Original Research	Open Access

Internal Factors Influencing the Profitability of Commercial Banks in Bangladesh

Md. Zakir Hosen

Professor, Dept. of Accounting and Information Systems, Patuakhali Science and Technology University, Bangladesh
Email: zakir@pstu.ac.bd

Abstract

The profitability of commercial banks is influenced by a number of internal and external factors. This paper attempts to identify the internal factors which significantly influence the profitability of commercial banks in Bangladesh. In this study, profitability is measured by ROA and ROE which may be significantly influenced by the internal factors such as IRS, NIM, CAR, CR, DG, LD, CTI and SIZE of the bank. Data are collected from published annual reports during 2014--2018 of 23 commercial banks. Using simple regression model, it is found that CR has significant effect on the profitability and CAR has significant influence on ROA only. In addition to this, DG has significant effects on PCBs' profitability (ROE only) where as IRS and CTI have significant influence on profitability (ROA only) of ICBs. Further, none of these variables have significant effects on the profitability of SCBs but CAR and CR are correlated with profitability (ROA only) and the causes may be the nature of services provided by SCBs to its clients. The internal policy makers should manage the influential internal factors of the banks in order to increase their profitability so that they can meet stakeholders' expectations.

Keywords: Profitability; Commercial banks; Internal factors; Stakeholders.

1. Introduction

Banking industry is the vital part in any economy because it plays an important role in mobilizing savings from surplus to deficit unit to stream economic activities of the country which propel its economic growth. Stable, healthy and competitive banking industry of a country can significantly contribute to economic growth and development of a country (Bawumia et al., 2005). Further, Mujeri and Younus (2009) asserted that for enhancing economic growth, an important prerequisite is to ensure the required flow of saving into productive investments which depends on the development of appropriate financial institutions particularly banks that are capable of generating adequate quantity and quality of investment. To provide financial services to the economy formal financial institutions specifically banks are established which offer various financial services to its clients including deposit collection and credit disbursement, in order to achieve its primary objective i.e. profitability. Obidike et al. (2015), asserted that financial institutions are established to provide financial services with a view to make profit. The banking industry is managed by the central bank of the country. The central bank monitors all the activities of the commercial banks (Kalsoom et al., 2016). In this regard, Bangladesh bank (BB) monitors, regulates, promotes, directs and controls the activities of commercial banks in Bangladesh. The commercial banks started to provide banking services in Bangladesh thorough nationalizing twelve pre-independent commercial banks in 1972. To make the industry effective and efficient as well as to provide better financial service to the citizen, a number of commercial banks licensed time to time which are operating according to the bank company act 1991. Hossain and Ahamed (2015) stated that increased competition due to frequent entrants ultimately affect the banking profitability. At present, the industry has exaggerate number of banks and sometimes these numbers may affect profitability and cause to be over competitive even inefficient the industry as Mexico has only 47 commercial banks with 7.4 times larger GDP and 13.2 time larger surface area of Bangladesh in 2016 (Khatun et al., 2018).

In Bangladesh, the banking industry comprises sixty scheduled commercial banks of which six are state owned commercial banks (SCBs), three specialized banks, thirty one private commercial banks (PCBs), eleven Islamic shariah-based commercial banks (ICBs), and nine foreign commercial banks (FCBs). Generally, the bank primarily, as an intermediary, collects money from depositors and lends those to borrowers because it has no money and difference between the lending and borrowing price contribute its profitability. Profitability is ability of a company to use its resources to generate revenues in excess of its expenses i.e. company's capability of generating profits from its operation. It is influenced by various factors such as internal, industry specific, economic specific, etc. Olweny and Shipho (2011) concluded that the bank-specific factors were more significant factors influencing the

profitability of commercial banks in Kenya than market factors. The study also revealed that profitable commercial banks were strive to improve their capital bases, reduce operational costs, improves assets quality by reducing the rate of non-performing loans, employs revenue diversification strategies as opposed to focused strategies and kept the right amount of liquid assets. Further, Ramadan *et al.* (2011) investigated the nature of the relationship between the profitability of banks and the characteristics of internal and external factors on 10 banks of Jordan. They found that profitability tends to be associated with well capitalized banks, high lending activities, low credit risk, and the efficiency of cost management. San and Heng (2013), investigated the impact of bank-specific characteristics and macroeconomic conditions on Malaysian commercial banks financial performance. They found that equity assets ratio and liquidity ratio had significant positive relationship with return on assets, bank size had positive significant relationship with return on equity loan loss reserves to gross loans ratio had negative significant relationship with return on assets and net interest margin. In order to assess the definite area of the industry, this study deals with internal factors of the banks that usually contribute to the banks' profitability.

Therefore, the specific objectives of this study are to identify bank-specific internal factors that significantly influence the scheduled commercial banks' profitability and assess whether these influential factors may vary among different segment of commercial banks. Further, time dimension changes from earlier studies may change these factors to influence its profitability. The outcome of this study will help stakeholders to make appropriate policy or pay close attention to manage internal factors efficiently to improve the profitability/commitment of the organization to the society.

2. Literature Review

There are numerous studies on the profitability of this high competitive industry in every country and most of the studies dealt with profitability. The factors influencing the profitability also vary from countries to countries or time to time and the influential factors are considered from wider areas. Dietrich and Wanzenried (2011), concluded that equity to total assets ratio, cost to income ratio, deposit growth rate, funding cost, interest income, effective tax rate and ownership structure negatively affect banking profitability in Switzerland. Khan *et al.* (2011), studied the determinants of bank profitability in Pakistan and found that bank size, loan growth, deposits to asset ratio, deposit to loan ratio had significant positive relation where net interest margin, tax and overhead expenses had negative significant relation with profitability. Oladele *et al.* (2012), found that operating expense; relationship between cost and income, and equity to total assets significantly affected the performance of banks in Nigeria. Ongore and Kusa (2013), found that bank specific factors (capital adequacy, management efficiency, liquidity management) significantly affect the performance of commercial banks in Kenya, except for liquidity variable. Further, Poudel (2012) concluded that default rate (DR) and capital adequacy ratio (CAR) have negative association with ROA where as cost per loan asset (CLA) also has an inverse relationship with banks' profitability measured by return on assets (ROA) in Nepal. Chavarin (2014), analyzed on the determinants of 45 commercial bank profitability in Mexico and found that the profitability of commercial banking is persistent by control of operating expenses, the charging of commissions and fees, and the level of capital and also found that market entry barriers and obstacles to competition as a relatively high persistence of profitability. There are also a number of studies on bank-specific are conducted in Bangladesh such as Samad (2015) identified a few bank specific factors such as loan-deposit ratio, loan-loss provision to total assets, equity capital to total assets, and operating expenses to total assets and the researcher finds that they significantly impact the performance of commercial banks. Mahmud *et al.* (2016) incorporated several bank specific factors in determining the profitability of commercial banks in Bangladesh. The study indicated that capital adequacy ratio, bank size, and total debt to total equity have significant impact on bank performance. Hossain and Hossain (2015), found that capital ratio, total loan as a percentage of total assets and staff expenditure as a percentage of total assets are highly correlated with profitability whereas total expenditure as a percentage of total assets and cost income ratio are highly negatively correlated with profitability. The study also suggests that bank size, operating efficiency; savings deposits as a percentage of total assets, branch, liquidity ratio, and assets management have no significant relationship with profitability. A number of recent studies in Bangladesh relating to this study are chronologically presented in Table 1.

Table-1. Recent studies in Bangladesh

Authors	Method	Variables		Results
		dependent	independent	
Noman *et al.* (2015)	GMM	ROAA, ROAE, and NIM	CRGL, LLRGL, LLRCR & CAR	Real interest rate affects the profitability of the banks negatively whereas capital adequacy, size and inflation rate have a positive influence.
Hossain and Hossain (2015)	Regression	ROA, ROE	NIM, ROD, PER, TITA, NPBCR, NPACR, NPBTA,	Capital ratio, total loan and staff expenditure are highly correlated with profitability whereas total expenditure and cost income ratio are highly negatively correlated with profitability.
Rahaman and Akhter (2015)	Regression	ROA, ROE	Size, Capital adequacy, Loan,	Bank-size and deposit have significant negative impact on the return on assets (ROA) while equity has positive

			deposit, Expense management	significant impact. However, loan and expense management are found to be insignificant in affecting the profitability of the banks.
Khatun and Siddiqui (2016)	Regression	ROE	Size, Equity Backing	Defined capital adequacy ratio is positively affecting profitability of banks.
Hossain and Ahamed (2015)	Econometric regression	ROA, ROE	TIN,NII, CR,OPEX, CAP,SIZE, DPST	ROA, TIN, NII, CR, OPEX, CAP, SIZE, and DPST have been found to be significant. For ROE, TIN, NII, CAP, DPST have positive relationship. Only CR had a negative relationship with ROE among the statistically significant predicting variables.
Liza (2017)	Regression	ROA, ROE	E/TA,L/TA,TD/TA,NII/TA,IGS/TA	Capital adequacy has negative impact on profitability while the remaining all factors have positive impact on the profitability.
Islam and Rana (2017)	Regression	ROA, ROE	II, Commission, OPEX, CR, CF, CI, LD	Nonperforming loan (CR) and operating expenses have a significant effect on the profitability. Moreover, the results have shown that higher CR may lead to less profit due to the provision of classified loans.
Islam *et al.* (2017)	Regression	ROE	CA, LA, CR, DP, NIM, NI, IGSEC, OI	Asset size and Net Interest Margin ratio had no significant effect on the profitability. But the impact of non-performing loans on profitability was observed as the most significant among various variables.
Hossain and Khalid (2018)	Regression	ROAA	ETA, CIR, LLPOTL, YGD, NII, ETR,RGG, TBiff, IG	Bank-specific (internal) and market-specific (external) factors have influence on bank profitability, but macroeconomic factors do not.
Lee and Iqbal (2018)	Regression	ROA, ROE	TLTA, LLPTL, EQTA, LTDEP, OPEXTA, CAR, LNASSET, INTMARGIN, GDP, CPI	The results of the random effect-GLS method indicate that total loan to total asset (TLTA), equity to total assets (EQTA), loan to deposit (LTDEP), and interest margin (INTMARGIN) exert a positive effect on both the performance measures (ROA and ROE), while logarithm of total assets (LNASSET), and GDP growth rate (GDPGR) affect the banks' performance negatively.
Hassan and Ahmed (2019)	Regression	ROA	Bank size, CRAR, Liquidity, NPI, and Cost-to-Income.	CRAR and cost-to-income are negatively correlated, and liquidity is positively correlated to bank profitability. On the other hand, estimation shows a negative correlation between bank size and profitability. Moreover, NPI is found to be positively correlated to ROA.

From above discussion, Return on Assets, Return on Equity, Interest Rate Spread, Net Interest Margin, Capital Adequacy Ratio, Non-performing Loan to Total Loan, Deposit Growth, Lending Deposit Ratio, Cost to Income Ratio and Bank Size are used as variables in order to achieve the objectives of this study because these are the most commonly identified variables in the earlier studies which significantly influence the performance of the industry.

3. Materials and Methods
3.1. Population
The population of this study is 60 scheduled commercial banks which are divided into State owned commercial banks (SCBs), Specialized banks (SBs), Private commercial banks (PCBs), Islamic shariah-based commercial banks (ICBs), and Foreign commercial banks (FCBs).

3.2. Sampling and Sample

Quota sampling procedure is used to select four SCBs, fifteen PCBs, four ICBs for this study (appendix-A). SBs and FCBs are excluded in this study due to the special nature of service provision and the complexity of available structural data respectively.

3.3. Variables

The variables of this study are divided into dependent and independent which are described as follows:

3.4. Dependent Variables

The banks' performance can be explained in different ways and one of traditional approach is to look at the profit and loss account of banks which can be considered as microeconomic approach. On the other hand, the performance can be considered by considering the commercial banks' aggregate total assets and liability statement in an economy which can be regarded as macroeconomic approach. Beyond these, Return on Asset (ROA) and Return on Equity (ROE) are two of the important accounting measures of bank profitability. These are considered as depended variable in this study and explained as follows:

Return on asset (ROA): It is a broad measure of overall bank performance which explains management's ability to produce income by using assets where high ROA indicates better performance in using assets. Alternatively, it measures the efficiency of using resources to earn income (Ally, 2013; Zopounidis and Kosmidou, 2008). It is measured as net income before tax divided by total assets.

Return on equity (ROE): One of the innermost measures of banking performance for allocating capital among divisions that can be as the ratio of pre-tax profit to equity is ROE. High ROE indicates high managerial performance (Moussu and Petit-Romec, 2014). It is measured as net income after tax divided by total equity. Musah (2017); Raharjo *et al.* (2014); Owusu-Antwi *et al.* (2017); Ongore and Kusa (2013); San and Heng (2013) used ROA and ROE to measure bank profitability.

3.5. Independent Variables

The performance of the banks is influenced by numerous internal factors which are considered as independent variables of the study. A brief description of the independent variables used in this study is given below:

Interest Rate Spread (IRS): The difference between commercial banks' interest rate on deposit and lending is call interest rate spread. These rates may vary due to bank specific factors, industry/market specific factors as well as macroeconomic factors etc. Generally banks have different lending rates and deposit rates to its different products and the average of overall lending rate and borrowing rate is treated as interest spread (Mustafa & Sayera, 2009). It is measured as (interest received divided by all interest bearing assets) minus (interest paid divided by interest earning liabilities).

Net interest margin (NIM): NIM is the ratio of net interest income to total earning assets. Aboagye *et al.* (2008) stated that it is the best measure to represent bank interest rate spread which is supported by Amidu and Wolfe (2013), Ongore and Kusa (2013); and San and Heng (2013). It is measured as banks' interest income minus banks' interest expenses and the result is divided by total assets.

Capital Adequacy (CAR): It is the ratio of total assets financed by equity. If the ratio is higher, then bank has lower external borrowings which positively contribute to the profitability.

Credit Risk (CR): It is the ratio of non- performing loans to total loan (earning assets). This variable measures the quality of lending because competition may force to lend high volume without maintaining quality of the client which ultimately reduces the profitability of the bank.

Deposit Growth (DG): Deposit is the prime source of banks' fund at lowest cost. If a bank's deposit is growing year to year, then lowest cost funding is increasing and that may contribute to the profitability of the bank. It is measured as deposit at year 1 minus deposit in previous year and the result is divided by deposit in previous year.

Loan to Deposit Ratio (LD): It is one of the determinants of liquidity as the amount of lending against the amount of deposit. Scheduled Commercial banks convert deposits into lending so that it can increase profit. A high ratio has positive relation with profitability where as increasing liquidity risk alternatively, a low ratio confides liquidity but reduces profitability.

Cost to Income Ratio (CTI): It is a measure of operating expenses as a percentage of operating income. It is a popular and critical measure of banks' efficiency. A lower ratio generally indicates higher efficiency and vice versa.

Bank Size (Size): It is the bank total asset size. This study takes logarithm of total assets as a proxy of size (Samad, 2015). This assets size influence the clients' confidence as well as profitability of the bank though operating efficiency. It may have positive relation with profitability (San and Heng, 2013; Zeitun, 2012).

3.6. Empirical Model

The study based on the variables above estimates the following panel regression models.

$$\text{ROA}_{it} = \beta_0 + \beta_1 \text{IRS} + \beta_2 \text{NIM} + \beta_3 \text{CAR} + \beta_4 \text{CR} + \beta_5 \text{DG} + \beta_6 \text{LD} + \beta_7 \text{CTI} + \beta_8 \text{Size} + \varepsilon it \text{-----------(1)}$$

$$\text{ROE}_{it} = \beta_0 + \beta_1 \text{IRS} + \beta_2 \text{NIM} + \beta_3 \text{CAR} + \beta_4 \text{CR} + \beta_5 \text{DG} + \beta_6 \text{LD} + \beta_7 \text{CTI} + \beta_8 \text{Size} + \varepsilon it \text{-----------(2)}$$

Where, in equation (1) and (2), i and t are cross section dimension and time dimension respectively; β_0 and β_{it} are intercept and coefficients respectively; and ε_{it} is the idiosyncratic errors. The dependents and independents variables of both equations are described above.

3.7. Data

Data collection is a systematic process of gathering data for a particular purpose from various sources. In this study, data have been collected from published annual reports of 23 commercial banks covering a period from 2014 to 2018 resulting 230 sample observations. The data is reliable as it drawn from the audited financial statements included in the annual reports. The data is generated in the defined state using measurement techniques stated in table 2.

3.8. Data Analysis

The study adopts the quantitative approach to analyze data applying regression because the study seeks to establish the relationship between dependent variables and independent variables. The analyses are performed using SPSS 23.0.

3.9. Hypothesis of the Study

The hypothesis of this study is formed according to the effects of independent variables on dependent variables. In this study, it is expected that IRS, NIM, CAR, DG, LD and SIZE have positive effects on profitability where as CR and CTI may have negative effects on profitability. Therefore the declared hypotheses of this study are as follows:

H_1: IRS has significant positive effect on profitability.
H_2: NIM has significant positive effect on profitability.
H_3: CAR has significant positive effect on profitability.
H_4: CR has significant negative effect on profitability.
H_5: DG has significant positive effect on profitability.
H_6: LD has significant positive effect on profitability.
H_7: CTI has significant negative effect on profitability.
H_8: SIZE has significant positive effect on profitability.

4. Results and Discussion

4.1. Descriptive Statistics

The overall and segmented descriptive statistics are presented in Table 2. It is found that the overall ROA is 0.78% which typically represents the private commercial banks (PCBs) (0.83%) where as state owned banks (SCBs) earned around half (0.34%) of the overall figures and ICBs earned 30.77% more than the overall earnings (Islam and Rana, 2017). Similar trend found in ROE, NIM, LD and CTI where as IRS, CA, and Size are comparatively stable among the segments. The SD follows the same pattern (Rahaman and Akhter, 2015).

Table-2. Descriptive statistics

SL	Variable	Overall		SCB		PCB		ICB	
		Mean	STD*	Mean	STD*	Mean	STD*	Mean	STD*
1.	ROA	0.0078	0.0081	0.0035	0.0050	0.0083	0.0089	0.0102	0.0056
2.	ROE	0.0960	0.0555	0.0529	0.0743	0.1052	0.0474	0.1050	0.0429
3.	IRS	0.0377	0.0101	0.0367	0.0104	0.0370	0.0108	0.0412	0.0055
4.	NIM	0.0275	0.0130	0.0129	0.0111	0.0289	0.0115	0.0369	0.0076
5.	CAR	0.1135	0.0286	0.1031	0.0114	0.1121	0.0326	0.1291	0.0156
6.	CR	0.0959	0.0874	0.1929	0.0867	0.0820	0.0805	0.0509	0.0145
7.	DG	0.1134	0.0679	0.1095	0.0559	0.1056	0.0689	0.1463	0.0685
8.	LD	0.8016	0.1469	0.5992	0.1376	0.8393	0.1138	0.8628	0.0861
9.	CTI	0.5734	0.1797	0.7876	0.0828	0.5305	0.1658	0.5200	0.1462
10.	SIZE	12.3650	0.8799	12.2377	1.5659	12.3320	0.6588	12.616	0.6438

*STD= Standard Deviation.

In addition, SCBs have double and ICBs have half CR compared to the overall CR where as ICBs have three times of the industry DG and SCBs have just opposite position direction. Among the segments, PCBs are ideally representing the industry.

4.2. Regression

In Table 3, it is found that only CAR and CR have significant effects on ROA where as ROE is significantly influenced by CR and CTI (Hossain and Hossain, 2015). The adjusted R^2 for ROA and ROE are 48.1% and 39.6% respectively which indicates that these independent variables can explain ROA better than ROE (Hossain and Khalid, 2018). The models are well fit because the probability of the test statistic is significant for dependent variables. The detailed results are presented in table 3.

Table-3. The overall regression result

SL	Predictor value	ROA and other independent variables						ROE and other independent variables					
1.		B	SE	Beta	t-value	P Value	VIF	B	SE	Beta	t-value	P Value	VIF
1.	IRS	.051	.067	.063	.760	.449	1.517	-.114	.494	-.021	-.231	.818	1.517
2.	NIM	.039	.056	.064	.708	.480	1.776	.612	.413	.144	1.484	.141	1.776
3.	CAR	.117	.031	.416	3.812	.000	2.611	-.134	.228	-.069	-.587	.558	2.611
4.	CR	-.021	.011	-.232	-2.021	.046	2.896	-.330	.079	-.519	-4.191	.000	2.896
5.	DG	.004	.008	.032	.452	.652	1.108	.059	.063	.072	.944	.347	1.108
6.	LD	-.004	.006	-.073	-.730	.467	2.214	-.042	.041	-.111	-1.025	.308	2.214
7.	CTI	-.006	.005	-.142	-1.258	.211	2.786	-.066	.038	-.215	-1.767	.080	2.786
8.	SIZE	.000	.001	-.031	-.372	.711	1.495	.007	.006	.104	1.167	.246	1.495
Criterion variable:		$F_{8, 106}$=14.205, P<0.000; R=71.9, R2=51.7, adjusted R2=48.1; Durbin-Watson=1.587, P>0.05, n=115						$F_{8, 106}$=10.337, P<0.000; R=66.2, R2=43.8, adjusted R2=39.6; Durbin-Watson=1.741, P>0.05, n=115					

The segmented regression results of PCBs, ICBs and SCBs are presented in table 4, 5 and appendix C respectively.

Table-4. Regression result of PCBs

SL	Predictor value	ROA and independent variables						ROE and independent variables					
		B	SE	Beta	t-value	P Value	VIF	B	SE	Beta	t-value	P Value	VIF
1.	IRS	.045	.082	.055	.554	.581	1.570	-.043	.465	-.010	-.092	.927	-.043
2.	NIM	.029	.095	.037	.304	.762	2.380	.095	.547	.024	.175	.862	.095
3.	CAR	.214	.045	.787	4.810	.000	4.245	.621	.292	.354	2.129	.037	.621
4.	CR	-.025	.015	-.225	-1.660	.102	2.904	-.352	.084	-.562	-4.191	.000	-.352
5.	DG	-.003	.011	-.020	-.229	.820	1.155	.126	.062	.192	2.021	.048	.126
6.	LD	-.009	.008	-.112	-1.072	.288	1.721	-.030	.048	-.075	-.633	.529	-.030
7.	CTI	.005	.008	.099	.663	.510	3.521	.034	.046	.110	.724	.472	.034
8.	SIZE	-.003	.002	-.208	-1.600	.114	2.689	-.014	.010	-.195	-1.402	.166	-.014
Criterion variable:		$F_{8, 66}$=11.557, P<0.000; R=76.4, R2=58.3, adjusted R²=53.3; Durbin-Watson=1.533, P>0.05, n=75						$F_{8, 66}$=9.625, P<0.000; R=73.4, R2=53.8, adjusted R²=48.3; Durbin-Watson=1.236, P>0.05,n=75					

Table-5. Regression result of ICBs

SL	Predictor value	ROA and independent variables						ROE and independent variables					
		B	SE	Beta	t-value	P Value	VIF	B	SE	Beta	t-value	P Value	VIF
1.	IRS	.525	.183	.508	2.872	.017	4.477	-1.467	3.661	-.187	-.401	.697	4.477
2.	NIM	.127	.185	.126	.686	.509	4.857	5.770	3.705	.757	1.557	.150	4.857
3.	CAR	-.154	.050	-.423	-3.098	.011	2.660	-1.771	.997	-.639	-1.777	.106	2.660
4.	CR	-.086	.041	-.223	-2.117	.060	1.581	-.075	.815	-.026	-.092	.928	1.581
5.	DG	.000	.000	.119	1.260	.236	1.269	.001	.003	.133	.535	.605	1.269
6.	LD	.006	.007	.089	.819	.432	1.678	.025	.141	.050	.175	.865	1.678
7.	CTI	-.039	.011	-.982	-3.443	.006	11.635	.072	.229	.236	.314	.760	11.635
8.	SIZE	.003	.003	.285	.989	.346	11.885	-.045	.051	-.681	-.896	.391	11.885
Criterion variable:		$F_{8, 11}$=16.624, P<0.000; R=96.4, R2=93.0, adjusted R²=87.4; Durbin-Watson=2.411, P>0.05, n=20						$F_{8,11}$=1.321, P<0.334; R=71.7, R2=51.4, adjusted R²=12.5; Durbin-Watson=1.762, P>0.05, n=20					

It is found that independent variables explain half of the dependent variables and only CAR, CR have significant influence on ROA (Noman *et al.*, 2015) and ROE of PCBs respectively (Table 4). In table 5, independent variables explain aggregately 87.4% variation in ROA and it is significantly influenced by IRS, CAR and CTI of ICBs. Further, the model is well fit because the probability of test statistic is significant where as none of the independent variables has significant influence on ROE as only 12.5% of ROE can be explained aggregately by the selected independent variables (Hossain and Hossain, 2015). In all cases, these independent variables can superiorly clarify ROA than ROE. Only ROA of PCBs and ICBs is significantly influenced positively by CAR (Khatun and Siddiqui, 2016) where as ROE of only PCBs is influenced negatively by CR. The industry is represented and dominated by PCBs because the PCBs captured majority of the industry. On the other hand, the independent variables of SCBs cannot significantly influence its profitability (ROA and ROE) of SCBs, but can explain only 12.4% and 1.9% variation of ROA and ROE respectively and the models are not well fit because the probability of test statistic is not significant (appendix c). It indicates that SCBs profitability may be significantly influenced by other factors such as ownership structure, agency services to the government, etc. For example, these banks are owned by government and collect fees, charges, tax, etc, of government and also provide general banking services to its clients.

5. Summary of Findings

It is found that all the hypotheses are rejected for SCBs which means that none of these factors significantly influences the profitability of SCBs because this group provides client-services mostly related to government. So profitability of SCBs may be significantly influenced by fees, charges, commission, etc it received as non-operating revenue. H_1 is rejected except ROA of ICBs which indicates that ROA of ICBs will increase if its IRS increases. NIM cannot influence the profitability of commercial banks in Bangladesh (H_2 is rejected). Profitability (ROA) of PCBs and ICBs is influenced by CAR (partially accepted H_3) where as it is also (ROE of PCBs and ROA of ICBs) influenced by CR (H_4 partially accepted). DG has influence on profitability (ROE) of PCBs and ROA of ICBs is

influenced by CTI (partially accepted H_5 and H_7). Finally, LD and SIZE have no significant influence on profitability of scheduled commercial banks of Bangladesh. The profitability of different segment of banks is influenced by different variables but CAR significantly influences the profitability of the industry.

6. Conclusion

The banking sector of Bangladesh is dominated by the PCBs because it captures the industry. The SCBs provide most of government activities related services where as motto of the ICBs is serving to client on Islamic shariah-based. The study importantly assesses how the internal factors influence profitability varying different segment of banks. It is found that CAR and CR have significant relationship with ROA and only CR has with ROE. None of these variables has significant influence on profitability of SCBs where as the profitability of the industry is influenced by CAR. So the study suggests policy makers to concentrates influential internal factors and efficient management of these factors will further contribute to the profitability of the entity effectively.

References

Aboagye, A. Q., Akoena, S. K., Antwi-Asare, T. O. and Gockel, A. F. (2008). Explaining interest rate spreads in Ghana. *African Development Review,* 20(3): 378-99.

Ally, Z. (2013). Comparative analysis of financial performance of commercial banks in Tanzania. *Research Journal of Finance and Accounting,* 4(19): 133-43.

Amidu, M. and Wolfe, S. (2013). Does bank competition and diversification lead to greater stability? Evidence from emerging markets. *Review of Development Finance,* 3(3): 152-66.

Bawumia, M., Belnye, F. and Ofori, M. E. (2005). The determination of bank interest spreads in Ghana: An empirical analysis of panel data. *African Development Review,* 20(3): 378-99.

Chavarin, R. (2014). Determinants of commercial bank profitability in Mexico. *Social Science Research Network*: 1-33.

Dietrich, A. and Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. *Journal of International Financial Markets, Institutions and Money,* 21(3): 307-27. Available: http://econpapers.repec.org/article/eeeintfin/v_3a21_3ay_3a2011_3ai_3a3_3ap_3a307-327.htm

Hassan, S. M. R. and Ahmed, R. (2019). Internal determinants of islamicc bank profitability: Evidence from Bangladesh. *International Journal of Economics and Financial Research Academic Research Publishing Group,* 5(7): 171-76. Available: https://doi.org/10.32861/ijefr.57.171.176

Hossain and Ahamed, F. (2015). Determinants of bank profitability: A study on the banking sector of Bangladesh. *Journal of Finance and Banking,* 13(1): 43-57.

Hossain and Hossain, M. A. (2015). Key factors behind the profitability of conventional banks in Bangladesh. *International Journal of Innovative Research and Development,* 4(9): 351-58.

Hossain and Khalid, M. S. (2018). Determinants of bank profitability before and during crisis: Evidence from Bangladesh. *International Journal of Finance and Accounting,* 7(5): 142-46.

Islam, M. A. and Rana, R. H. (2017). Determinants of bank profitability for the selected private commercial banks in Bangladesh: A panel data analysis. *Banks and Bank Systems,* 12(3): 179-92.

Islam, M. A., Sarker, M. N. I., Rahman, M., Sultana, A. and Prodhan, A. Z. M. S. (2017). Determinants of profitability of commercial banks in Bangladesh. *International Journal of Banking and Financial Law,* 1(1): 001-11.

Kalsoom, A., Khurshid, M. K. and Campus, F. (2016). A review of impact of interest rate spread on profitability. *Research Journal of Finance and Accounting,* 7(11): 23-26.

Khan, F., Anuar, M. A., Choo, L. G. and Khan, H. (2011). Determinants of bank profitibility in Pakistan: A case study of Pakistani banking sector. *World Applied Sciences Journal,* 15(10): 1484-93.

Khatun and Siddiqui, S. (2016). Size, equity backing, and bank profitability: A case study using panel data from Bangladesh. *Journal of Applied Finance and Banking,* 6(1): 1-14.

Khatun, Saadat, S. Y., Sarwar, S. and Chowdhury, F. T. K. (2018). *Banking sector in Bangladesh: Moving from diagnosis to action.* Centre for Policy Dialogue (CPD), 8th December 2018.

Lee, M. and Iqbal, N. (2018). Profitability determinants of commercial banks: In the context of Bangladesh. *Developing Country Studies,* 8(4): 101-13.

Liza, Y. F. (2017). Profitability determinants of private commercial banks in Bangladesh: An internal factor analysis. *Australian Academy of Accounting and Finance Review,* 3(3): 119-28.

Mahmud, K., Mallik, A., Imtiaz, F. M. and Tabassum, N. (2016). The bank-specific factors affecting the profitability of commercial banks in Bangladesh: A panel data analysis. *International Journal of managerial Studies and Research,* 4(7): 67-74.

Moussu, C. and Petit-Romec, A. (2014). ROE in banks: myth and reality. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2374068

Mujeri, M. K. and Younus, S. (2009). An analysis of interest rate spread in the banking sector in Bangladesh. *The Bangladesh Development Studies,* 32(4): 1-33.

Musah, A. G. (2017). Capital structure and firm performance of non-bank financial institutions (NBFIs) in Ghana. *Research Journal of Finance and Accounting,* 8(14): 32-39.

Noman, M. H. A., Chowdhury, M. M., Chowdhury, M. J., Kabir, M. J. and Pervin, S. (2015). The effect of bank specific and macroeconomic determinants of banking profitability: A study on Bangladesh. *International Journal of Business and Management,* 10(6): 287–97.

Obidike, P. C., Ejeh, G. C. and Ugwuegbe, S. U. (2015). The impact of interest rate spread on the performance of Nigerian banking industry. *Journal of Economics and Sustainable Development,* 6(12): 131-39.

Oladele, P. O., Sulaimon, A. A. and Akeke, N. I. (2012). Determinants of bank performance in Nigeria. *International Journal of Business and Management Tomorrow,* 2(2): 1-4.

Olweny, T. and Shipho, T. M. (2011). Effects of banking sectoral factors on the profitability of commercial banks in Kenya. *Economics and Finance Review,* 1(5): 1-30.

Ongore, V. O. and Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues,* 3(1): 237-52.

Owusu-Antwi, G., Banerjee, R. and Antwi, J. (2017). Interest rate spread on bank profitability: The case of Ghanaian banks. *Journal of Accounting, Business and Finance Research,* 1(1): 34-45.

Poudel, R. P. S. (2012). The impact of credit risk management on financial performance of commercial banks in Nepal. *International Journal of Arts and Commerce,* 1(5): 9-15.

Rahaman, M. M. and Akhter, S. (2015). Bank-specific factors influencing profitability of Islamicc banks in Bangladesh. *Journal of Business and Technology (Dhaka),* 10(1): 21-36.

Raharjo, P. G., Hakim, D. B., Manurung, A. H. and Maulana, T. N. (2014). The determinant of commercial banks' interest margin in Indonesia: An analysis of fixed effect panel regression. *International Journal of Economics and Financial Issues,* 4(2): 295-308.

Ramadan, I. Z., Kilani, Q. A. and Kaddumi, T. A. (2011). Determinants of bank profitability: Evidance from Jordan. *International Journal of Academic Research,* 3(4):180-191

Samad, A. (2015). Determinants bank profitability: Empirical evidence from Bangladesh commercial banks. *International Journal of Financial Research,* 6(3): 173.

San, O. T. and Heng, T. B. (2013). Factors affecting the profitability of Malaysian commercial banks. *African Journal of Business Management,* 7(8): 649-60.

Zeitun, R. (2012). Determinants of Islamicc and conventional banks performance in GCC countries using panel data analysis. *Global Economy and Finance Journal,* 5(1): 53-72.

Zopounidis, C. and Kosmidou, K. (2008). The determinants of banks' profits in Greece during the period of EU financial integration. *Managerial Finance,* 34(3): 146-59.

Appendices
Appendix-A: List of Sampled Bank

State owned commercial banks (SCBs)	Private commercial bank (PCBs)	Islamic shariah-based commercial bank (ICBs)
Janata Bank LTD Sonali Bank LTD Rupali Bank LTD Agrani Bank LTD	Bank Asia LTD Dhaka Bank LTD Eastern Bank LTD Jamuna Bank LTD Mercantile Bank LTD Mutual Trust Bank LTD National Bank LTD NCC Bank LTD Prime Bank LTD Pubali Bank LTD Southeast Bank LTD The City Bank LTD United Commercial Bank LTD Bangladesh Commerce Bank LTD Standard Bank LTD	Islamic Bank Bangladesh LTd Alarahfah Islamic bank LTD Social Islamic Bank LTD Shajalal Islamic Bank LTD

Appendix-B: Correlation Matrix

Correlation between ROA and independent variables

Variable	ROA	IRS	NIM	CAR	CR	DG	LD	CTI	SIZE
ROA	1								
IRS	.380**	1							
NIM	.307**	.117	1						
CAR	.666**	.396**	.258**	1					
CR	-.599**	-.411**	-.349**	-.647**	1				
DG	.183	.178	.237*	.155	-.186*	1			
LD	.377**	.251**	.525**	.393**	-.659**	.114	1		
CTI	-.592**	-.397**	-.518**	-.662**	.676**	-.160	-.557**	1	
SIZE	.144	-.186*	-.146	.362**	-.105	-.079	-.065	-.131	1
N	115	115	115	115	115	115	115	115	115
** Significant at the 0.01 level (2-tailed). * Significant at the 0.05 level (2-tailed).									

Correlation between ROE and independent variables

	ROE	IRS	NIM	CAR	CR	DG	LD	CTI	SIZE
ROE	1								
IRS	.233*	1							
NIM	.360**	.117	1						
CAR	.443**	.396**	.258**	1					
CR	-.613**	-.411**	-.349**	-.647**	1				
DG	.202*	.178	.237*	.155	-.186*	1			
LD	.395**	.251**	.525**	.393**	-.659**	.114	1		
CTI	-.550**	-.397**	-.518**	-.662**	.676**	-.160	-.557**	1	
SIZE	.146	-.186*	-.146	.362**	-.105	-.079	-.065	-.131	1
N	115	115	115	115	115	115	115	115	115
**Significant at the 0.01 level (2-tailed). * Significant at the 0.05 level (2-tailed).									

Appendix-C: Regression Result of SCB

SL	Predictor value	ROA and other independent variables						ROE and other independent variables					
		B	SE	Beta	t-value	P Value	VIF	B	SE	Beta	t-value	P Value	VIF
1.	IRS	.074	.251	.153	.293	.775	5.927	1.016	3.954	.142	.257	.802	5.927
2.	NIM	.112	.115	.248	.968	.354	1.428	1.566	1.815	.234	.863	.406	1.428
3.	CAR	.073	.119	.166	.616	.551	1.581	.115	1.869	.018	.062	.952	1.581
4.	CR	-.030	.021	-.524	-1.467	.170	2.767	-.454	.324	-.530	-1.402	.189	2.767
5.	DG	-.021	.023	-.232	-.896	.389	1.452	-.221	.364	-.167	-.609	.555	1.452
6.	LD	-.001	.011	-.018	-.059	.954	2.029	-.069	.175	-.127	-.394	.701	2.029
7.	CTI	-.003	.015	-.050	-.195	.849	1.408	-.185	.242	-.206	-.763	.462	1.408
8.	SIZE	.001	.002	.274	.496	.629	6.629	.020	.028	.415	.710	.492	6.629
Criterion variable:		$F_{8, 11}=1.337$, P<0.320; R=70.2, R2=64.6, adjusted R^2=12.4; Durbin-Watson=2.772, P>0.05, n=20						$F_{8, 11}=1.045$, P<0.460; R=65.7, R2=43.2, adjusted R2=1.9; Durbin-Watson=2.655, P>0.05, n=20					