financial Statements) of the respective banks for the period of 2014 to 2018. Multiple Regression Model & Descriptive Statistics are used for data analysis which is being done through MS Excel 2013 version. In Multiple Regression Model considered ROA as dependent variable and internal factors as an independent variable. VIF test is also employed to check the Multicollinearity problem. **Findings:** The regression analysis reveals that independent variables (bank-specific internal factors) of the banks are important enough to explain the variation of the dependent variable (ROA) of the study. Moreover, the results show that there is a significant and negative relationship between ROA and NPL ratio & liquidity ratio. On the other hand, ROA and bank size have significant positive relationship. But leverage ratio and solvency ratio have statistically insignificant relationship with ROA. So, it is said that among five internal factors, NPL, liquidity and bank size are the most important bank specific internal factors that affect the profitability of banks. **Implications:** This study shall provide the regulators, managements, depositors and other concerned parties an important insight about State Owned Commercial Banks profitability and enhance the performance thereby. **Originality:** This study is a unique one in Bangladesh perspective because there is hardly any study about effect of bank-specific internal factors on the profitability of State Owned Commercial Banks of Bangladesh.

**Key Words:** Impact, internal factors, external factors, profitability.

## INTRODUCTION

Bank is a financial institution authorized to get deposits and make loans (Islam and Rana, 2017). The main element in a financial system is banks. They work as an intermediary between funds provider and those in needs of funds contributing to economic growth. Banks also play a role in the

implementation of a country monetary policy. Thus, profitable banks will ensure the continuity of economic growth as well as the stability of the financial system (Al-Harbi, 2019). However, to maintain financial stability and sustain negative shocks, it is important to understand the factors that influence the profitability of banks (Rehman et al., 2018). On the other hand, banking business is directly associated with trust factor

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(Babu & Choudary, 2014). Moreover, for arresting *negative shocks and maintaining* financial stability, it is important to understand the determinants that mostly affect the profitability of banking sector of Bangladesh (Mizan et al., 2013).

The factors that affect banks' profitability are categorized into two groups: Endogenous and exogenous elements. Endogenous means internal and exogenous means external. Capital adequacy, loans, deposits, foreign ownership, overhead costs, off-balance sheet (OBS) activities, etc., are example of internal or endogenous factors. On the other hand, external factors include GDP growth, per capita GDP, real interest rates, and regulations and financial structure, which may affect bank's profitability (Al-Harbi, 2019).

Banks profitability refers to the difference between the profit amount obtained from the assets and expense of the liabilities. However, bank profitability is also described as a function of both micro- and macro-determinants. Microvariables are related to balance sheet and income statement of banks. Therefore, they are also termed as bank-specific variables or factor. Although macrovariables are not linked to the internal practices of the banks, these variables affect profitability of banks' greatly. Size of bank, capital adequacy, risk management, operating expense, marketable securities, and NPL are generally considered as microvariables. Inflation, interest rate, GDP growth, and tax rate are used as macrovariables (Yuksel et al., 2018).

## OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

- Investigating the effect of NPL on state-owned commercial banks' profitability in Bangladesh.
- Identifying the effect of liquidity ratio on the SOCB's profitability of Bangladesh.
- Evaluating the influence of solvency ratio on the SOCB's profitability of Bangladesh.
- Describing the impact of leverage ratio on the SOCB's profitability of Bangladesh.
- Analyzing the power of bank size on the SOCB's profitability of Bangladesh.

## JUSTIFICATION OF THE STUDY

Several researchers together with Jaber and Al-Khawaldeh (2014), Berhe (2017), Rehman et al. (2018), Yuksel et al. (2018), Assfaw (2018), Makkar and Hardeep (2018),

Al-Homaidi et al. (2018), Bhattarai (2018), Supriyono and Herdhayinta (2019), Al-Harbi (2019), etc., have conducted research to analyze the determinants of the profitability of banks in different countries across the world. A number of studies have also been done in Bangladesh with same focal point such as Sufian and Kamaruddin (2012), Mizan et al. (2013), Rahman and Akhter (2015), Mahmud et al. (2016), Banna et al. (2017), Siddique et al. (2017), Liza (2017), Matin (2017), Islam and Rana (2017), Islam et al. (2017), Lee and Iqbal (2018), Hossain and Khalid (2018), and Hassan and Ahmed (2019). However, there is hardly any study about effect of bank-specific internal factors on the profitability of state-owned commercial banks of Bangladesh. Therefore, this study is undertaken to provide some empirical evidence on the effect of bank-specific internal factors on the profitability of state-owned commercial banks of Bangladesh. The study uses return on assets (ROA) as an alternative for bank's profitability.

## LITERATURE REVIEW

Worldwide, a number of researchers have worked on the factors affecting commercial banks profitability. In this section, we will amalgamate these factors that affecting banks profitability. Literature reviews are shown in Table A.

## METHODOLOGY

### Population and Sample Size

According to Bangladesh bank, Schedule Banks Statistics, there are 59 scheduled banks in Bangladesh. These 59 banks are considered as population of the study. Among this population, we have purposively selected a total of five state-owned commercial banks as sample for the period of 5 years (from 2014 to 2018). The sample banks are Sonali, Janata, Agrani, Rupali, and Basic Bank Limited.

### Data Source and Nature

The study applied explanatory research design and carried out based on secondary data only. The main source of data is annual reports (audited financial statements) of the respective banks. For literature review purposes, relevant article has also been consulted.

### Variables

The study used both dependent variable (ROA) and independent (NPLR, LQR, SR, LR, and BS) which are described in Table 1.

**Table A: Review of literature**

S. No.	Author	Period	Variables		Methods	Findings
			DV	IV		
1.	Hassan and Ahmed (2019)	2010–2017	ROA	Bank size, capital to risk assets, investment to deposits, NPL, and cost to income.	Research method a panel analysis. Fixed effect model is applied based on the Hausman test.	Four variables are found statistically significant.
2.	Sufian and Kamaruddin (2012)	2000–2010	ROA	Bank size, liquidity, capitalization, non-traditional activities, management quality as bank specific and GDP, inflation and concentration as macroeconomic variables.	The generalized least squares method with Hausman test.	Five bank-specific variables and macroeconomic variables significantly influence profitability.
3.	Banna et al. (2017)	2000–2013	ROA	Bank size, capital adequacy ratio, return on average equity and real interest rates	Data envelopment analysis method	All four variables have a significant effect on bank efficiency in Bangladesh.
4.	Siddique et al. (2017)	2011–2015	ROA, ROE, NIM	TETA, CIR% deposit ratio	Correlation and regression analysis	IV are significant enough to explain the variation of the DV.
5.	Hossain and Khalid (2018)	2002–2008	ROAA	Internal factors – ETA, CIR, LLPOTL, YGD, and NII. External – ETR, RGG, TB, and IG	Multiple regression models	Internal and external factors have influence on bank profitability, but macroeconomic factors do not
6.	Liza (2017)	2005–2015	ROA ROE	CA, LA, DP, NPL, IGSEC, NIM	Pooled ordinary least square	All variables except CA (-ve) positively influence profitability.
7.	Matin (2017)	2010–2015	ROA ROE NIM	CRAR, NPL, LLP. BS, NII, OBSTA, NIE_INC, NIATA, LQ, GDP, INFL.	Feasible generalized least squares	NPL, LLP, BS cost efficiency, and LQ had significant negative effect on ROA.
8.	Rahman and Akhter (2015)	2009–2013	ROA	Size, equity, deposit, loan, and OPEX	Least square method of FEM	Bank size and deposit have significant and negative impact on ROA.
9.	Islam and Rana (2017)	2005–2015	ROA ROE	NPL, CIR, LDR, cost of fund, and operating expense	Panel data	NPL and operating expense have a significant effect on profitability.
10.	Islam et al. (2017)	2014–2015	ROE	AS, CA, LA, NPL, DP, NIM, NII, IGSEC, OI	Multiple regression models	AS and NIM had no significant effect but effect of NLP is significant.
11.	Mahmud et al. (2016)	2003–2013	ROA	BS, GR, NPL, LR, OR, CAR	Prais-Winsten correlated panels corrected standard errors PCSEs Model	BR, OR, GR, and CAR affect profitability of banks.

(Contd...)

Table A: (Continued)

S. No.	Author	Period	Variables		Methods	Findings
			DV	IV		
12.	Lee and Iqbal (2018)	2009–2016	ROA ROE	ATQA, ETQA, LDR, NIM, BS, GDP growth rate	Random effect – GLS method	ATQA, ETQA, LDR, and NIM exercise positive effect on both ROA and ROE. However, BS and GDP growth rate affect negatively
13.	Assfaw (2018)	2011–2017	ROA ROE NIM	BS, LM, AQ, ME, CA	Descriptive statistics, Pearson correlation coefficient, multiple linear regression	CA, ME, and BS have statistically positive significant effect on financial performance of PCBs of Ethiopia.
14.	Berhe (2017)	2007–2016	EPS	CAR, NPLR, TLTD, IITA, LIQA	CAMEL model and OLS technique	Only CAR and LIQA have significant impact on profitability of CBs in Ethiopia.
15.	Makkar and Hardeep (2018)	2001–2016	ROA	Liquidity ratio, solvency ratio, management efficiency, and bank size	Least square regression model	Liquidity ratio, solvency ratio, management efficiency, and bank size have significant impact on profitability of Indian CBs.
16.	Al-Homaidi et al. (2018)	10 years	ROA ROE NIM	LNA, CAR, AQ, LR, AM, DEP, AM, OPEF, LEV, BRANCH, GDP, INF, INTR, EXCH	Pooled, fixed and random effects models and GMM	LNA, AM, LEV, and BRANCH are significantly related to ROA. In case of ROE, almost all bank- specific variables show significantly significant relation except for LNA, CAR, and DEP.
17.	Supriyono and Herdhayinta (2019)	2011–2015	ROA ROE	TA, LDR, OE/OI, NIM as internal and BIRATE and inflation as external variables.	Robust regression with STATA software	Except OE/OI and inflation, all variables have positive relations with profitability.
18.	Jaber and Al-khawaldeh (2014)	2007–2012	ROAA	CAR, LQR, COST, BS as internal and INF, ASSGDP, MACPASS as external variables.	Multivariate analysis	Almost all internal and external factors are significant.
19.	Bhattarai (2018)	2011–2016	ROA	Default risk, cost per LA, CAR as internal and GDP growth, exchange rate and inflation as external variables.	Regression analysis	Profitability in Nepal is mostly influenced by cost per loan assets
20.	Rehman et al. (2018)	2007–2015	ROA	CAP, AC, FS, AQ, ER, FBS, TR, MS, and BS as internal and GDP growth rate, real IR and industry concentration as external variables.	Panel data Regression	AC and BS as internal and real IR and GDP growth rate as external factors have extensive influence banks' profitability in Pakistan.

## Model and Tools Applied

In this study, multiple regression models and various tools such as statistical tools (mean and one-way ANOVA) and MS Excel version 13 have been used for data analysis.

## Model Specification

The following model represents the effect of bank-specific internal factors on profitability, as follows:

$$X = \beta_0 + \beta_1 Y_1 + \beta_2 Y_2 + \beta_3 Y_3 + \beta_4 Y_4 + \beta_5 Y_5$$

Where, X represents banks profitability measured by ROA,  $Y_1$  = Non-performing loans (NPL) ratio;  $Y_2$  = Liquidity ratio;  $Y_3$  = Solvency ratio;  $Y_4$  = Leverage ratio;  $Y_5$  = Bank

size;  $\beta_1, \beta_2, \beta_3, \beta_4,$  and  $\beta_5$  represent the coefficients of five independent variables, respectively;  $\beta_0$  = Model constant.

## Research Period

The research has been carried out for the period of 5 consecutive years starting from December 31, 2014, to December 31, 2018.

## Research Hypothesis

Five hypotheses have been developed for the study. A hypothesis will be completely accepted if the coefficient estimated is statistically significant and its sign is found as our expectation. It will be partially accepted if the coefficient estimated is slightly insignificant, but the sign is as predicted. Otherwise, a hypothesis will be rejected (Hassan and Ahmed, 2019).

**Table 1: Variables definition and measurement**

S. No.	Types	Name of variables	Measurement
1.	Independent variables (internal factors)	Non-performing loans ratio	NPLs/total loans
		Liquidity ratio	Investment/deposits
		Solvency ratio	Equity/assets
		Leverage ratio	Debt/equity
		Bank size	Natural logarithm of assets
2.	Dependent variable (profitability)	ROA	Net income/assets

**Table 2: List of hypotheses**

Hypothesis	Description
H1	The NPL ratio affects profitability negatively and significantly.
H2	The liquidity ratio affects profitability negatively and significantly.
H3	The solvency ratio affects profitability positively and significantly.
H4	The leverage ratio affects profitability negatively and significantly.
H5	The bank size affects profitability positively and significantly.

**Table 3: Descriptive statistics**

	ROA	NPLR	Invest/deposit	Equity/asset	Debt/equity	BS (LnTA)
Mean	-0.428	27.721	33.101	6.118	15.777	13.144
Std. error	0.351	3.017	1.960	0.390	0.960	0.130
Std. deviation	1.757	15.087	9.799	1.948	4.799	0.651
Sample variance	3.088	227.621	96.013	3.795	23.035	0.424
Minimum	-7.490	11.690	9.834	3.471	6.480	12.050
Maximum	1.000	57.150	47.107	13.363	27.660	14.083

Source: Sample banks annual reports and results are computed by Microsoft Excel

## RESULTS AND DISCUSSION

Some important descriptive statistics of variables used in the study are described in Table 3. The table shows profitability measure, ROA, and five bank-specific internal factors which are ratio of NPL to gross loan, liquidity ratio (investment to deposits), solvency ratio (equity to assets), leverage ratio (debt to equity), and bank size (natural logarithm of total assets). ROA has a minimum value of 7.49% and a maximum value of 1.00% with a standard deviation of 1.75% which is the evidence that profitability among state-owned commercial banks varies greatly.

On the other hand, the NPL ratio among state-owned commercial banks in Bangladesh is varied from 11.69% to 57.15% with the mean and standard deviation of 27.72% and 15.08%, respectively, which indicates a high volatility among state-owned commercial banks' ability in credit risk management. In addition, minimum liquidity ratio is 9.83%. Similarly, solvency ratio and leverage ratio show a

high volatility. However, bank size has minimum value of 0.13 and maximum value 14.08 with a very low standard deviation of 0.53.

Moreover, we have conducted ANOVA test to verify the applicability of the model.

Table 5 shows the ANOVA test results for our dataset.

Based on the ANOVA test results, we cannot accept the null hypothesis, i.e., bank-specific internal factors affect the profitability of state-owned commercial banks of Bangladesh. The multiple regression models show the following output.

It is shown in Table 6 that value of correlation coefficient  $R=0.825$  means that there is a strong linear relationship between dependent variable ROA and independent variables. On the other hand, the value of R square is 0.682 which indicates that 68.20% of the variations in the dependent variable ROA are explained by the independent variables. Moreover, Table 6 represents the beta coefficient ( $\beta$ ) of five independent variables with  $P$  value. It is shown in Table 6 that beta coefficient for the beta coefficient of intercept, NPL to total loans and advances ratio (NPLR), and investments to deposits ratio (LQR) are negative to ROA. It states that when NPL and LQR of state-owned commercial banks are raised in one unit, ROA (profitability) of state-owned commercial banks is decreased by 0.073 units and 0.085 units, respectively, keeping other independent variables constant.

However, the beta coefficient of equity to assets ratio (SR), debt to equity ratio (LR), and bank size (BS) are positive to ROA which implies that larger the beta coefficient of

**Table 4: Hypotheses for ANOVA**

$H_0$	Bank-specific internal factors do not affect the profitability of state-owned commercial banks.
$H_1$	Bank-specific internal factors affect the profitability of state-owned commercial banks.

**Table 5: ANOVA**

	df	SS	MS	F	Sig. F
Regression	5	50.559	10.112	8.156	0.0002
Residual	19	23.555	1.240		
Total	24	74.115			

**Table 6: Regression analysis**

	Coefficients	Std. error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-19.397	8.100	-2.394	0.027	-36.351	-2.442
NPLR	-0.073	0.019	-3.821	0.001	-0.114	-0.033
Investment/deposit	-0.085	0.032	-2.669	0.015	-0.151	-0.018
Equity/asset	0.313	0.192	1.633	0.118	-0.088	0.714
Debt/equity	0.040	0.074	0.540	0.595	-0.115	0.195
BS (LnTA)	1.618	0.551	2.935	0.008	0.464	2.772

### Summary output

Multiple R	0.825
R square	0.682
Standard error	1.113
Observations	25

**Table 7: Hypothesis acceptance or rejection based on multiple regression models**

Hypothesis	Determinant	Statistical significance	Expected effect	Estimated effect	Results
H1	NPL	Significant	Negative	Negative	Accepted
H2	LQR	Significant	Negative	Negative	Accepted
H3	SR	Insignificant	Positive	Positive	Partially accepted
H4	LR	Insignificant	Negative	Positive	Rejected
H5	BS	Significant	Positive	Positive	Accepted

**Table 8: Variance inflation factor and tolerance level**

Variables	Variance inflation factor	Tolerance level (1/VIF)
NPLR	1.628784	0.613955
Investment/deposit	1.878948	0.532213
Equity/asset	2.700536	0.370297
Debt/equity	2.447293	0.408615
BS (LnTA)	2.495704	0.400689
Average	2.230253	0.465154

SR, LR, and BS higher would be ROA. According to the estimation, we found that the intercept, NPLR, LQR, and BS are statistically significant at a level of 5%. On the other hand, as *P*-value of solvency ratio and leverage ratio is more than 0.05, these results are statistically insignificant. Table 7 summarizes the acceptance or rejection of hypotheses on the multiple regression models assessment.

### Multicollinearity Test

VIF test is performed to measure multicollinearity problem among predictor variables (bank-specific internal factors) of the study. According to Suganya and Kengatharan (2018), cutoff value of VIF and tolerance statistics is 10.0 and 0.10, respectively. As per results of Table 8, VIF for each independent variable is <10 (cutoff VIF) and the mean value of VIF is about 2. On the other hand, tolerance value of each independent is <0.10 (cutoff tolerance statistics). Therefore, independent variables of this study are free from the multicollinearity problem.

## CONCLUSION

Profitability is critical to the long-term survival of commercial banks, especially in the changing environment of banking industry in the context of Bangladesh (Lee and Iqbal, 2018). To date, studies on the effect of internal and

external factors on the profitability of banking sectors in Bangladesh are numerous. On the other hand, effect of bank-specific internal factors on the profitability of state-owned commercial banks of Bangladesh is relatively scarce.

The aim of the study is to investigate the effect of bank-specific internal factors on the profitability of state-owned commercial banks of Bangladesh. This study examined the performance of five state-owned commercial banks of Bangladesh during the period of 2014–2018. The five bank-specific internal factors that are examined consist of NPL ratio (NPL to gross loan), liquidity ratio (investment to deposits), solvency ratio (equity to assets), leverage ratio (debt to equity), and bank size (natural logarithm of total assets). To examine the significant relationship between profitability and those potential bank-specific internal factors, the study used the multiple regression model analysis (MRMA).

The results show that there is a significant and negative relationship between ROA and NPLR and ROA and investment-deposit ratio. On the other hand, ROA and bank size have significant positive relationship. However, debt/equity and equity/assets have statistically insignificant relationship with ROA. Hence, it is said that among five bank-specific internal factors, NPL, liquidity, and bank size are the most important factors of bank profitability.

The study did not include macroeconomic variables which might affect the state-owned commercial banks profitability. Hence, there is a scope of further investigation for state-owned commercial banks of Bangladesh. Nevertheless, we believe that this study shall provide the regulators, managements, depositors, and other concerned parties an important insight about state-owned commercial banks profitability and enhance the performance thereby.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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