

# IMPACT OF BANK INTERNAL FACTORS ON PROFITABILITY OF COMMERCIAL BANKS IN SRI LANKA: A PANEL DATA ANALYSIS

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## ABSTRACT

*Banking system takes a major part to provide better financial services to the people in a country. Aim of this study is to examine what extent bank internal factors impact on profitability of commercial banks in Sri Lanka. Capital adequacy, Operating cost efficiency, Non-performing loans, Bank size, Liquidity, Assets Quality and Managerial efficiency are considered as bank internal factors while Return on assets is considered as profitability measure of this study. Panel data has been collected from published financial statement of nine commercial banks listed on Colombo Stock Exchange (CSE) for the period of ten years from 2006 to 2015. Fixed effect and random effect models are performed to investigate the best model to evaluate the impact of bank internal factors on profitability. Results of the study reveal that random effect model is the best model using Hausman specification test. As per the random effect model, capital adequacy has positive and significant impact on profitability while non-performing loan and operating cost efficiency have negative and significant influence on profitability. Rest of the selected variables such as bank size, liquidity, assets quality and managerial efficiency don't have any significant impact on profitability of commercial banks in Sri Lanka. The finding of this study provides information to present and future investors for making best decision on which internal factors should be well analyzed when they make investment on banking sector in Sri Lanka.*

**Keywords:** Profitability, Capital adequacy, Operating cost efficiency, Non-performing loans, Bank internal factors

## 1. Introduction

Commercial banks play a significant and energetic role for developing an economy of a country. When the banking sector in a country is functioning in an efficient, effective, and disciplined way it leads to bring a rapid growth in the various sectors in the country. Many factors may impact on profitability of commercial banks. Basically, it can be categorized as bank internal factors and bank external factors. Bank internal or specific factors are capital adequacy, liquidity, operating expenses, assets quality, managerial efficiency, bank size and etc (Flamini et al., 2009 and Athanasoglou, et al., 2006). Changes of these factors may lead for occurring unsystematic risk. It can be controllable by the management of the bank. External factors of the bank such as inflation rate, interest rate, gross domestic product and money supply cannot be controlled by the management of the bank as the risk occurred by them is uncontrollable called systematic risk. Both risks may have greater influence on profitability of the bank.

In Sri Lanka, commercial banks take important part for operating the economy by their process such as taking money as deposit from the people who have surplus fund and providing such money to the people who want to invest in development activities. Commercial banks are listed under the sector of bank finance and insurance companies, which is one sector among 20 diversified sectors in Colombo stock exchange (CSE) in Sri Lanka. Altogether 25 licensed commercial banks consist of 13 domestic banks and 12 foreign banks and 7 licensed specialized banks are functioning in Sri Lanka. Central bank of Sri Lanka was established in 1950 as an apex institution to supervise, direct and control entire activities of banking and financial sectors in Sri Lanka. In order to protect financial institutions from unexpected losses, external parties of the banks such as Central Bank of Sri Lanka and Basel Committee are developing policies and releasing guiding articles time to time

Many researchers in different countries have investigated impact of internal and external bank factors on profitability of the bank. But they don't give a clear picture on how each factors influence on profitability. Weerasainghe and Perera (2013) carried out a study in Sri Lanka, have found that the favorable macroeconomic environment seems to stimulate higher profits in banking sector. Samarathunga and Madurapperuma (2016) have done another study in Sri Lanka; have revealed that efficient management of the bank-specific factors and implementation of favorable economic policies lead to an economic growth can contribute immensely to uplift the performance of the banking industry in Sri Lanka. Rahaman and Akhter (2015) have

done a study in Bangladesh, where they have revealed that bank-size and deposit have significant negative impact on the return on assets. Abdullahi and Usman (2017) revealed from their study conducted in Nigeria that banks should focus on increasing their equity to total asset ratio and credit risk management due to its impact on financial performance. Results of each study in various countries are not consensus. Therefore, this study aims to examine impact of bank internal factors on profitability of commercial bank in Sri Lanka.

## 2. Literature review

### *Capital adequacy (CA)*

Capital adequacy is a measure of financial strength of the banks. It express ability of the bank to manage unexpected losses. This ratio is positively related to the financial soundness of the bank, thus it is negatively related with a possible failure (Kumar and Thamilselvan, 2014). Bandara (2015) have carried out a study in Sri Lanka, found that capital adequacy ratio has significant and positive impact on return on average equity but it doesn't have any significant impact on return on assets. However, Swarnapali (2014) done a study in Sri Lanka found that there was a negative relationship between capital adequacy ratio and bank profitability. But researches carried out in other countries have found that positive relationship between capital adequacy ratio and profitability of commercial banks in Sri Lanka (Flamini et al. (2009), Rao and Lakew (2012), Nouaili et al. (2015) and Obamuyi (2013)). Capital adequacy is measured using the formula:

$$\text{Capital Adequacy Ratio} = \frac{(\text{Tier One Capital} + \text{Tier Two Capital})}{\text{Risk Weighted Asset}} \times 100$$

*H<sub>1</sub>: There is a significant impact of Capital adequacy on profitability of commercial banks*

### *Operating cost efficiency (OCE)*

Efficiency of management in a bank can be managed by operating cost efficiency. Operating cost efficiency is an important bank internal factor that can influence bank capital and the cost of financial intermediation (Agapova and McNulty 2016; Berger and Patti, 2006). In Sri Lanka, Bandara (2015) has done a study and revealed that cost to income ratio had a negative and statistically significant relationship with the financial performance of the bank. Another study done by Pradhan and Parajuli

(2017) in Nepal revealed cost income ratio has negative impact on return on assets. Operating cost efficiency is measured using the formula:

$$\text{Operating Cost efficiency} = \frac{\text{Total Operating expenses}}{\text{Total Operating income}}$$

*H<sub>2</sub>: There is a significant impact of operating cost efficiency on profitability of commercial banks*

### ***Assets quality (AQ)***

Assets quality reflects amount of credit risk with the loan and investment portfolio. Basel Committee on Banking Supervision (BCBS), for the effective supervision of banking system are related with the asset quality of bank and loan risk management and this indicates that the asset quality become an important aspect for supervision authorities of each country worldwide (Abata,2014). According to the findings of Adhikary (2006) lower asset quality reaching substantial amount may lead to bank bankruptcies and economic slowdown. The studies done by Abata (2014), Bace (2016), Ozurumba (2016), Ongore and Kusa (2013) and Duraj and Moci (2015) have found that lower asset quality affecting profitability of banks negatively.

*H<sub>3</sub>: There is a significant impact of assets quality on profitability of commercial banks*

### ***Managerial efficiency (ME)***

In terms of deposit amount, banks with a higher deposit amount generate better managerial efficiency. Improvement in efficiency will ultimately lead to larger profits and lower costs. The average profit and cost per employee are also taken as indicators to measure the efficiency of employees. Few researchers have considered managerial efficiency is as a bank internal factors for their analysis. Therefore, there is no much literature for it. Senarath (2015) in Sri Lanka has found that there is a positive relationship between bank efficiency and profitability.

*H<sub>4</sub>: There is a significant impact of managerial efficiency on profitability of commercial banks*

### ***Nonperforming Loans (NPL)***

When the borrower doesn't make any interest payments or principal on loan amount, such loan is classified as non-performing loan by the bank. Akter and Roy (2017), Kaaya and Pastory (2013) and Kirui (2014) have found negative relationship between non-performing loans and profitability of the banks. In Sri Lanka, Rathnasiri (2016) has found non-performing loan has significant negative impact on profitability of the commercial banks in Sri Lanka. Another study done in Sri Lanka by Sujeewa (2015) has found that non-performing loans and provisions have an adverse impact on the profitability

$$\text{Nonperforming ratio} = \frac{\text{Total non - Performing loans}}{\text{Total loans and advances}}$$

*H<sub>3</sub>: There is a significant impact of Nonperforming loans on profitability of commercial banks*

### ***Bank size (BS)***

Generally, size of a firm is measured using its total assets. A study carried out by Yong and Floros, (2012) and Staikouras and Wood, (2003) in their studies revealed that bank size was found to be negatively related to profitability. Another study in Nigeria done by Ayanda et al., (2013) has found that the size of the bank does not have significant relationship with profitability. Weerasinghe and Perera (2013), Madhushani and wellappuli (2016), Sufian and Chong (2008) and Deger and Adem (2011) have found that bank size has positive relationship with profitability. But the study done in Kenya by Alice Gatete (2015) shows that there is a positive and significant impact of bank size and profitability. Bank size may be calculated using proxy:

$$\text{Bank size} = \log(\text{total assets of a bank})$$

*H<sub>6</sub>: There is a significant impact of bank size on profitability of commercial banks*

### ***Liquidity (LQ)***

An ability of the bank to meet its financial obligations as they come due is called as liquidity. Athanasoglou et al, (2005), Demirguc-Kunt and Huizinga (1999) and Dang (2011) revealed that adequate level of liquidity is positively related with bank profitability. However, Weerasinghe and Perera (2013) and Shafana (2013), found

negative significant relationship between liquidity and profitability in Sri Lanka. However, Kawshala and Panditharathna (2017) found that there is not a significant relationship between liquidity and profitability of commercial banks in Sri Lanka. It is measured by using the formula:

$$\text{Liquidity} = \frac{\text{Liquid assets}}{\text{Total assets}}$$

H<sub>7</sub>: There is a significant impact of liquidity on profitability of commercial banks

**3.Methodology**

***Research design***

In order to carry out this explanatory study, quantitative data on bank internal factors and profitability measures have been collected from the published annual report of commercial banks listed on Colombo Stock Exchange (CSE) in Sri Lanka. The study has been conducted using secondary data collected for the period of 10 years from 2006 to 2015.

***Target Population***

Population of the study is 25 commercial banks listed on Colombo stock exchange (CSE) in Sri Lanka consists of 13 domestic banks and 12 foreign banks.

***Sampling Frame***

In order to carry out this study, only nine listed commercial banks have been selected using random sampling method among twenty five commercial banks. Financial statements of the selected banks have been used to get data.

***Variables***

Independent variables of this study are Capital adequacy ratio (CA), Operating cost efficiency (OCE), Assets quality (AQ), Managerial efficiency (ME), Nonperforming loan (NPL), Liquidity (LQ), Bank size (BS) while Return on assets (ROA) is treated as dependent variables to measure profitability.

Statistical model of this study is given below:

$$ROA = \alpha + \beta_1 CA + \beta_2 OCE + \beta_3 AQ + \beta_4 ME + \beta_5 NPL + \beta_6 BS + \beta_7 LQ + e \dots \dots \dots (1)$$

## 4. Data Analysis

*Table 4.1 :Descriptive Statistics*

Variables	Obs	Mean	Std. Deviation	Minimum	Maximum
Capital Adequacy Ratio	90	.1372	.0247	.056	.2000
Operating Cost efficiency	90	.5269	.1376	.1132	.8567
Assets Quality	90	4.6150	2.2640	1.31	14.24
Managerial Efficiency	90	29.2958	9.3613	11.61	47.91
Non-performing Loans	90	.0583	.0500	.0131	.3361
Bank Size	90	5.3443	.4538	4.1013	6.1954
LQ	90	.0852	.0273	.0402	.1540
ROA	90	.0132	.0046	.0010	.0384

As per the Basel III, capital adequacy ratio should be 7.75% since 2017. The result in the descriptive statistics table shows mean capital adequacy ratio of selected banks is 13.72%. It means that commercial banks are maintaining capital requirement in an acceptable manner. Its standard deviation is also at level of 0.0247. Approximately half of the operating income is used for spending on operating expenses. But standard deviation is slightly high 13.76%. Mean of assets quality is 4.61 with the standard deviation 14.24. Managerial efficiency has mean of 29.29 with the standard deviation 47.91. It has largest mean and standard deviation when compared with other selected variables for this study.

Average nonperforming loans on total loans and advances are 5.8%. It can be reduced more and more if the banks use some techniques to manage credit risk. Average liquid assets are 8.52% of total assets. Thereby, banks may face liquidity risk in the future. Mean and standard deviation of the bank size are 5.3443 and 0.4538 respectively. Average return on assets is 1.32% and it is very lower than average return on equity as 17.96%. Standard deviation is also very lower for ROA = 0.0046.

*Table 4.2: Pair wise Correlation Analysis*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Capital adequacy ratio	1						
(2) Operating cost efficiency	-0.097	1					
(3) Assets Quality	-0.002	0.191	1				
(4) Managerial Efficiency	0.984	0.071	0.984	1			
(5) Nonperforming Loans	-0.459*	-0.039	-0.312*	0.002	1		
(6) Bank Size	0.000	0.710	0.002	0.121	0.253	1	
(7) Liquidity	-0.193	0.356*	0.272*	0.009	0.009	-0.274*	1
(8) ROA	-0.254*	-0.236*	-0.177	0.349*	0.009	-0.274*	0.037
	0.015	0.025	0.093	0.000	0.009	0.009	0.723
	-0.316*	-0.094	-0.105	0.466*	-0.020	0.037	0.032
	0.002	0.374	0.325	0.000	0.849	0.723	0.032
	0.375*	-0.410*	-0.271*	-0.088	-0.475*	0.020	0.032
	0.000	0.000	0.009	0.409	0.000	0.850	0.760

According to the result revealed in the table 4.2, positive correlation ( $r = 0.375$ ) is identified between capital adequacy and ROA. It is significant at 0.01 level ( $p = 0.000$ ). Operating cost efficiency, assets quality and non-performing loans have negative and significant relationship with ROA ( $r = -0.410$ ,  $p = 0.000$ ,  $r = -0.271$ ,  $p = 0.009$  and  $r = -0.475$ ,  $p = 0.000$  respectively). Further, Managerial efficiency, bank size and liquidity have no relationship with ROA of commercial banks listed in Sri Lanka since p value of them are above significant value 0.05.

*Table 4.3 Test of Multicollinearity*

<b>Variables</b>	<b>VIF</b>	<b>1/VIF</b>
Capital adequacy ratio	1.43	0.700426
Operating cost efficiency	1.21	0.826784
Assets Quality	1.28	0.781725
Managerial Efficiency	1.98	0.505995
Nonperforming Loans	1.45	0.690176
Bank Size	1.45	0.691618
Liquidity	1.41	0.708479
Mean VIF	1.46	

VIF test is performed to measure multicollinearity problem among predictor variables of the study. As per the result of Table 4.3 VIF for each independent variable is less than 10 (cut off VIF) & the mean of VIF is also less than 2. All are near to 1. Tolerance value of each construct is less than 0.10 (cut off tolerance statistic). Therefore, model of this study is free from the multicollinearity problem.

### ***Regression Analysis***

In this section, researcher employed panel data analysis to examine the impact of internal factors on profitability of listed commercial banks in Sri Lanka. The study so assumes that the different intercept for each bank and for both fixed and random effect regressions.

Table 4.4, presents the results of panel data multiple regression analysis. Fixed effect and random effect models are performed to examine the impact of internal factors on profitability. The F-statistics value for the fixed effect model was 3.36 ( $p < 0.05$ ) which



shows that the independent variables are jointly statistically significant to explain the variations in profitability. The R-square statistics value of 0.241 which shows that the independent variables jointly account for about 24% of variation on profitability in the fixed models respectively. Similarly, Wald Chi2 value of random effect model is 31.94 ( $P < 0.01$ ) which explains that model is significant. R-square value of random effect mode is 0.238 which explains that around 24% of the total variability of the model is explained by internal factors. In order to evaluate whether fixed effect or random effect model are most suitable to examine the impact of internal factors on profitability, Hausman Specification test is performed and with the results of test ( $\text{Chi}2 = 0.95$ ,  $\text{Prob} > \text{Chi}2 = 0.995$ ) random effect model is considered as most appropriate model to examine the impact of internal factors on profitability.

Table 4.4 : Panel data Multiple Regression Analysis

VARIABLES	Fixed Effect ROA	Random Effect ROA
CA	0.0678*** (0.0202)	0.0656*** (0.0190)
OCE	-0.00716* (0.00402)	-0.00761** (0.00362)
AQ	-0.000222 (0.000255)	-0.000244 (0.000224)
ME	4.25e-05 (8.41e-05)	4.31e-05 (6.85e-05)
NPL	-0.0244* (0.0138)	-0.0254** (0.0114)
BS	-0.00255 (0.00269)	-0.00142 (0.00158)
LIQ	0.00704 (0.0215)	0.0125 (0.0180)
Constant	0.0219 (0.0175)	0.0161 (0.0107)
Observations	90	90
R-squared	0.241	0.2380
F-statistic(p-value)	3.36(0.0036)	31.94(0.000)
Hausman Specification (p-value)	0.95(0.9956)	

From the results presented in the random effect model, there is a significant positive relationship of CA ( $\beta = 0.0656$ ,  $P < 0.01$ ) with profitability. OCE ( $\beta = -0.00761$ ,  $P < 0.05$ ) and NPL ( $\beta = -0.0254$ ,  $P < 0.05$ ) are significantly and negatively related to profitability. However, AQ, ME, BS, LQ do not show any significant relationship with profitability. Therefore, as per the random effect model presented in the table 4.4,  $H_1$  is supported with the results of the study that there is a significant positive influence of CA on profitability. Further,  $H_2$  &  $H_3$  are also supported with the results of the study that OCE and NPL are significantly negatively influenced on profitability.  $H_3$ ,  $H_4$ ,  $H_6$ , &  $H_7$  are not supported with the results of the study that AQ, ME, BS & LQ are not significantly influenced on profitability.

## 5. Conclusion

The major aim of this study is to examine the impact of bank internal factors on profitability of commercial banks in Sri Lanka. Data has been collected from nine commercial banks for ten years period from 2006 to 2015 from annual reports of randomly selected banks. The findings of this study revealed that capital adequacy has positive significant impact on profitability of the banks while operating cost efficiency and non-performing loans have negative and significant impact on profitability in terms of ROA. Further assets quality, managerial efficiency, bank size and liquidity have no any significant impact on profitability of commercial banks in Sri Lanka. As per the finding of the study, capital adequacy of each bank should be maintained as it is or more than it. Operating cost efficiency can be increased by reducing unwanted operating expenses in the bank. Management of the bank can use some credit risk management strategies such as reduce percentages of non-performing loans on total loans and advances, screening the details of the customers according to the CAMELS and 5C methods, providing loans to their customers, diversification of loans and analyze capacity of loans receivers with the help of Fitch rating agencies.

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