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Determinants of Profitability of Commercial Banks in Bangladesh

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Abstract

This report focuses on the determinants of profitability of 30 DSE listed Commercial banks of Bangladesh from 2010 to 2017. The analysis part of this paper includes multiple regressions to determine impact of significant variables on profitability. The findings of this paper suggests that the net interest margin ratio (NIM), Asset size (LOGA), the ratio of operating expense (OPEX) are significant against the dependent variable called Return on Equity (ROE). Interest income is main source of income for banks. The finding suggests that if asset size increases, return on equity (ROE) will decrease and if operating expense ratio increases, return on equity decreases. Additional analysis is done in return on assets (ROA) and return on operating assets (ROOA) to justify whether the results meet with the main analysis. The findings of this study suggest that commercial banks should be more careful while giving loans with diversified portfolio maintenance.

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1. Introduction

1.1 Background Information

A listed commercial bank's profitability is determined by some bank specific factors and macroeconomic factors. This research paper highlights the contribution of banks specific factors for the determination of profitability. These commercial banks have major contribution for the economic improvement and advancement of the country. This sector gives service to the people according to their needs. Again, credit is called as the blood of any economy. This sector has equal contribution for the transfer of credits and funds to important areas including agriculture, service industry as well as the industry sector of the country. After the independence of the country in 1971, the division of State Bank of Pakistan situated in Dhaka is converted to Bangladesh Bank, according to Presidential order no. 127 of 1972. All the banks of then East Pakistan were converted to six national banks. Lacking in service, Poor management, capital lease problem as well as lack of monetary instrument influenced the government to establish some commercial banks in Bangladesh. Arab Bangladesh Bank Limited which is currently named as AB Bank Ltd started its drive in Bangladesh in 12th April, 1982 which is recognized as first commercial bank listed in Bangladesh. In present situation, there have 65 scheduled and non-scheduled banks are operated here where state owned banks are six including Basic Bank Limited and Bangladesh Development Bank Limited, specialized banks are three, 42 private commercial banks with 3 recently approved banks called Bengal Bank, People's Bank and Citizen Bank, 9 foreign banks and 5 non-scheduled banks (source from Bangladesh Bank)

1.2 Objective of the Study

The objective of the paper is to determine the profitability of listed commercial banks of Bangladesh. In this paper, the major determinants of profitability are considered to help in the growth of the banks. There are few papers related to the issue, but those paper indirectly consider the profitability. The hypothesis is developed to test the significance of the variables taken for the research purpose.

1.3 Organization of the Study:

In Introduction part, background information, objectives, organization and scope is discussed. In the Literature Review part, references and findings from renowned authors are discussed. In Methodology, Definition and discussion of variables are presented. In Analysis part, there are statistical methods such as multiple regressions, ANOVA, multicollinearity and Durbin-Watson test is shown. In result and discussion part, findings are discussed. In conclusion, there is summary report about the findings. This paper includes references also.

1.4 Scope of Further Research

Further analysis can be done including macro-economic factors with the firm specific factors to find the result of external factors influencing the determinants of profitability.

2. Literature review

Many aspects of commercial banks are analyzed in various prior studies. Commercial banks are one of the three streams of banks currently existing in Bangladesh (Hossain, 2019; Hossain, 2020). Apart from the various aspects of commercial banks, many researchers have focused on various factors of commercial banks and their relationship with profitability in the developed country settings. Between the bank specific factors and macro specific factors, research is conducted by Bhatia, Mahajan and Chander (2012), Sufian and Nor (2012) in India, Liu and Wilson(2010) in Japan on bank specific factors. Macit(2012) found a positive

relationship profitability and equity to total asset ratio from 2005-2010 in Turkey. Evidence prepared by Demirguc and Huizinga (1999) proved that higher equity tends to more profit. Mauricio Jara, Jose Maya, Perales (2014) observed the relationship between profitability and capital adequacy. They found a positive relationship from the 78 commercial banks of Brazil, Chile, Colombia and Mexico from 1995 to 2000. Hassan and Bashir suggested that increase in the capital of a bank will increase the overall profitability of the listed banks. Growe, Lee and Maldonado (2014) used Generalized Least Suares method and found an inverse position between non-performing loans and profitability in USA regional banks. From the theoretical part, relationships are drawn from signaling theory, bankruptcy cost hypothesis, risk-return hypothesis and also power and efficiency structure. Signaling theory explains the relationship between two major components called capital and profitability. Berger (1995), Trujillo and Pance (2012) found that higher capital leads to positive signal about the value of the firm. Bankruptcy costs hypothesis suggest that a firm always tries to use more equity when bankruptcy risk arises. The risk return hypothesis implies that a firm can increase profit through increase in leverage.

Table 1: Summary Review

Summary table Author	Sample	Time period	Research design	Variables	Findings
Sufian, 2011	11 banks of **Korea**	1992-2003	Regression analysis	Dependent variable: ROE Independent variables: Log of total assets, Loans loss provision of total loans, Log of total deposits, Book value of shareholder equity.	Log of total assets has negative and other income has a positive relationship with profitability
Yuksel et al (2018)	13 post-**Soviet countries**	1996-2016	Generalized Method of Moments	Dependent variable: ROE Independent variables: Loan amount, Economic growth non-performing loans and non-interest income.	Loan amount, non-performing loans and non-interest income are significant.
Buchoty, 2015	12 banks of **Indonesia**	2006-2013	Regression	Dependent variable: ROA Independent variable: Asset size, Loans to deposit ratio, Adequacy ratio, and capital adequacy ratio	Loans to deposit ratio and capital adequacy ratio has no significant influence on profitability
Macit, 2012	15 banks of **Turkey**	2005-2010	multiple regression	Dependent variables: ROA, ROE Independent variables: Equity to total asset ratio, Non-performing loans to total loans, Leverage, Macro factors.	The positive relation of equity to total asset ratio with profitability and negative relation of non-performing loans to total loans with profitability.
Fah et al, 2014	115 commercial banks of **Japan**	2010-2012	Regression Analysis	Dependent variable: Net interest margin Independent variables: Capital adequacy, Liquidity, Asset quality, management efficiency.	Capital adequacy is negatively correlated and asset quality and management efficiency is positively correlated.

Islam et al, 2016	11 private commercial banks of **Bangladesh**	2014-15	Multiple regression	Dependent variables: ROE Independent variables: Asset size, interest margin, deposit to total asset, investment to total asset.	Investment activities of commercial banks significantly impact the profitability.
Asli Demirguc-Kunt and Harry Huizinga, 1999	Bank level data for **80 countries**	10years (1988-1995)	Secondary data and regression analysis	Dependent variables: Interest margins and profitability Independent variables: Bank characteristics, leverage, Capital adequacy ratio, macro-economic conditions	Banks that keep more equity relative to assets, performs better than others.
Saeed, 2014	73 commercial banks of **UK**	2006-2012	Multiple regression analysis with secondary data	Dependent variables: ROA, ROE Independent variables:	Outstanding loans, capital adequacy ratio, deposit and liquidity have a positive impact on profitability.
Toni Aburime, 2008	154 banks of **Nigeria**	1980-2006	Secondary data	Dependent variable: ROE Independent variables: Net interest margin, debt to equity ratio, deposits.	Net interest margin is significant determinant.

2.1 Hypothesis development

Based on the prior study, the hypothesis of this study is developed below:

1. There is a positive relationship between net interest margin and bank's profitability (ROE)
2 Increase in size of the total asset will increase the profitability of the banks.
3. Non-performing loan has a negative relationship with a bank's profitability.
4. The higher the level of operating expense, the lower the level of profit.

3. Research Methodology

3.1 Sample selection

This work picks 30 listed in Dhaka Stock Exchange commercial banks in Bangladesh for the year 2010-2017. The total size of the sample is 240 banks-years (30*8). The source of the sample was the annual report prepared by each bank.

3.2 Research Model

Table 2: Dependent Variable

Dependent Variable:

Variable	Notation	Measure
Return on equity	ROE	Return on equity= Net profit/total equity

Additional dependent variable:

Variable	Notation	Measure
Return on asset	ROA	Return on asset= Net profit/total asset
Return on operating asset	ROOA	Return on operating asset= Net profit/ operating asset

Independent variable:

Table 3: Independent Variable

Variable	Notation	Measure	Proxy
Net interest margin	NIM	Net interest margin= Net interest or	Earnings
Other operating income	OI	investment income/ Total asset Other income/ Total asset	
Size	Log A	Natural logarithm of total assets	Industry impact
Equity to total assets	CA	Equity/ Total assets	Capital adequacy
Loans to total assets	AE	Loans/ Total assets	Asset Efficiency
Non-Performing Loans to Total Loans	AQ	Non-Performing loans/ Total Loans	Asset Quality
Total Deposit to Total Assets	DA	Total Deposit/ Total Assets	Asset Structure
Investment to Total assets	ITA	Investment/ Total assets	Investment Capability
Operating Expenses to total Assets	OPEX	Operating expense/total Assets	Management Efficiency
Debt to equity ratio	LEV	Total debt/ Total Equity	Leverage

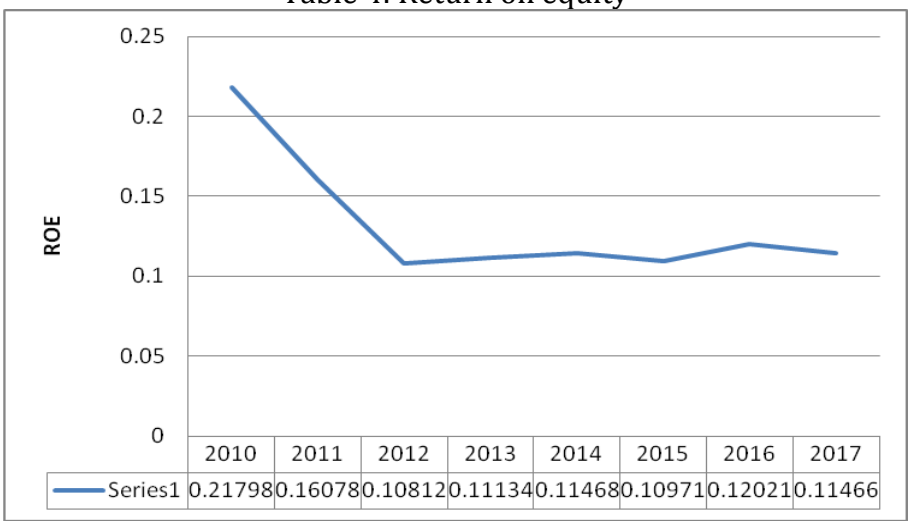
So, the equation can be written as follows

$$\beta 0+\beta 1NIM+\beta 2OI+\beta 3logA+\beta 4CA+\beta 5AE+\beta 6AQ+\beta 7DA+\beta 8ITA+\beta 9OPEX+\beta 10LEV+\varepsilon$$

3.3 Explanation of the variables

Return on equity (ROE)

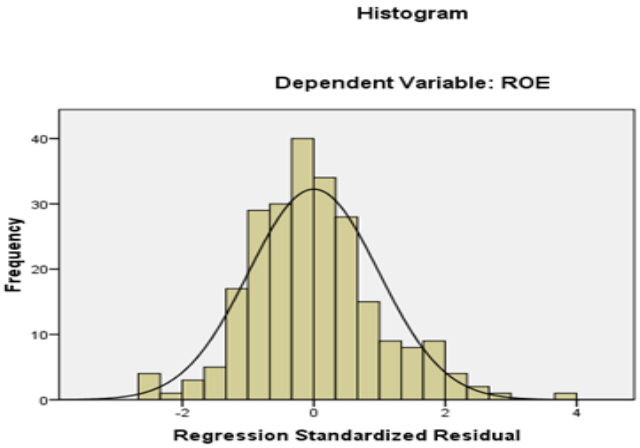
Table 4: Return on equity



Source: Calculated from the annual report of the banks

Table 4 shows ROE which is the most used dependent variable for determining the profitability. The calculation is done for a company by dividing profit after tax by total equity. ROE helps an investor to understand how an efficient manager of a company uses the assets to earn profit.

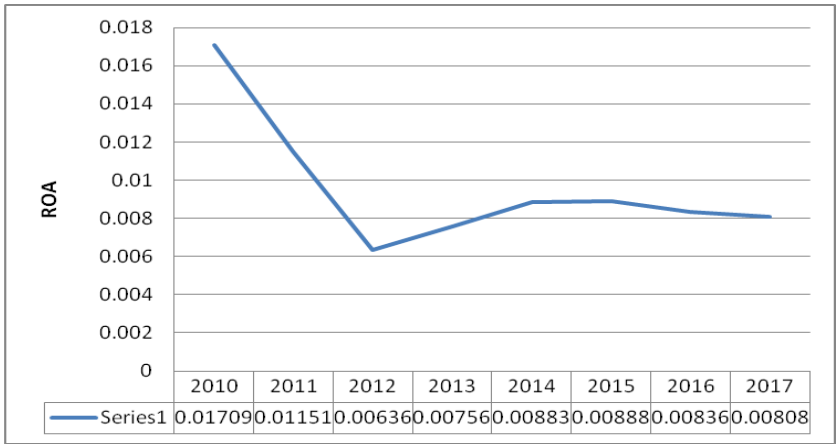
Table 5: Histogram



Source: Calculated from the annual report of the banks through SPSS

Return on Assets (ROA):

Table 6: Return on Assets



Source: Calculated from the annual report of the banks

ROA is called return on assets. This indicates the profitability position of a company comparative to its entire assets. ROA is calculated using net income divided by the total assets of a company. This chart indicates the down flow of ROA from 2011 and then upward from 2012.

Return on operating assets (ROOA):

ROOA includes return on operating assets. All the assets are not equal to contribute same in the company profitability. ROOA determines how a company uses its operating assets to generate profit. Operating assets examples are cash, accounts receivables, inventory and fixed assets.

Independent variables:

From the literature review part, significant factors influencing the profitability of a bank include earnings, industry impact, capital adequacy, asset quality, asset structure, investment capability, management efficiency and leverage.

Earnings (NIM):

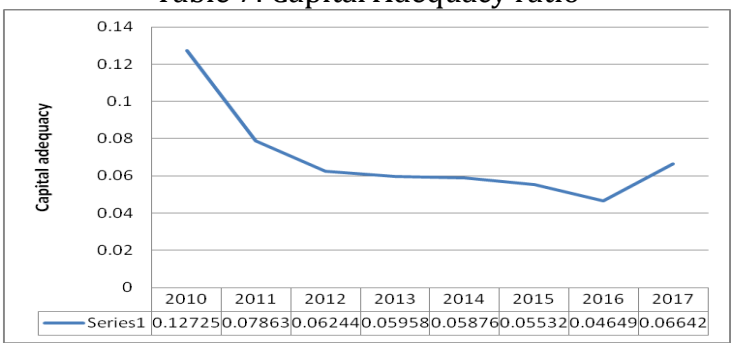
Earnings include two important variables called net interest margin and other income. Net interest margin includes the net interest income of the conventional banks and income from investment of Islamic banks. Other income includes brokerage commission, fees and other income. These variables are divided by the total assets to identify the portion of each variable in total assets.

Asset size (LOGA):

Asset size is considered as a significant factor to influence profitability. Normally, the natural logarithm of asset is taken as the independent variable. The effect of the size of the bank to the determination of profitability is considered as positive (Smirlock, 1985). But, after a certain limit the impact can be negative due to bureaucratic problems and distribution (Gibson, 2001)

Capital Adequacy ratio (CA)

Table 7: Capital Adequacy ratio



Source: Calculated from the annual report of the banks

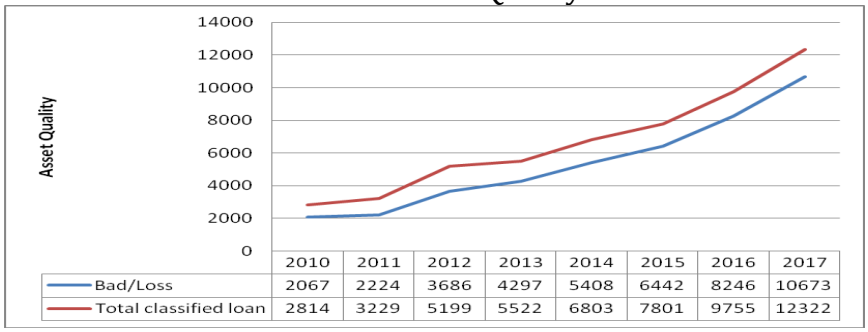
Table 7 indicates the flow of capital adequacy. Capital adequacy represents the total equity of a company related to total asset ratio, which shows the capital strength of a company. If the capital adequacy ratio is higher, there will be less need for external funding and thus increases profitability. Below the graph represents the capital adequacy ratio for banks from 2010 to 2017 which shows the down flow of this ratio reducing profitability.

Asset Efficiency:

For determining the asset efficiency, one ratio is loan to total assets. This ratio helps to identify what is the portion of loans and advances to total assets. Loans and advances are known as a major source of a company. So, increasing loans and advances affect positively to the determination of profitability in an extent (Afzaal, 2012).

Asset Quality (AQ):

Table 8: Asset Quality



Source: Calculated from the annual report of the banks

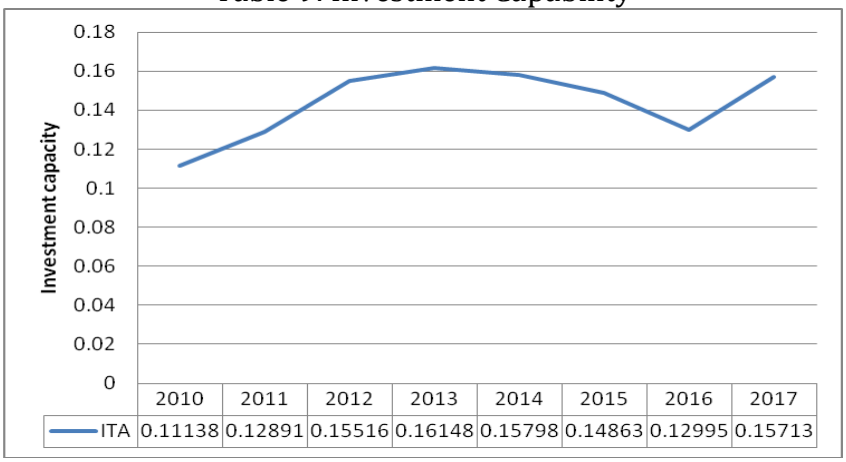
Table 8 which are Non-performing loans of a bank influence negatively to the loan portfolio and thus negatively influence profitability. The red line in the below graph shows total classified loans and another line so bad or loss portion of banks from 2010 to 2017. Both of the loans increase much year to year.

Asset structure (DA):

Asset structure is represented by the deposit to total assets in where higher the level of deposit higher the opportunity to give loans. When a bank has more deposit, it will not have any need to finance debt with high charge from external sources. This will lead to high profitability.

Investment Capability (ITA):

Table 9: Investment Capability

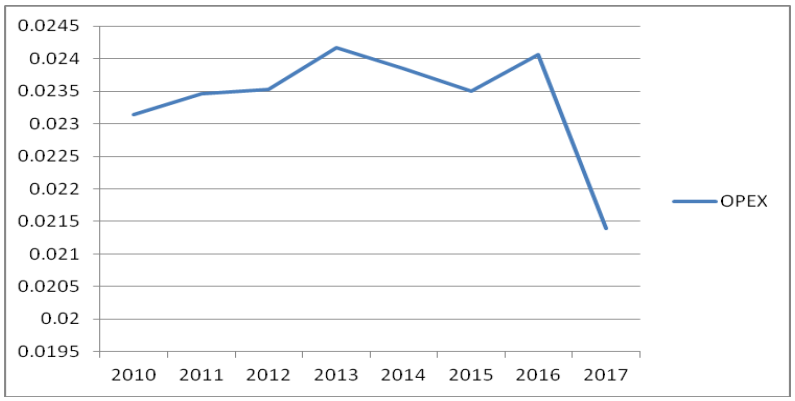


Source: Calculated from the annual report of the banks

Investment capacity determines the portion of investment in total assets. Banks normally invest in bonds, government securities and debentures. The returns from this investment will increase the profit of the firms. The following chart shows the average investment to total asset for the commercial banks from 2010 to 2017. This ratio increases from 2011 and decreases in 2016.

Management Efficiency ratio (OPEX):

Table 10: Management Efficiency ratio

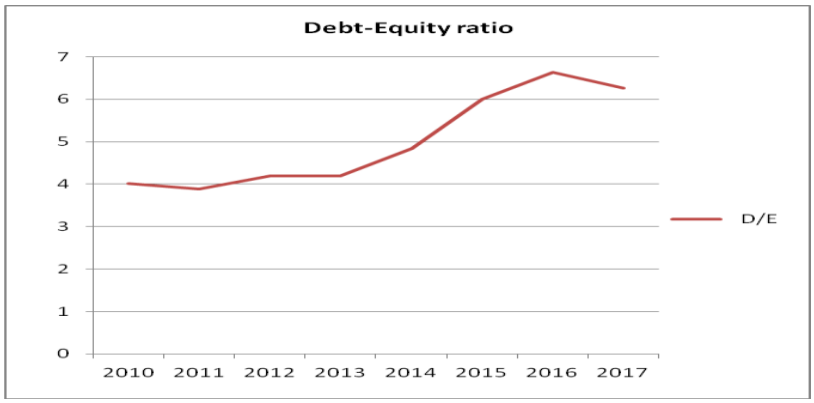


Source: Calculated from the annual report of the banks

The ratio operating expense to total asset reflects management efficiency. The following graph shows the trends of operating expenses for the eight years. The banking sector has outstanding performance in recent years in case of expense reduction.

Leverage (LEV):

Table 11: Leverage



Source: Calculated from the annual report of the banks

Leverage is an important variable for determining profitability. To an extent, higher the debt-equity ratio, the higher the return on equity (Brown1912). There are some problems with higher debt after a fixed extent. Higher debt costs, higher interest for the banks and makes a bank bankrupt. This chart shows the debt equity ratio line from 2010 to 2017.

4. Analysis of the result

4.1 Descriptive analysis of variables

Table 12: Descriptive Analysis

Variable	Mean	Standard Deviation	Minimum	Maximum
ROE	0.1334	0.0602	0.0142	0.4068
NIM	0.0233	0.0103	-0.0389	0.0634
OI	0.0249	0.0138	0	0.0849
LOGA	5.1977	0.2772	4.0889	5.954
CA	0.0636	0.1219	-0.8194	0.1542
AE	0.6866	0.2523	0.072	4.2888
AQ	0.0726	0.1248	0.0083	0.8002
DA	0.7821	0.0878	0.0755	0.909
ITA	0.1438	0.0908	0.0005	0.7935
OPEX	0.0234	0.008	0.0185	0.0548
LEVERAGE	11.16	4.6545	-12.27	27.6154

Source: Calculated from the annual report of the banks through SPSS

Table 12 shows the mean value, standard deviation, minimum and maximum values of 30 commercial banks in Bangladesh for the main dependent variable ROE and other independent variables. Banks of Bangladesh have average ROE equal to 13.34% and the standard deviation is about 6%. Average Net interest margin and other income are 2.33% and 2.49% of total assets. Bank size is taken as the natural logarithm of assets where mean value is 5.20, standard deviation is 2.77, minimum value is 4.08 and maximum value is 5.95. The average value of Capital adequacy (CA) ratio is 6.36% where the minimum value is -8.19%

and maximum value is 15.42%. Average loans to total assets ratio is 68.6% and non-performing loan relative to total loan is 7.26%. Deposit to total asset ratio is 78.2% and standard deviation is 8.78% with minimum value 7.55% to maximize value 90.9%. Investment to total asset is 14.38% with 9.08% standard deviation. Operating expense is 2% of total assets and on an average leverage is 11.16 with maximum 27.62.

4.2 Correlation between variables

Table 13: Correlations

		ROE	NIM	OI	LOGA	CA	AE	AQ	DA	ITA	OPEX	LEV
ROE	Pearson Correlation	1	.338**	.311**	-.229**	.167**	.055	-.224**	.057	-.140*	.032	-.047
	Sig. (2-tailed)		.000	.000	.000	.009	.400	.000	.378	.030	.625	.464
	N	240	240	240	240	240	240	240	240	240	240	240
NIM	Pearson Correlation	.338**	1	-.036	.048	.153*	.047	-.201**	-.045	-.318**	.308**	-.042
	Sig. (2-tailed)	.000		.580	.461	.018	.469	.002	.492	.000	.000	.521
	N	240	240	240	240	240	240	240	240	240	240	240
OI	Pearson Correlation	.311**	-.036	1	-.132*	.270**	.007	-.262**	.006	.225**	.184**	-.058
	Sig. (2-tailed)	.000	.580		.041	.000	.920	.000	.925	.000	.004	.374
	N	240	240	240	240	240	240	240	240	240	240	240
LOGA	Pearson Correlation	-.229**	.048	-.132*	1	.595**	-.022	-.506**	-.082	.182**	-.239**	.491**
	Sig. (2-tailed)	.000	.461	.041		.000	.731	.000	.205	.005	.000	.000
	N	240	240	240	240	240	240	240	240	240	240	240
CA	Pearson Correlation	.167**	.153*	.270**	.595**	1	-.007	-.870**	-.088	.250**	-.257**	.400**
	Sig. (2-tailed)	.009	.018	.000	.000		.911	.000	.175	.000	.000	.000
	N	240	240	240	240	240	240	240	240	240	240	240
AE	Pearson Correlation	.055	.047	.007	-.022	-.007	1	-.143*	.127*	-.090	-.075	.010
	Sig. (2-tailed)	.400	.469	.920	.731	.911		.027	.050	.163	.250	.873
	N	240	240	240	240	240	240	240	240	240	240	240
AQ	Pearson Correlation	-.224**	-.201**	-.262**	-.506**	-.870**	-.143*	1	-.147*	-.222**	.191**	-.534**
	Sig. (2-tailed)	.000	.002	.000	.000	.000	.027		.023	.001	.003	.000
	N	240	240	240	240	240	240	240	240	240	240	240
DA	Pearson Correlation	.057	-.045	.006	-.082	-.088	.127*	-.147*	1	.026	-.070	.342**
	Sig. (2-tailed)	.378	.492	.925	.205	.175	.050	.023		.686	.279	.000
	N	240	240	240	240	240	240	240	240	240	240	240
ITA	Pearson Correlation	-.140*	-.318**	.225**	.182**	.250**	-.090	-.222**	.026	1	.004	.226**
	Sig. (2-tailed)	.030	.000	.000	.005	.000	.163	.001	.686		.947	.000
	N	240	240	240	240	240	240	240	240	240	240	240
OPEX	Pearson Correlation	.032	.308**	.184**	-.239**	-.257**	-.075	.191**	-.070	.004	1	-.209**
	Sig. (2-tailed)	.625	.000	.004	.000	.000	.250	.003	.279	.947		.001
	N	240	240	240	240	240	240	240	240	240	240	240
LEV	Pearson Correlation	-.047	-.042	-.058	.491**	.400**	.010	-.534**	.342**	.226**	-.209**	1
	Sig. (2-tailed)	.464	.521	.374	.000	.000	.873	.000	.000	.000	.001	
	N	240	240	240	240	240	240	240	240	240	240	240

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed)

Source: Calculated from the annual report of the banks through SPSS

Table13 shows that_ROE is positively correlated with net interest margin (NIM) and their relationship is statistically significant at 1% level of significance. It explains that if the net interest margin increases, ROE will also increase. The relationship between ROE and other income (OI) is positive and statistically significant. The negative relationship between ROE and size (LOGA) implies that if asset increases, ROE will be decreased. Capital adequacy ratio (CA) is statistically significant and has a positive relationship. Loan to total assets ratio (AE) has positive relation but not significant. Non-performing loans (AQ) has a negative relationship with ROE which implies that if non-performing loan increases, ROE will be decreased. Total deposit to total asset (DA) has positive correlation with ROE. Investment and leverage ratio (ITA) is negatively correlated, meaning that increase in investment and leverage will decrease the ROE. Operating expense ratio has positive relation but not significant statistically. Leverage (LEV) has negative relationship with profitability.

4.3 Regression analysis:

Table 14: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.586[a]	.344	.315	.04977

a. Predictors: (Constant), LEV, AE, OI, NIM, DA, OPEX, ITA, LOGA, AQ, CA

Source: Calculated from the annual report of the banks through SPSS

In Table 14,_R square is 34.4%. This implies that 34.4% of the total variation is explained by the fitted regression equation.

Table 15: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.545	.098		5.583	.000	.353	.737
	NIM	1.914	.386	.329	4.960	.000	1.154	2.674
	OI	1.049	.281	.241	3.734	.000	.495	1.602
	LOGA	-.086	.017	-.397	-5.129	.000	-.119	-.053
	CA	.046	.070	.093	.653	.514	-.092	.184
	AE	-.004	.014	-.018	-.323	.747	-.031	.022
	AQ	-.096	.067	-.198	-1.425	.156	-.228	.037
	DA	.003	.044	.004	.065	.948	-.084	.089
	ITA	-.060	.041	-.091	-1.459	.146	-.142	.021
	OPEX	-1.074	.490	-.143	-2.194	.029	-2.039	-.110
	LEV	.000	.001	.021	.282	.778	-.002	.002

a. Dependent Variable: ROE

Source: Calculated from the annual report of the banks through SPSS

From the above table 15, NIM, OI, LOGA and OPEX are statistically significant. NIM and OI has positive and LOGA and OPEX has negative impact on profitability. Other variable has impact on profitability but not significant.

Table 16: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.297	10	.030	11.982	.000[a]
	Residual	.567	229	.002		
	Total	.864	239			

a. Predictors: (Constant), LEV, AE, OI, NIM, DA, OPEX, ITA, LOGA,AQ, CA
b. Dependent Variable: ROE

Source: Calculated from the annual report of the banks through SPSS

From this ANOVA table, we can conclude that the regression model we used is significant statistically. As a result, we reject the null hypothesis and we can conclude that significant relationship is present between bank's profitability and internal factors.

4.5: Multicollinearity test

Table 17: Coefficients

Model		Collinearity Statistics	
		Tolerance	VIF
1	NIM	.652	1.533
	OI	.686	1.457
	LOGA	.480	2.085
	CA	.141	7.068
	AE	.874	1.145
	AQ	.148	6.748
	DA	.698	1.434
	ITA	.734	1.362
	OPEX	.675	1.481
	LEV	.496	2.015

a. Dependent Variable: ROE

Source: Calculated from the annual report of the banks through SPSS

Table 17 shows that one of the important assumptions of the classical linear model is no perfect collinearity. The threshold for no multicollinearity problem is less than 3. If the result is 5, this is very likely that multicollinearity problem exists. If the result is more than10, definitely there is a problem of multicollinearity. From the above table, capital adequacy (CA) and asset quality (AQ) have multicollinearity problem. Other variables have no problem of multicollinearity.

4.6: Durbin Watson test:

Table 18:Model summary

Model	Durbin-Watson
1	1.353[a]

a. Predictors: (Constant), LEV, AE, OI, NIM, DA, OPEX, ITA, LOGA, AQ, CA

Source: Calculated from the annual report of the banks through SPSS

If the result is between 1.5 and 2.5, there is no problem of auto correlation. This study finds the result 1.353 which is very close to 1.5. So, there is no problem of auto correlation here.

4.7: Additional analysis

Table 19: Return on assets (ROA)

Variable	Mean	Standard Deviation	Minimum	Maximum
ROA	0.0971	0.013	-0.0995	0.0405

Source: Calculated from the annual report of the banks through SPSS

Table 20: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.761[a]	.579	.560	.00866

a. Predictors: (Constant), LEV, AE, OI, NIM, DA, OPEX, ITA, LOGA, AQ, CA

Source: Calculated from the annual report of the banks through SPSS

This table 19 explains that return on asset has an average 9.71% with standard deviation 1.3%. The fit is 57.9%. From table 20, this helps to understand that 57.9% of the total fit is explained by the fitted regression equation.

Table 21:Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.011	.017		.641	.522	-.023	.044
	NIM	.057	.067	.045	.844	.399	-.076	.189
	OI	.197	.049	.208	4.026	.000	.100	.293
	LOGA	.000	.003	-.002	-.035	.972	-.006	.006
	CA	.038	.012	.358	3.138	.002	.014	.062
	AE	-.003	.002	-.064	-1.403	.162	-.008	.001
	AQ	-.038	.012	-.366	-3.290	.001	-.061	-.015
	DA	.002	.008	.013	.259	.796	-.013	.017
	ITA	-.006	.007	-.042	-.841	.401	-.020	.008
	OPEX	-.105	.085	-.064	-1.227	.221	-.272	.063
	LEV	.000	.000	-.079	-1.303	.194	.000	.000

a. Dependent Variable: ROA

Source: Calculated from the annual report of the banks through SPSS

In table 21, this additional analysis finds that OI, CA and AQ have statistically significant impact on profitability measurement variable ROA. Other variables have an impact on profitability, but not significant. Here also, AQ negatively affects the profitability.

Return on operating assets (ROOA)

Table 22: Return on operating assets

Variable	Mean	Standard Deviation	Minimum	Maximum
ROOA	0.0114	0.0172	-0.1131	0.1162

Source: Calculated from the annual report of the banks through SPSS

Table 23:Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.694[a]	.482	.460	.01269

a. Predictors: (Constant), LEV, AE, OI, NIM, DA, OPEX, ITA, LOGA, AQ, CA

Source: Calculated from the annual report of the banks through SPSS

These tables explain that return on asset has an average 1.14%. The fit is 48.2%. This helps to understand that 48.2% of the total fit is explained by the fitted regression equation.

Table 24: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.017	.025		-.686	.493	-.066	.032
	NIM	.179	.098	.107	1.814	.071	-.015	.372
	OI	.213	.072	.171	2.982	.003	.072	.355
	LOGA	.000	.004	.005	.074	.941	-.008	.009
	CA	.089	.018	.630	4.986	.000	.054	.125
	AE	-.006	.003	-.085	-1.676	.095	-.013	.001
	AQ	.005	.017	.039	.318	.751	-.028	.039
	DA	.022	.011	.112	1.966	.050	.000	.044
	ITA	-.015	.011	-.079	-1.433	.153	-.036	.006
	OPEX	-.058	.125	-.027	-.463	.644	-.304	.188
	LEV	.000	.000	.040	.586	.559	.000	.001

a. Dependent Variable: ROOA

Source: Calculated from the annual report of the banks through SPSS

Table 24 explains that variables called OI, CA; DA has statistically significant impact on profitability. Here, AQ has Positive impact on profitability also.

5. Result and Discussion:

This study takes 30 listed commercial banks for the year 2010-2017 with a view to provide the determinants of profitability where profitability is denoted by ROE. From the statistical analysis, it is clear that net interest margin (NIM) is the prime source of profitability which is statistically significant and positive. This study finds that the variable asset size (LOGA) has negative impact on the profitability which is also statistically significant. The capital adequacy ratio (CA) is not statistically significant but has a positive impact on profitability where the higher the level of equity relative to total asset, the higher the level of profitability. Loans to total assets ratio (AE) has a negative impact on profitability though not significant. Non-performing loans (AQ) is an important factor. Though it has no significant impact on bank profitability, it negatively affects the profitability. This finding is relevant to policy. Non-performing loan is increasing day by day and this leads to reduction in profitability. Deposit to total asset ratio is not statistically significant but has a positive impact on profitability. So, banks should take initiatives to increase the deposits. This result shows that investment to

total asset ratio negatively impacts on profitability after a certain extent. Operating expense ratio (OPEX) has significantly negative impact on profitability. At last, debt to equity ratio (LEV) has a positive impact on profitability which is not significant statistically. This analysis makes it clear that to a certain level, increasing debt will increase the profitability until the cost of debt is equal to the cost of equity. When cost of debt is greater than the cost of equity, this will decrease the profitability. From additional analyses part, Capital adequacy ratio and asset quality ratio is statistically significant with return on assets. Here, if capital adequacy ratio increases, return on assets will also increases and if asset quality ratio increases, return on assets decreases. Again, Capital adequacy ratio and deposit to total asset ratio is statistically significant with return on operating assets. If capital adequacy ratio and deposit to total asset ratio increases, return on operating assets will also increases.

6. Conclusion

This study finds that private commercial banks of Bangladesh are dominant from the side of profitability and market share. Commercial banks also arrange significant employment for the country. It also finds out that the major source of profitability is the interest income a bank earns. For growth in revenue, banks go for different activities such as credit card, green banking, house loan, student loan and so on. The result is also significant from the study that banks are very concern about the expenses they incur. It is concluded that asset size decrease the profitability as higher the level of assets in a company, higher the level of inefficiencies and bureaucratic problems exists. This finding suggests that banks should keep minimum assets to conduct its operation. Banks should focus on collecting loans so that the extent of non-performing loans may reduce. The authority should impose strict regulations for the distribution and collection of loans. The result says that diversification in case of banking activities are necessary to increase the profit of a bank. Moreover, efficient policy making is important for sustainable growth in the banking sector.

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