



**AN ANALYSIS OF THE FINANCIAL PERFORMANCE
OF COMMERCIAL BANKS IN SIERRA LEONE:
AN ECONOMETRIC ANALYSIS**

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Abstract:

The topic of this research is an analysis of the financial performance of commercial banks in Sierra Leone using an econometric approach. However, the study was guided by four key specific objectives in order to help achieved the research and they are as follows; asset quality, capital adequacy, earning rate and liquidity management in the financial performance of commercial banks. The study adopted the descriptive research design method, in which the targeted population of the study consists of 14 commercial banks that are licensed and registered with the Central Bank of Sierra Leone. The study makes use of both qualitative and quantitative sources of data. The secondary data was however collected through various published reports from the Commercial Bank of Sierra Leone, articles, journals, magazines, etc. while the primary sources of data on the other hand were collected with the help of the questionnaires administered to the listed commercial banks in the study. Data was analyzed using Multiple Regression Analysis. Findings from the study revealed that Asset Quality (ASQ) is having a negative coefficient of -0.007021 on the Returns on Assets and is statistically insignificant at a 5% Prob level with a P-Value of 0.8307. Suggesting that for every increase in Asset Quality, the ROA is expected to decreased by the rate of 0.007021. In contrast to the Returns on Equity; Asset Quality (ASQ) has a negative coefficient value of -0.081445 to the Returns on Equity and also has an insignificant relationship with a (p-Value = 0.6974). Findings from the study also revealed that the Capital Adequacy Ratio (CAR) are positive with a coefficient of (0.167228) and statistically significant at 5% with a P-value of (0.0077) to the Returns of

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Assets (ROA). Indicating that for every increase in the Capital Adequacy Ratio, the Returns on Asset (ROA) are expected to increase by the rate of 0.167228. In contrast to the Returns of Equity; Capital Adequacy Ratio (CAR) proved to have a negative and insignificant relationship with the Returns on Assets with (p-Value = 0.1333), with a coefficient value of -0.755936. From the findings of the study, all the variables used have positive relationship or coefficient and as well as performing good except for Asset Quality and Liquidity Management. some commercial banks are performing well while others are not. This is as a result of liquidity management.

JEL: G21, G28, G32, G38

Keywords: financial performance, commercial banks, Sierra Leone

1. Introduction

Banks, which deal with commercial activities. are known as commercial banks These financial institutes help to integrate every financial activity of the community. The main objective of a commercial bank is to play a vital role in the development of good trade Commercial banks are mechanisms of mobilizing funds in returnable resources. They offer financial support to all types of businesses through providing various types of loans, and other financial services. Commercial banks aid the economic development of the nation. Commercial banks pool together the savings of the community and use the funds productively through prudent investments. Smith defines a commercial bank as a bank which deals in exchanging currency accepting deposits, giving loans is involved in commercial activities. Integrated and speedy development of the country is possible only when competitive banking services reach every nook and come of the country. Today a number of commercial banks are concentrated in only a few places because lack of development of infrastructure in remote places. The government must give attention to remote places bank plays a vital role in the economic development of nations. So today a is challenging for the government to formulate the new banking policy rationally in remote areas.

The financial information is reported through the financial statements. and other counting reports. It contains a wealth of information that properly said and interpreted can provide valuable insights into purposes, which range from a simple analysis of the short-term liquidity position of the firm to a comprehensive assessment of the strengths and weaknesses of the firm in various areas. Financial statements of banks contain a wealth of information that if properly analyzed and interpreted can provide valuable insights of purposes, which range from a simple analysis of short-term liquidity and profitability position of the banks to a comprehensive assessment of the strengths and weaknesses of the banks in various areas. An interesting form of financial performance analysis of the banking sector is the analysis of management efficiency. Sound management is crucial for the going concern nature of the banking industry and also

drives the much-needed growth of the sector. The current account deficit dropped from 45% of non-iron ore GDP in 2011 to 39.4% in 2012. The improvement reflects the sharp decline in investment-led imports related to iron ore projects, the commencement of iron ore export, and favourable terms of trade. Although the latter is expected to deteriorate in 2013, the current account deficit would narrow further on account of the expected strong export performance. Sierra Leone's reserve coverage rose from 2.8 months of imports (excluding iron ore-related imports) in 2011 to 3.1 months in 2012. It is expected to stabilize around this level in 2013. Monetary and banking sector developments were broadly satisfactory in 2012, as risks to financial sector stability appeared contained.

The commercial banks in Sierra Leone have been facing challenges relating to its financial performance partly due to the outbreak of the Ebola scourge and also the management of their loans and advances to customers. The former resulted in huge impairment loss of intoxicated assets resulting to decline in some of the bank's financial performance. However, *"performance appraisal is an ongoing monitoring and reporting of program accomplishment, particularly progress towards pre-established goals."* Performance measurement system requires the identification of indicators which can identify the past. Current or potential future outcomes will attest to organizations sustainability and may be either qualitative or quantitative in nature. The compelling problems facing the banking industry in relation to their financial performance and which are not peculiar to the local and foreign banks would be explored by conducting with the view of providing suggestions. The main objective of this study is to conduct an analysis of the financial performance of commercial banks in Sierra Leone. With a specific objective of determining the effect of asset quality on the financial performance of commercial banks in Sierra Leone, assessing the effect of capital adequacy ratio on the financial performance of commercial banks in Sierra Leone, and also to evaluate the effectiveness of earning ability on the financial performance of commercial banks in Sierra Leone.

2. Literature Review

The concept of financial performance brings into focus the need for banks to plan their action and regulate their plans in the view of financing and investment decisions. The manner in which the banks raise their finances and the proper allocation and utilization of the funds raised is critical for the banks' performance.

There are various sources of finance available to the banks although they have to consider the cost of capital. Most banks have a hybrid capital structure which comprises debt and equity. In considering whether to use debt or capital the cost becomes crucial to that decision. The overriding principle is to acquire funds that minimize its weighted average cost of capital thereby increasing the market value of the banks. The sources of finance range from here to long-term the underlying fierce competitive environment in the banking industry. The desirable characteristics of cheapness, security, risk and flexibility are worthy of consideration. The aim of financing policy will be to raise the appropriate level of fund the time they are needed, at lowest possible cost. There is clearly

a link between the financing decisions made by a company's managers and the wealth of the company's shareholders. For a financing policy to be efficient, however companies need to be aware of the sources of finance available to them. Once the financing decision is being made with the object of obtaining optional capital it is important to decide how the limited financial resources obtained would be utilized to achieve wealth maximization of shareholders Lynch (2000) documented investment as any application of funds which is intended to provide a return by way of interest, dividend or capital appreciation. In broad terms, investment is defined as committing resources to realize some benefits over a reasonable period. Thus, investment decision is an integrating topic which comprises different kinds of investment and leads to different interpretation.

Financial performance is equally important for non-profit making organizations although the performance measurement system is different. It is important to stress that non-profit making institutions should use financial resources judiciously and their performance could be generally be value for money. A prudence and sound system of financial performance has to be cultivated among bureaucrats' administrators. Engineers, educationist, and the public at large It is generally acceptable that the primary objective of a firm is to maximize the wealth of shareholders. The wealth maximization through the financial performance could be realized from an increase in the market of shares and in dividend payments to investors. The value of the company can be by its market capitalization, earnings capability and its net value bases. It takes into account present and prospective future earnings per shares the timing and risk of these earnings, the dividends policy of the firm and many other factors that bear upon the market price of the stock Market price acts as the performance index or report card of the firm's progress. In the words *"financial ratio can be derived from the balance sheet and the income statement. They must be analyzed on a comparative basis Ratio may also be judged in comparison with those of similar firms in the same line of business and when appropriate with an industry average and we can look to future progress in this regard."* A comparative study of financial performance is a basic process, which provides information on profitability, liquidity position, earning capacity, efficiency in operation, sources and use of capital, financial achievement and status of the companies. This information will help to determine the extent of efficiency and effectiveness of the company with respect to deploying financial resources in a profitable manner.

A thesis conducted in Financial Performance of Neal SBI Bank Limited and Everest Bank Limited analyzed different ratios of Natal and EBL for the period of five years till fiscal year 2008. Here, in some cases, the liquidity position of EBL is slightly stronger where as some cases the ratio of NSBL is higher. It concludes that the liquidity portion of these two hanks is sound.

He suggested NBBL to increase its current assets because the hank is not maintaining adequate liquidity position in comparison with HBL. As capital structures of both the bank are highly leveraged both the banks are recommended to maintain and improve mix at debt and owner's equity by increasing equity share. He further suggests that HBL to improve the efficiency in utilizing the deposits in loans and advance for

generating profit NBBL should try to maintain its present position in this regard Profitability position of HBL is comparatively better than the same of NBBL So, so NBBL is recommended to utilize its resources more efficiently for generating more profit margins. If resources are held idle, the bank faces high costs and causes a low-profit margin. An ideal dividend payout ratio is based upon shareholders' expectations and the growth requirement of the bank NBBL is suggested to increase its dividend payout ratio.

These liquidity ratios are very important in determining the profit and aggressive liquidity, also the periods under review are not the same and the case study was not entirely the same. My study also would emphasize the performance of a foreign bank relative to a local bank and what are some of factors that are responsible for any remarkable difference. The banking industry has not expanded in Sierra Leone but additional products are being offered to customers which were not previously available like mobile banking, and e-banking, ATM service, etc. Our study is reflective of the current trend in the banking industry. Again, the previous study focused on internal appraisal of the financial due consideration for external appraisal which is not the control of the banks. Our research is a comparative study of a foreign bank and a local bank, unlike the above study which focused only on one particular hank. The above researcher looked at a local bank and a foreign bank for comparative performance in terms of profitability as result of undertaken various investments. While the study is similar to ours on the choice of case study and profitability as financial performance measures, we noted a marked difference to our own study. Our objective is broader in scope as it is not limited to profitability but considers a wide range of financial performance measurement systems including external considerations. Also, specific financial ratios applicable to banking industry to determine the liquidity risk would be considered in our study unlike the previous study.

3. Methodology

A set of explanatory variables are combined in a statistical process called multiple linear regression (MLR), also referred to as multiple regression. Modeling the linear relationship between the explanatory (independent) factors and response (dependent) variables is the aim of multiple linear regression. Because multiple regression takes into account several explanatory variables, it can be thought of as an extension of ordinary least-squares (OLS) regression. The table below presents the regression output.

The study used both qualitative and quantitative data to capture the essence of the study. The quantitative data gathered was analyzed using descriptive statistics, correlation matrix, and multiple regression models. The outcome of the regression was used to test the various hypotheses of the study, while the use of the descriptive statistics in the study was meant to determine whether the series used in the study are normally distributed or not, and the correlation analysis was also used to determine the functional relationship that exists between the variables used in the study if they are positively or negatively correlated.

The study makes use of the various variables that are used to determine bank's performance that is; Returns on Assets, Returns on Equity, Capital Adequacy Ratio, Assets Quality, Earnings Ability, Management Efficiency and Liquidity Management.

The basic model specification for a simple linear regression estimation method that was used in the study is stated thus:

The scope of the study ranged from 2012 to 2021 given limited access to data in capturing and the basic model specification for a simple linear regression estimation is stated thus:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu_t \quad \text{eq. 1}$$

Where;

β_0 is the constant or the intercept of the variables,

$\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4$ are the co-efficient of the variables

$$ROA = \beta_0 + \beta_1(CAR) + \beta_2(ASQ) + \beta_3(LQM) + \beta_4(ERA) + \mu_t \quad \text{eq. 2}$$

$$ROE = \beta_0 + \beta_1(CAR) + \beta_2(ASQ) + \beta_3(LQM) + \beta_4(ERA) + \mu_t \quad \text{eq. 3}$$

Where;

ROA (Returns on Asset),

ROE (Returns on Equity),

CAR (Capital Adequacy Ratio more recent times),

ASQ (Asset Quality),

ERA (Earning Ability), and

LQM (Liquidity Management).

The level of collinearity in a multiple regression model can be identified and measured using a statistical technique known as the variance inflation factor (VIF). When the predictor variables are not linearly connected, VIF quantifies how much the variance of the estimated regression coefficients is exaggerated. The VIF test was conducted with the aim of checking for the presence of multicollinearity amongst the variables. The assumption is that; if the VIF is greater than 10 then there exist severe multicollinearity amongst the variables and vice versa. The table presents the result from the VIF.

3.1 The Liquidity Coverage Ratio (LCR)

It aims at improving the resilience of banks during short-term periods of liquidity stress. The LCR sets a minimum supervisory standard to ensure that banks have an adequate amount of unencumbered high-quality liquid assets (HQLA) to meet liquidity needs for a 30-calendar day scenario, HOLA includes cash or assets that can be converted into cash at little or no loss of value in order to meet liquidity needs. The LCR has two components: the value of the HQLA under stressed conditions, and (2) the total net cash outflows that would occur for 30 calendar days into the future under certain stress scenario parameters.

The Basel Committee calls for the ratio of the stock of HQLA to the total net cash outflow measure to remain at or above 100%, except during a pronounced period of stress, when liquidity can temporarily be drawn down. The LCR formula is:

$$\frac{\text{Amount of HQLA}}{\text{Total net cash outflows over 30-days period}} \leq 100\%$$

3.2 The Net Stable Funding Ratio (NSFR)

This ratio ensures that a bank's assets would be adequately supported by stable funding sources. The idea is to keep banks from engaging in excessive maturity transformation or doing it in too risky a manner. Having a stable funding profile reduces the likelihood of an institution failing and potentially disrupting financial markets. The NSFR seeks to achieve this objective by limiting banks' overreliance on short-term funding relative to the liquidity risk characteristics of them on and off-balance sheet items. The NSFR is the amount of available stable funding relative to the amount of required stable funding.

$$\frac{\text{Available Amount of Stable Funding}}{\text{Total net cash outflows over 30-days period}} \leq 100\%$$

Available Amount of Stable Funding \geq 100%

3.3 Required Amount of Stable Funding

The Basel Committee defines 'available stable funding' as the portion of capital and liabilities expected to be reliable over a given time horizon, which has been established as one year in the current supervisory framework. An institution's required stable funding, on the other hand, is a function of the liquidity characteristics and residual maturities of the various assets and off-balance sheet exposures held by that institution.

4. Data Discussions, Analysis and Presentation

4.1 Introduction

The analysis of this project examines the application of the various statistical tests based on econometrics which can be used to establish the validity of ordinary least square (OLS) assumption, heteroscedasticity and autocorrelation as being discussed in methodology to the significance of the several considered in evaluating the comparative financial performance of commercial banks in Sierra Leone. For the purpose of this study, the financial performance of the commercial banks was evaluated using the CAMEL model system, with the exclusion of Management Efficiency due to limitations of data on it. However, the Returns on Assets and Returns on Equity were used as a proxy for the financial performance of the banking sector.

Table 1: Banking Sector Indicators Based on Camel Model

Years	CAR	ASQ	ERA	LQM	ROA
2012	27.7	14.7	16.1	40.7	3.4
2013	30.1	22.4	9.9	72.5	2.1
2014	30.2	33.4	14.9	78.9	2.7
2015	34	31.7	18.3	83.3	3.2
2016	30.7	22.7	22.3	85.5	2.9
2017	34.2	14.6	25.6	66.9	5.3
2018	38.4	12.7	27.25	67.9	6.1
2019	41.7	16.8	26.1	68.4	6.1
2020	40.1	12.7	25.7	73.4	6.1
2021	41.3	15.2	23.9	73.7	5.4

Source: World Bank and BSL: Financial Stability Report, 2020.

4.2 Descriptive Statistics

Table 2: Descriptive Statistics

	ROA	ASQ	CAR	ERA	LQM
Mean	4.330000	19.69000	34.84000	21.00500	71.12000
Median	4.350000	16.00000	34.10000	23.10000	72.95000
Maximum	6.100000	33.40000	41.70000	27.25000	85.50000
Minimum	2.100000	12.70000	27.70000	9.900000	40.70000
Std. Dev.	1.609037	7.642345	5.189348	5.870285	12.42925
Skewness	-0.051123	0.866598	0.118058	-0.655432	-1.402638
Kurtosis	1.289106	2.273334	1.488572	2.123878	4.786540
Jarque-Bera	1.224006	1.471671	0.975069	1.035815	4.608872
Probability	0.542264	0.479105	0.614139	0.595766	0.099815
Sum	43.30000	196.9000	348.4000	210.0500	711.2000
Sum Sq. Dev.	23.30100	525.6490	242.3640	310.1423	1390.376
Observations	10	10	10	10	10

Source: EViews 8.

From Table 2 above, the Jarque-Bera statistics compare the alternative of non-normality to the null hypothesis of normality based on the aforementioned table. The Jarque-Bera values are significant at all levels of significance, according to the P-values for all of the aforementioned variables used in the study which are all greater than 5% (0.05), with the exception of Liquidity Management. Thus, this has leading to the acceptance of the null hypothesis and come to the conclusion that all the variables used in this study are normally distributed with the exception of Liquidity Ratio. The skewness values for ROA and ERA, and LQM indicates that the variables have a negative skewness, while the skewness variables for ASQ and CAR are having a positive skewness.

From the table above ASQ has a mean of 19.69 with a standard deviation of 7.642345, CAR has a mean of 34.84 with a standard deviation of 5.189348, ERA has a mean of 21.005 with a standard deviation of 5.87028, LQM has a mean of 71.12 with a standard deviation of 12.42925 and ROA has a mean of 4.33 with a standard deviation of 1.609037 while ROA has the smallest mean and LQM has the highest average in the data set.

4.2 Multiple Linear Regression Model

The table below presents the result from the multiple linear regression model.

Table 3: Multiple Linear Regression Output for ROA

Dependent Variable: ROA				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAR	0.167228	0.038843	4.305198	0.0077
ASQ	-0.007021	0.031165	-0.22529	0.8307
ERA	0.131496	0.037388	3.517048	0.017
LQM	-0.03513	0.01561	-2.250483	0.0742
C	-1.621603	1.14603	-1.414974	0.2162
R-squared	0.971804	Mean dependent var		4.33
Adjusted R-squared	0.949248	S.D. dependent var		1.609037
S.E. of regression	0.362488	Akaike info criterion		1.115201
Sum squared resid	0.656987	Schwarz criterion		1.266494
Log likelihood	-0.576005	Hannan-Quinn criter.		0.949233
F-statistic	43.08307	Durbin-Watson stat		2.437485
Prob(F-statistic)	0.000458			

Source: Computation using EViews 8.

From Table 2 above, the estimated coefficients of Capital Adequacy Ratio (CAR) are positive with a coefficient of (0.167228) and statistically significant at 5% with a P-Value of (0.0077) to the Returns of Assets (ROA). Indicating that for every increase in Capital Adequacy Ratio, the ROA is expected to increase by a rate of 0.167228. Also, Asset Quality (ASQ) is having a negative coefficient of -0.007021 on the Returns on Assets and is statistically insignificant at a 5% Prob level with a P-Value of 0.8307. Suggesting that for every increase in Asset Quality, the ROA is expected to decreased by the rate of 0.007021. Earning Ability is also having a positive coefficient of 0.131496 to the Returns on Assets and statistically significant at 5%. Implying that for every increased in ERA, the ROA is expected to increase by the rate of 0.131496. Finally, Liquidity Management is having negative coefficient on the dependent variable of =-0.03513. However, this relationship is insignificant on the Returns on Assets with a P-Value of 0.0742. Suggesting that for every improvement in liquidity management, returns on assets would decline by 0.035 times.

N From the table above $R^2 = 0.971804$ which indicates that 97.18% of changes or variations in ROA for the year's study were explained by CAR, ASQ, LQM and ERA, while the remaining 2.92% were captured and unexplained by Random error which may results from other factor not considered in this research.

4.3 Hypothesis Testing

$H_o : \beta_i = 0$ Regression coefficients are statistically insignificant.

$H_i : \beta_i \neq 0$ Regression coefficients are statistically significant.

For the regression coefficients *CAR* and *ERA*, their sig value is less than 0.05 we therefore reject H_0 , and conclude that their parameters are statistically significant while the parameter *ASQ* and *LQM*, their sig values are less great than 0.05 we therefore do not reject H_0 , and conclude that their parameter are statistically insignificant.

4.4 Test for Autocorrelation

The table below presents the autocorrelation result using the Breusch-Godfrey Serial Correlation LM Test.

Table 4: Test for Autocorrelation for ROA

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	3.314402	Prob. F(2,3)	0.1739
Obs*R-squared	6.884348	Prob. Chi-Square(2)	0.032

Source: Computation using EViews 8.

The critical Chi-square value for the Observed R- square value is less than 0.05, we do not reject H_0 and conclude that there is a serial correlation in the data.

4.5 Heteroscedasticity Test

The table below presents the result of Heteroscedasticity using the Goldfield Quandt Test.

Table 5: Test for Heteroscedasticity Section for ROA

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.866936	Prob. F(4,5)	0.5422
Obs*R-squared	4.095239	Prob. Chi-Square(4)	0.3933
Scaled explained SS	0.233829	Prob. Chi-Square(4)	0.9937

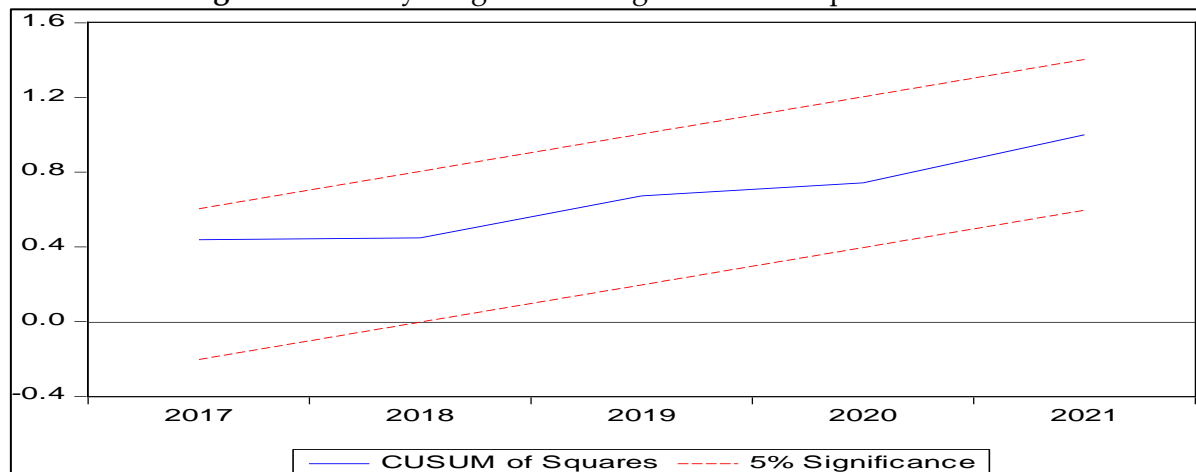
Source: Computation using EViews 8.

The critical Chi-square value for the Observed R-square value is greater than 0.05, we therefore accept H_0 and conclude that there is no heteroscedasticity in the error variances i.e. the disturbance terms are homoscedastic in nature.

4.5 Stability Diagnostic

The graph below presents the result of CUSUM of Squares.

Figure 1: Stability Diagnostic Using CUSUM of Squares for ROA



Source: EViews 8

The results of the estimated CUSUM of Squares tests indicate that the parameters used in this study (specifically Returns on Assets) are highly stable. Specifically, the plots of CUSUM of Squares fell within the 5% critical bounds, providing further evidence of the stability of the parameters.

4.6 Multiple Regression for Returns on Equity (ROE)

The result below presents the multiple linear regression model for Returns on Equity.

Table 6: Multiple Linear Regression Output for ROE

Dependent Variable: ROE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ASQ	-0.081445	0.197688	-0.411986	0.6974
CAR	-0.755936	0.422141	-1.790718	0.1333
ERA	5.415679	1.539837	3.517048	0.017
LQM	0.22738	0.099303	2.289769	0.0707
C	9.324275	7.639598	1.220519	0.2767
R-squared	0.912756	Mean dependent var		21.005
Adjusted R-squared	0.842961	S.D. dependent var		5.870285
S.E. of regression	2.326287	Akaike info criterion		4.833277
Sum squared resid	27.05806	Schwarz criterion		4.984569
Log likelihood	-19.16638	Hannan-Quinn criter.		4.667309
F-statistic	13.07763	Durbin-Watson stat		2.215947
Prob(F-statistic)	0.007378			

Source: Computation using EViews 8.

The econometric result using the least squares regression method indicates that Asset Quality (ASQ) has a negative coefficient value of -0.081445 to the Returns on Equity and also has an insignificant relationship (p-Value = 0.6974). Also, the Capital Adequacy Ratio (CAR) proved to have a negative and insignificant relationship with the Returns on Assets (p-Value = 0.1333), with a coefficient value of -0.755936. Indicating that an increase on the Capital Adequacy Ratio would ultimately lead to a significant decrease on the

Returns on Equity of the commercial banks by -0.76 times. Furthermore, the result revealed that Earning Ability (ERA) has a positive and significant effect on the dependent Variable (ROA) with a (p-value = 0.017) and a coefficient value of 5.415679. Implying that an increase in the Earning Ability would proportionately lead to a significant increase on the Returns on Equity of the commercial banks. Finally, Liquidity Management (LQM) has a positive coefficient of 0.22738 to the Returns on Equity and is statistically significant with a (p-Value =0.0707). Suggesting that for every increase in the Liquidity Management would ultimately lead to a proportionate increase in the Returns on Equity of Commercial Banks in Sierra Leone.

With an R-squared of 0.912756, the independent variables and the dependent variable together accounted for nearly 91% of the predictive power in the dependent variable. This suggests that the factors utilized in this study cannot fully account for the dependent variable in Sierra Leone. The dependent variable's unexplained portion can be attributed to the omission of highly significant independent factors that are outside the preview of this study but can explain the dependent variable.

4.7 Hypothesis Testing

$H_o : \beta_i = 0$ Regression coefficients are statistically insignificant,

$H_i : \beta_i \neq 0$ Regression coefficients are statistically significant.

For the regression coefficient *ERA*, its sig value is less than 0.05 we therefore reject H_o , and conclude that their parameters are statistically significant while the parameters *CAR*, *ASQ* and *LQM*, their sig values are less or greater than 0.05 we therefore do not reject H_o , and conclude that their parameter are statistically insignificant.

4.8 Test for Autocorrelation

The result below presents the autocorrelation test using the Breusch-Godfrey Serial Correlation LM Test.

Table 7: Test for Autocorrelation for ROE

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	1.681034	Prob. F(2,3)	0.3238
Obs*R-squared	5.284552	Prob. Chi-Square(2)	0.0712

Source: Computation using EViews 8.

The critical Chi-square value for the Observed R- square value is less than 0.05, we do not reject H_o and conclude that there is a serial correlation in the data.

4.8 Heteroscedasticity Section

The table below presents the Heteroscedasticity test using the Goldfield Quandt Test.

Table 8: Test of Heteroscedasticity Output for ROE

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	5.021394	Prob. F(4,5)	0.0532
Obs*R-squared	8.006823	Prob. Chi-Square(4)	0.0913
Scaled explained SS	1.037945	Prob. Chi-Square(4)	0.9040

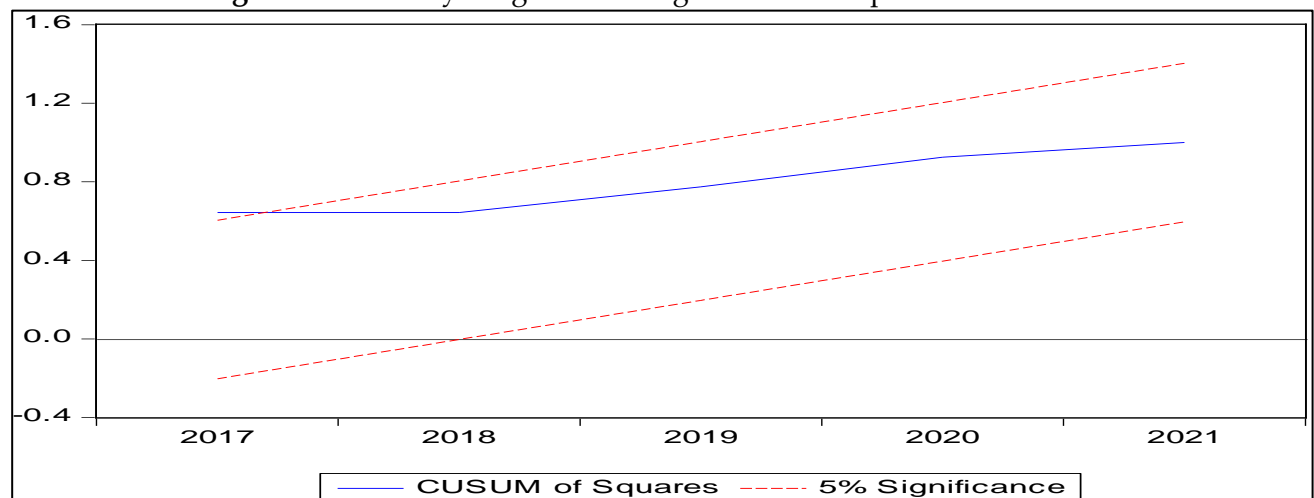
Source: Computation using EViews 8.

The critical Chi-square value for the Observed R- square value is less than 0.05, we therefore reject Ho and conclude that there exists the presence of heteroscedasticity in the error variances i.e. the disturbance terms are heteroscedastic in nature.

4.9 Stability Test

The graph presents the stability test conducted using CUSUM of Squares.

Figure 1.2: Stability Diagnostic Using CUSUM of Squares for ROE



Source: Emmanuel, Joseph and Desmond J. Computation using EViews 8.

The results of the estimated CUSUM of Squares tests indicate that the parameters used in this section are highly unstable. Specifically, the plots of the CUSUM of Squares fell above the 5% critical bounds, providing further evidence of the instability of the parameters, specifically the Returns on Assets when determining the financial performance of commercial banks in Sierra Leone.

5. Findings of The Study

5.1 To Determine the Effect of Asset Quality on the Financial Performance of Commercial Banks in Sierra Leone

The first specific objective of the study was to determine the effect of Asset Quality on the financial performance of commercial banks in Sierra Leone. The findings from the

study revealed that Asset Quality (ASQ) is having negative coefficient of -0.007021 on the Returns on Assets and statistically insignificant at 5% Prob level with a P-Value of 0.8307. Suggesting that for every increase in Asset Quality, the ROA is expected to decreased by the rate of 0.007021.

In contrast to the Returns on Equity; Asset Quality (ASQ) has a negative coefficient value of -0.081445 to the Returns on Equity and also has an insignificant relationship with a (p-Value = 0.6974). Indicating that an increase in the Asset Quality of the bank would proportionately leads to a decrease in the Returns on Equity of the commercial banks.

5.2 To Assess the Effect of Capital Adequacy Ratio on the Financial Performance of Commercial Banks in Sierra Leone

The second specific objective of the study was to assess the effectiveness of the capital adequacy ratio on the financial performance of commercial banks. Findings from the study revealed that the Capital Adequacy Ratio (CAR) are positive with a coefficient of (0.167228) and statistically significant at 5% with a P-value of (0.0077) to the Returns of Assets (ROA). Indicating, that for every increase in the Capital Adequacy Ratio, the Returns on Asset (ROA) is expected to increase by the rate of 0.167228.

In contrast to the Returns of Equity; the Capital Adequacy Ratio (CAR) proved to have a negative and insignificant relationship with the Returns on Equity with (p-Value = 0.1333), with a coefficient value of -0.755936. Implying that an increase on the Capital Adequacy Ratio would ultimately lead to a significant decrease on the Returns on Equity of the commercial banks by -0.76 times.

5.3 To Evaluate the Effectiveness of Earning Ability on the Financial Performance of Commercial Banks in Sierra Leone

The third specific objective of the study was to evaluate the effectiveness of earning ability on the financial performance of commercial banks. Findings from the study revealed that Earning Ability is also having a positive coefficient of 0.131496 to the Returns on Assets and statistically significant at 5%. Implying that for every increase in Earning Ability (ERA), the ROA is expected to increase by the rate of 0.131496.

In contrast to the Returns on Equity; Earning Ability (ERA) has a positive and significant effect on the dependent Variable (ROA) with a (p-value = 0.017) and a coefficient value of 5.415679. Implying that an increase in the Earning Ability would proportionately lead to a significant increase on the Returns on Equity of the commercial banks.

5.4 To Establish the Effect of Liquidity Management on the Financial Performance of Commercial Banks in Sierra Leone

The fourth and final specific objective of the study was to establish the effect of liquidity management on the financial performance of commercial banks. Findings from the study revealed that Liquidity Management has having negative coefficient on the dependent variable of -0.03513 . However, this relationship is insignificant on the Returns on Assets

with a P-Value of 0.0742. Suggesting that for every improvement in liquidity management, returns on assets would decline by 0.035 times.

In contrast to the Returns on Equity; Liquidity Management (LQM) is a positive coefficient of 0.22738 to the Returns on Equity and is statistically significant with a (p-Value =0.0707). Indicating that for every increase in the Liquidity Management would ultimately lead to a proportionate increase in the Returns on Equity of Commercial Banks in Sierra Leone.

6. Summary, Conclusion and Recommendations

This study aims to investigate the analysis on the financial performance of commercial banks in Sierra Leone. However, the study was guided with four key specific objectives in order to help achieve the research aim of the study and they are as follows; firstly, to determine the effect of Asset Quality on the financial performance of commercial banks in Sierra Leone. Secondly, to assess the effectiveness of the capital adequacy ratio on the financial performance of commercial banks. Thirdly, to evaluate the effectiveness of earning ability on the financial performance of commercial banks and finally, to establish the effect of liquidity management on the financial performance of commercial banks. The study reviewed various concepts, books, articles and journals on the principles, practice and determinants of a bank's performance. The CAMEL model, which serves as a fundamental tool used by regulatory authorities (specifically central banks) to determine the financial performance of commercial banks was also reviewed. The study adopted the descriptive research design method, in which the targeted population of the study consists of 14 commercial banks that are licensed and registered with the Central Bank of Sierra Leone. The study makes use of both qualitative and quantitative sources of data. The secondary data was however collected through various legal reports from the Bank of Sierra Leone Limited, articles, journals, magazines, etc. while the primary sources of data on the other hand were collected with the help of the questionnaires administered to the listed commercial banks in the study. The findings from the study revealed that Asset Quality (ASQ) is having negative coefficient of -0.007021 on the Returns on Assets and statistically insignificant at 5% Prob level with a P-Value of 0.8307. Suggesting that for every increase in Asset Quality, the ROA is expected to decreased by the rate of 0.007021.

In contrast to the Returns on Equity; Asset Quality (ASQ) has a negative coefficient value of -0.081445 to the Returns on Equity and also has an insignificant relationship with a (p-Value = 0.6974). Indicating that an increase in the Asset Quality of the bank would proportionately lead to a decrease in the Returns on Equity of the commercial banks. Findings from the study also revealed that the Capital Adequacy Ratio (CAR) are positive with a coefficient of (0.167228) and statistically significant at 5% with a P-value of (0.0077) to the Returns of Assets (ROA). Indicating, that for every increase in the Capital Adequacy Ratio, the Returns on Asset (ROA) is expected to increase by the rate of 0.167228. In contrast to the Returns of Equity; the Capital Adequacy Ratio (CAR) proved

to have a negative and insignificant relationship with the Returns on Assets with (p-Value = 0.1333), with a coefficient value of -0.755936. Indicating that an increase on the Capital Adequacy Ratio would ultimately lead to a significant decrease on the Returns on Equity of the commercial banks by -0.76 times.

The study concludes that Capital Adequacy Ratios (CAR) have a positive and significant relationship with the Returns on Assets. Indicating that for every increase in the Capital Adequacy Ratio, the Returns on Asset (ROA) is expected to increase by the rate of 0.167228. On the other hand, the Capital Adequacy Ratio (CAR) proved to have a negative and insignificant relationship with the Returns on Equity of the commercial banks. Implying that an increase in the Capital Adequacy Ratio would ultimately lead to a significant decrease in the Returns on Equity of the commercial banks by -0.76 times. The study finally tries to establish the effect of liquidity management on the financial performance of commercial banks. The study concludes that Liquidity Management is having a negative and insignificant relationship to the Returns on Assets. Suggesting that for every improvement in liquidity management, returns on assets would decline by 0.035 times. On the other hand, Liquidity Management (LQM) is having a positive and significant relationship with the Returns on Equity of commercial banks in Sierra Leone. Indicating that for every increase in the Liquidity Management would ultimately lead to a proportionate increase in the Returns on Equity of Commercial Banks in Sierra Leone. However, the recommendations of the study are in line with the research findings. Asset Quality (ASQ) tends to have negative and insignificant effect on the Returns on Assets and Returns on Equity of commercial banks in Sierra Leone. The study therefore recommends that bank management must strengthen credit evaluation procedures so as to reduce the rate of non-performing loans within the banking sector. It is obvious an increase in the non-performing loans of the banking system has a significant impact on a bank's performance since the major sources of revenue of commercial banks come from interest and commission. Also, the study recommends that the Central Bank must make it mandatory for commercial banks to send all credit applications to the credit reference bureau for profile checking, to avoid additional debt burden on the banking system. They further try to investigate the effectiveness of the capital adequacy ratio on the financial performance of commercial banks. Capital Adequacy Ratios (CAR) have to have a positive and significant relationship with the Returns on Assets.

The study recommends that the central bank must be considerate when setting/implementing the Capital Adequacy Ratios (CAR) as it tends to have a significant relationship with the performance of commercial banks in terms of ROA. Also, the Capital Adequacy Ratio (CAR) proved to have a negative and insignificant relationship with the Returns on Equity of the commercial banks. The study further recommends that the central bank must be extremely cautious when dealing with the Capital Adequacy Ratios (CAR) as it is deemed to have an insignificant relationship with the financial performance of commercial banks in terms of ROE. The study finally tries to establish the effect of liquidity management on the financial performance of commercial banks. The study therefore recommends that the regulatory authorities (central bank) must treat

liquidity with caution as it poses significant threat to commercial banks in terms of performing their intermediation role effectively. A high liquidity ratio set by the regulatory authority will reduce the volume of liquid cash available with commercial banks, thereby limiting their ability to perform their intermediation role effectively and efficiently. The study further recommends that the Central Bank must be considerate when setting/implementing policies in regards to liquidity ratio and as well as reserve requirements to enable banks to maintain liquidity position, while, Bank Managers must endeavor to maintain highly liquid assets with them. During the course of the research work, researchers must ensure that they limit or restrict themselves to the purpose of their visit to organizations, and conduct themselves in a professional manner.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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