

# EFFECTS OF CAPITAL ADEQUACY ON FINANCIAL PERFORMANCE OF LISTED COMMERCIAL BANKS IN NAIROBI SECURITIES EXCHANGE

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**Abstract:** The main objective of the study was to find out the effect of capital adequacy on performance of listed Commercial Banks of Kenya. The specific objectives of the study were; the effect of asset quality on financial performance of commercial banks, the effect of management efficiency on financial performance of commercial banks, the effect of liquidity management on the financial performance of commercial banks and the effect of loan portfolio on the financial performance of commercial banks. The study reviewed related literature derived from research work by other researchers on capital adequacy and some general literature to aid in further understanding the purpose. It was organized as follows: a theoretical review of the theories, an empirical review as per the study objectives, a conceptual framework, a critique, the research gap and a summary. The study adopted descriptive research design. The study population was all 44 commercial banks registered with central bank of Kenya. The study focused on all 11 commercial banks listed in Nairobi Securities Exchange. Secondary data on asset quality, management efficiency, liquidity management and loan portfolio was collected from the audited financial statements for a period of five years 2011 to 2015 and analyzed using SPSS Version 21.0. Correlation and multiple regression analysis were used for analysis. T-test was carried out in testing research hypotheses. Data was presented in form of frequency distribution tables. This facilitated description and explanation of the study findings. The study found that asset quality, management efficiency and liquidity management were negatively correlated with ROE at -0.375, -0.272 and -0.032 respectively. Loan portfolio was positively correlated with ROE at 0.251. Asset quality and management efficiency were statistically significant with ROE with p-values of 0.000 and 0.011 respectively hence we accept the null hypothesis. Liquidity management and loan portfolio were insignificant with p-values of 0.304 and 0.161 respectively hence we reject null hypothesis. The study concluded that listed commercial banks need to maintain low non-performing loans, reduce on their expenditures, maintain high liquidity levels and lend more so as to earn from interest from loans. The study recommends that proper vetting need to be done on loan approval and also close monitoring need to be done to the lenders so as to reduce credit risk. All expenditures need to be approved by the relevant authority and should only for business operations. Banks should not maintain too much fixed assets as opposed to liquid assets while loan book need to grow at positive level without jeopardizing the operations of the institution. The study recommends further research on non-listed commercial banks so as to compare results and also other factors influencing performance of financial performance of listed commercial banks should be researched on.

**Keywords:** Capital, Performance and Commercial Banks.

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## 1. INTRODUCTION

### Background of the Study:

Capital can be defined in various ways: An economist's definition of capital may differ from an accountant's definition, which, in turn, may differ from the definition used by regulators. Specifically, the economist's definition of capital is the difference between the market values of assets and liabilities. (Saunders and Cornett, 2008).

Capital adequacy captures the overall soundness or risk exposure of an individual bank and reflects the idea of bank capital as a cushion to absorb losses. Alternatively, it can be defined as the adequacy of a bank's net worth enabling it to absorb potential adverse changes in the value of its assets without becoming insolvent, (Sinkey, 2002). The need for adequate capital to a bank cannot be over-emphasized. With this, a bank can absorb operating losses as the bank continues with its operations. It enables the bank to support the basic infrastructure of the business and to maintain public confidence. It shows shareholders are prepared to make funds permanently available to support the business. Further, it protects uninsured depositors and other stakeholders. It keeps the cost of deposit insurance low as it reduces the chances of bank collapse. Capital is also important in order to acquire real investments that can allow banks to provide financial services, (Saunders and Cornett, 2008).

Adequate capital allows banks to absorb risks and sustain shocks; it enables assets (non-performing loans) to be written off and for banks to provide long-term funds, (Mishkin and Eakins, 2007). According to Saunders and Cornett capital is important because it helps absorb unanticipated losses and preserve confidence in the financial system.

About 30 banks collapsed in Kenya between 1984-1999, due to severe banking crises episodes in (1984, 1993 and 1998). Insolvency in one bank quickly spread to others through contagion destroying credibility of banks causing general banking nonperformance. One practical cause of this systemic fragility was the structural weaknesses of the affected banks. A significant contributor was under-capitalization, which reduced these banks cushion against losses and weakened their ability to survive a run on their deposits, (Masai and Mullei, 2006). In Kenya, Central Bank of Kenya (CBK) increased the minimum capital requirement, aimed at strengthening institutional structures and improving resilience of the banking industry in respect to the international standards. According to the Banking Act (2008), every bank was expected to maintain a minimum core capital of at least KES 1 billion (USD 12 million) by 2012. It was further expected that the small banks that found difficulties raising their capital to the required levels would be encouraged to merge (Kenya Finance Act, 2008). In line with the capital buffer theory (Whalley, 2001) banks aim at holding more capital than required (that is, maintaining regulatory capital above the regulatory minimum) as insurance against breach of the regulatory minimum capital requirement.

### **Commercial Banks in Kenya:**

Commercial banks in Kenya are regulated by the Central Bank of Kenya (CBK). The Central Bank, by regulating, makes and enforces rules which govern the minimum capital requirement for Kenyan banks and are based on the international standards developed by the Basel Committee. In the year 2008, CBK reviewed the minimum capital requirements for commercial banks and mortgage finance institutions with the aim of maintaining a more stable and efficient banking and financial system. According to the Banking Act (2008) every institution was expected to maintain a minimum core capital of at least KES 1 billion (USD 12 million) by 2012.

The history of banking in Kenya dates back to the colonial period. British commercial banks started operations in Kenya during 1890s. As Kenya became more and more part of this capitalist world economy, the banks established themselves in the colony to provide services for financing exports and imports (CBK, Kenya Bankers Association and Reuters 2009). Three British banks dominated banking in colonial Kenya. The National Bank of India (later National and Grindlays Bank) began operations in 1896. It was followed in 1910 by the Standard bank of South Africa (later standard Bank and Standard Chartered), and shortly thereafter the national Bank of South Africa entered the field. In 1925, the latter merged with two other British banks to form Dominion Colonial and overseas (later Barclays Bank) with a primary interest to finance external trade. Kenyan financial services industry is dominated by the banking sector. During the period 2007 – 2011, the Kenyan banking system showed resilience, which was attributed to the low financial integration in the global financial market and the strict supervision and sound regulatory reforms (Bank Supervision Annual Report 2009, 2010; IMF, 2009). According to the Central Bank of Kenya the financial sector performance indicators with return on asset indicator went up from 2.6 percent in 2007 to 4.4 percent in 2011 while the ratio of gross non-performing loans to gross loans improving from 10.6 percent to 4.4 percent over the same period.

### **Statement of the Problem:**

Financial Managers have a responsibility of ensuring that there is adequate capital for sound financial performance. This has led to the desire to establish whether there is an adequate capital that maximizes firm's value. Studies on the impact of capital adequacy on firm performance have mostly been carried out in developed economies on large and listed firms. In the developing economies, Chiang, et al., (2013) concluded that while high capital adequacy is positively related to a firm's asset, it is negatively related to profit margins in Hong Kong.

The problem of this study can be attributed to inadequate capitalization, poor management and supervision and consequent poor performance in the banking industry, which has affected the performance of the commercial banks. Existing literature on adequate bank capitalization and performance are not settled. Commercial banks have been having inadequate capital and this has affected the performance of banking firms and contribution to the economy. The management, supervision and regulation of banks is also felt inadequate hence, the spate of bank distress witnessed in the recent past in Kenya. Investors and stakeholders do not appear to understand what really determines capital adequacy and why some banks perform better than others (Ongore, 2012).

Studies have been done on capital adequacy, but they have not induced a clear relationship between capital adequacy and financial performance in Commercial banks in Kenya. Nag and Das (2002) studied the impact of capital requirement norms on flow of credit to the business sector by public sector banks in India and found that in the post reform period, public sector banks shift their portfolio in a way that reduced their capital requirements this did not capture determinants of capital adequacy.

Due to this gap, this study will establish the relationship between capital adequacy and financial performance of commercial banks in Kenya. The study will be done by reviewing various financial performance measures and in particular the Return on Equity (ROE) ratio. ROE has an important indicator to measure the financial performance of the banks has been discussed extensively. Foong (2008) indicated that the efficiency of banks can be measured by using the ROE which illustrates to what extent banks use reinvested income to generate future profits.

Discussion in previous studies seems to have suggested a number of factors that may influence the failure pattern of banks, bank products and management. Given that no study has been done recently on the relationship between capital adequacy and firms' performance in the listed banking sector in Kenya, the study seeks to bridge the gap by undertaking this study. This study will therefore address the effects of capital adequacy on financial performance of commercial banks in Kenya.

## **2. LITERATURE REVIEW**

### **The Capital Buffer Theory:**

The buffer theory of Calem and Rob (1996) predicts that a bank approaching the regulatory minimum capital ratio may have an incentive to boost capital and reduce risk in order to avoid the regulatory costs triggered by a breach of the capital requirements. However, poorly capitalized banks may also be tempted to take more risk in the hope that higher expected returns will help them to increase their capital. This is one of the ways risks relating to lower capital adequacy affects banking operations.

Capital adequacy buffer model is based on a combination of the Capital Asset Pricing Model (CAPM) (Sharpe, 1964) and the Merton (1974) Distance to Default (DD) Model. Ikpefan (2013) states that banks may prefer to hold a 'buffer' of excess capital to reduce the probability of falling under the legal capital requirements, especially if their capital adequacy ratio is very volatile.

### **The Expense Theory:**

According to the expense theory of Williamson (1963) and developed by Nyong (2001) otherwise called "the theory of managerial discretion", managers have the option in pursuing policies, which maximize their own utility rather than profit maximization for shareholders. Such utility include the satisfaction which managers derive from certain types of expenditure. Managers' prestige, power and status are to some extent reflected in the amount of slack they receive in the form of expense account, luxurious offices, company cars and other perquisites of office.

### **The Deposit Insurance Theory:**

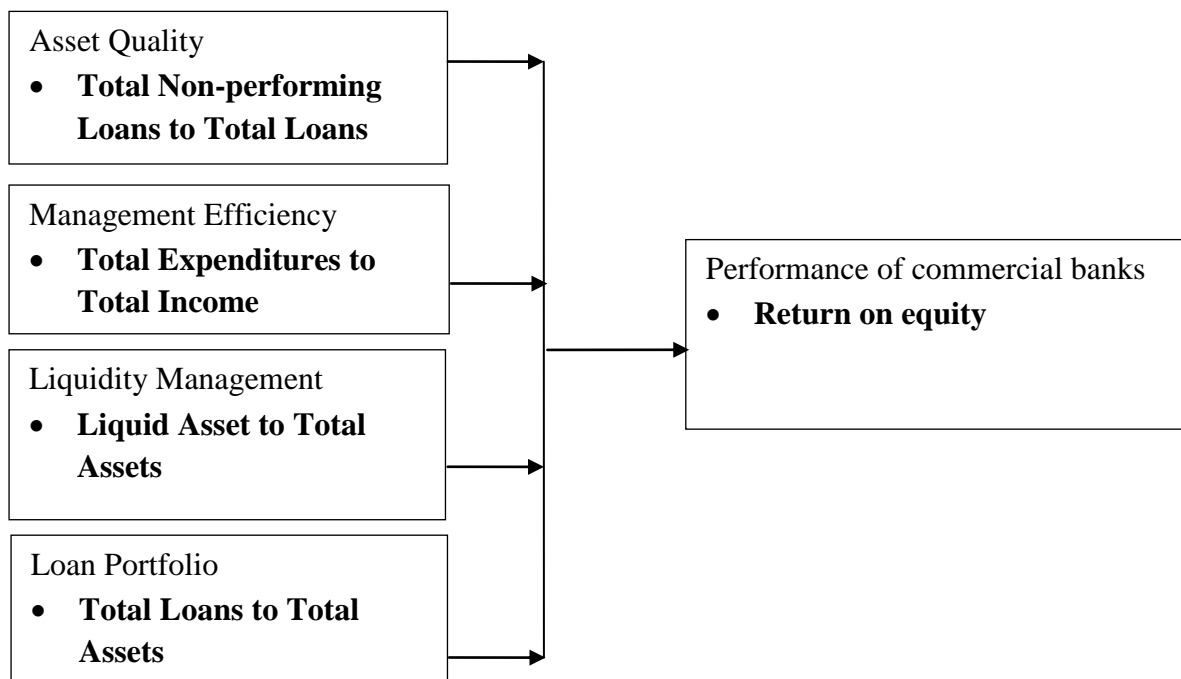
The deposit insurance theory of Flannery, (1989) provides an insight into the behaviour of commercial banks. The theory was developed by (Cham, Greenbaum and Thakor, 1992) and it states that, as insured banks increase their risk of failure without limit, there is an expected value transfer of wealth from government deposit Insurance Corporation to bank owners. Regulators are concerned about bank's soundness, particular with respect to solvency or the probability of bank failure. Therefore, regulation of bank risks exposure is necessary to reduce the expected losses incurred by the deposit insurance corporation.

### The Portfolio Regulation Theory:

The theory by Peltzman (1970) addressed that the regulation of banks is necessary to maintain safety and soundness of the banking system, to the extent, which put them in a position to meet its liabilities without difficulty. This made it imperative for the regulatory authorities to compel greater solvency and liquidity on individual banks than making it optional.

Portfolio theory was developed in 1950's through the early 1970's and was considered an important advance in the mathematical modeling of finance. Since then, many theoretical and practical criticisms have been developed against it. These include the fact that financial returns do not follow a Gaussian distribution or indeed any symmetric distribution, and those correlations between asset classes (Michael, Sproul 1998).

### Conceptual Framework:



### Empirical Review:

#### Asset Quality:

Barakat (2009) conducted a study which aimed at checking the extent to which Basel II standards requirement are applied by commercial banks operating in Jordan. Data was collected through a questionnaire administered to more than forty (40) bank employees in Jordan. The study revealed that all banks operating in Jordan applied the Basel II standards, as well as the existence of great differences in applying Basel II standards among local and foreign banks.

Olweny and Shipho, (2011) adopted the CAMEL model with the exclusion of the Earnings component since they use it as the independent variable to measure profitability of banks in Kenya. They in addition included Foreign Ownership and Market Concentration to the model to cater for market factors. The study used data for the period from years 2002 to 2008. The study focused on capital adequacy, operational efficiency, asset quality and Liquidity as components affecting profitability.

#### Management Efficiency:

Njeule, (2013) did a comparative study on the effects of CBK prudential regulations of 2006 on the financial performance of commercial banks. The study covered a twelve-year period from years 2001 to 2012; six years prior to implementation of the prudential regulations (2001-2006) and six years after implementation of the prudential regulations (2007-2010). This study used only one type data the secondary data to determine the effects of CBK prudential regulations of 2006 on the financial performance of commercial banks.

### **Liquidity Management:**

Botoe (2012) analyzed the impact of liquid asset holdings on profitability within Commercial Banks in Liberia. The study used regression analysis to analyze the profitability of commercial banks using balanced data over the period between years 2006 and 2011. The study used the liquidity asset to estimate the relationship between liquid asset and profitability. Results revealed that the business cycle of a commercial bank, deposit ratio and asset ratio influenced banks profitability.

### **Loan Portfolio:**

Abiola and Olaisi (2014) sought to investigate the impact of credit risk management on the performance of commercial banks in Nigeria. Secondary data was obtained from financial reports of seven commercial banking firms. The study used a time series methodology whereby data was obtained for seven years (2005–2011). The panel regression model was employed for the estimation of the model. In the model, Return on Equity (ROE) and Return on Asset (ROA) were used as the performance indicators while Non-Performing Loans and Capital Adequacy Ratio as credit risk management indicators. The findings revealed that credit risk management has a significant impact on the profitability of commercial banks in Nigeria.

## **3. RESEARCH METHODOLOGY**

### **Research Design:**

This study used a descriptive research design. According to Cooper and Schindler (2006), a descriptive study is aims at finding out the what, where and how of a phenomenon. This study therefore was able to generalize the findings to all the banks. The main focus of this study was quantitative. This method concerns the intense investigation of problem solving situations in which problems are relevant to the research problem. The design was also used by Mwangi (2012) who examined the effect of credit risk management on the financial performance of commercial banks.

### **Target Population:**

The target population of the study comprised of commercial banks in Kenya. Population is the abstract idea of a large group of many cases from which a researcher draws a sample and onto which results from a sample are ultimately generalized, (Kothari, 2004).

### **Data Analysis:**

The data collected was analyzed using multiple regression and correlation analysis to establish the relationship between the independent variables of financial performance: asset quality, management efficiency, liquidity management and loan portfolio and the dependent variable (Return on Equity Analytical Model

$$Y_{it} = \alpha + \beta_1(X_1)_{it} + \beta_2(X_2)_{it} + \beta_3(X_3)_{it} + \beta_4(X_4)_{it} + \beta_5(X_5)_{it} + \varepsilon$$

Where:

- $Y_{it}$  = Financial Performance (Return on Equity) at time t
- $\alpha$  = Constant term for the independent variables
- $\beta$  = Regression model coefficient
- $X_1$  = Asset Quality (Total Non-performing Loans to Total Loans Ratio)
- $X_2$  = Management Efficiency (Total Expenditures to Income Ratio)
- $X_3$  = Liquidity Management (Liquid Asset to Total Asset Ratio)
- $X_4$  = Loan Portfolio (Total Loans to Total Assets Ratio)
- $\varepsilon$  = the error term

### **Data Presentation:**

Data was presented inform of frequency distribution tables. This facilitated description and explanation of the study findings. Regression analysis was utilized to test the effects of capital adequacy on financial performance of the eleven listed commercial banks in Nairobi securities exchange and it describes how the dependent variables are numerically related to various independent variables.

#### 4. DATA ANALYSIS, RESULTS AND DISCUSSIONS

The results of the analyzed data that was collected and a detailed discussion of the findings. The data was analyzed using both descriptive and quantitative techniques of analysis. Descriptive techniques included annual analysis of key statistics while quantitative techniques included correlation and regression models of analysis. The researcher presents the findings of the study in three sections; descriptive, correlation and regression analysis. The tables on this chapter are derived from the data resulting from the findings of the study. The study relied on secondary data only.

##### Descriptive Analysis:

Descriptive analysis shows the mean, minimum, maximum and standard deviation of the variables of study. This enabled the researcher understand better the trends of the variables of study of listed commercial banks for the period of study (2011-2015).

##### Descriptive Statistics:

	Minimum	Maximum	Mean	Standard Deviation
<b>Asset Quality</b>	0.0090	0.1200	0.041582	0.0277533
<b>Management Efficiency</b>	0.1540	0.8590	0.478018	0.1397630
<b>Liquidity Management</b>	0.0120	0.3130	0.103509	0.0652380
<b>Loan Portfolio</b>	0.4050	0.7910	0.615655	0.0857585
<b>ROE</b>	-10.0000	31.0000	21.909091	6.8157571

Source: Research Findings

We can conclude from the table that loan portfolio, management efficiency and ROE are negatively skewed. Other variables asset quality and liquidity management are positively skewed. The mean value of loan portfolio which is measured by Total Advances to Assets Ratio is 61.56% which indicates that more than half of banks' total assets are employed in advances. This implies major sources of banks earning is income from interest. With respect to management efficiency the proxy variable Income to Expenditure Ratio shows mean value of 47.8% which is quite high indicating that it has negative impact on profitability of banks. The proxy variable for liquidity has shown mean values of 10.35%. Meanwhile, a non- performing asset has a mean value of 4.15% which is low, good indicator that the commercial banks' assets portfolio has a positive impact on overall financial performance. Table 4.2 shows mean/average results of the independent and dependent variables for the five year period (2011-2015).

Management efficiency was highest in 2011 at 85.9% meaning that, expenditures were highest at 2011 as compared to others years under study. Mean score was high in 2014 at 50.25% while standard deviation was highest in 2014 at 0.0939 meaning that on average listed commercial banks spent more in 2014 as compared to others years under study. The results are as shown below

##### Liquidity Management Yearly Trends:

	Minimum	Maximum	Mean	Standard Deviation
<b>2011</b>	0.0120	0.1800	0.084000	0.0504837
<b>2012</b>	0.0310	0.2320	0.102727	0.0648831
<b>2013</b>	0.0290	0.2520	0.086273	0.0671894
<b>2014</b>	0.0300	0.2620	0.116727	0.0681045
<b>2015</b>	0.0510	0.3130	0.127818	0.0740470

Source: Research Findings

Liquidity management highest in 2015 at 31.3% meaning that listed commercial banks had more liquid assets in this year as compared to others years under study. Mean score was high in 2015 at 12.78% while standard deviation was highest in 2015 at 0.0740 meaning that on average 2015 was the year when listed commercial banks were more liquid as compared to other years under study. The results are as shown 4.5.

**Loan Portfolio Yearly Trends:**

	Minimum	Maximum	Mean	Standard Deviation
2011	0.4090	0.7910	0.623636	0.0940503
2012	0.4220	0.7400	0.592273	0.0789077
2013	0.4050	0.7430	0.597818	0.1028609
2014	0.5160	0.7530	0.629818	0.0788300
2015	0.5270	0.7400	0.634727	0.0787770

Source: Research Findings

Loan portfolio was highest in 2011 at 79.1% meaning that banks gave out more loans in 2011 as compared to other years under study. Mean score was high in 2015 at 63.47% while standard deviation was highest in 2011 at 0.0940. The results showed that, on average listed commercial banks loaned over half of their total assets and therefore they earned more from interest income as Shown

**Return on Equity Yearly Trends:**

	Minimum	Maximum	Mean	Standard Deviation
2011	16.0000	31.0000	24.0000	4.4271887
2012	17.0000	31.0000	25.0000	4.1472883
2013	10.0000	28.0000	22.4545	5.6632788
2014	7.0000	30.0000	20.6363	6.3130457
2015	-10.0000	26.0000	17.4545	10.1426193

Source: Research Findings

Return on Equity was lowest in 2014 at 7% and highest in 2011 and 2012 at 31%. Mean score was high in 2012 at 25% while standard deviation was highest in 2015 at 10.143. The results shows that the financial performance of listed commercial banks was almost steady in years 2011 and 2012 respectively then took downward trend

## 5. DISCUSSIONS OF FINDINGS

**Asset Quality:**

The findings of the study revealed that asset quality was negatively correlated with ROE at  $\alpha = 5\%$  with correlation coefficient of -0.375. The results of the inferential statistics such as unstandardized regression coefficients of -114.79 show a negative effect on financial performance of listed commercial banks. This further indicates that asset quality had a significant effect on financial performance of listed commercial banks as indicated by the low p value of 0.000. The results are presented using financial performance of listed commercial banks and the regression model, reported adjusted R-square, ANOVA p-value and asset quality standard Beta, co-efficient, p-value of 0.251, 0.002 and -0.467 respectively. This is in line with findings from Sangmi and Nazir, 2010 which indicated that it is the major concern of all commercial banks to keep the amount of non-performing loans to low level. This is so because high non-performing loan affects the profitability of the bank. Thus, low non-performing loans to total loans shows that the good health of the portfolio a bank. The lower the ratio, the better the financial performance of the listed commercial banks.

**Management Efficiency:**

The findings of the study revealed that management efficiency was negatively correlated with ROE at  $\alpha = 5\%$  with correlation coefficient of -0.272. The finding of the study revealed that management efficiency negatively affected financial performance of listed commercial banks. The results of the inferential statistics such as unstandardized regression coefficients of -16.374 show a negative effect on financial performance of listed commercial banks. This is revealed by the low p-values of 0.011. The results are presented using financial performance of listed commercial banks and the regression model, reported adjusted R-square, ANOVA P-value and management efficiency standard Beta, co-efficient, P-value of 0.251, 0.002 and -0.336 respectively. Athanasoglou et al. (2005) asserted that the higher the operating profits to total income (revenue) the more efficient the management is in terms of operational efficiency and

income generation. The other important ratio is that proxy to management quality is expense to asset ratio. The ratio of operating expenses to total asset is expected to be negatively associated with profitability. Management quality in this regard, determines the level of operating expenses and in turn affects profitability.

#### **Liquidity Management:**

The study findings revealed that liquidity management was negatively correlated with ROE at  $\alpha = 5\%$  with coefficient of -0.032. The finding of the study revealed that liquidity management positively affected financial performance of listed commercial banks. Results of the inferential statistics such as unstandardized regression coefficients of 13.327 show a positive effect on financial performance of listed commercial banks as indicated by the low p values. The results are presented using financial performance of listed commercial banks and the regression model, reported adjusted R-square, ANOVA P-value and liquidity management standard Beta, co-efficient, P-value of 0.251, 0.002 and 0.128 respectively. According to Dang (2011) adequate level of liquidity is positively related with bank's profitability. The image of bank is greatly reflected by the risk of liquidity.

#### **Loan Portfolio:**

The study findings revealed that loan portfolio was positively correlated with ROE at  $\alpha = 5\%$  with coefficient of 0.251. The finding of the study revealed that loan portfolio positively affected financial performance of listed commercial banks. Results of the inferential statistics such as unstandardized regression coefficients of 13.872 show a positive effect on financial performance of listed commercial banks as revealed by the low p values. The results are presented using financial performance of listed commercial banks the regression model, reported adjusted R-square, ANOVA P-value and loan portfolio standard Beta, co-efficient, P-value of 0.251, 0.002 and 0.175 respectively. Lending is the principal business activity for most commercial banks, the loan portfolio is typically the largest asset and the predominate source of revenue. As such, it is one of the greatest sources of risk to a financial institution's safety and soundness. Whether due to lax credit standards, poor portfolio risk management, or weakness in the economy, loan portfolio problems have historically been the major cause of losses and failures (Koch, 2000)

## **6. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **Summary of Findings:**

The study sought to evaluate the effects of capital adequacy on performance of listed commercial banks in Kenya. Specifically, the study considered asset quality, management efficiency, liquidity management and loan portfolio.

- ✓ The research findings revealed that the factors under study had a positive effect on financial performance of listed commercial banks. The regression model shows that there is negative relationship between asset quality and financial performance of listed commercial banks. Therefore, on the regression equation the study found that the t-value for  $X_1$  coefficient is -3.778 with a p-value of 0.000 which is less than 5% level of significance hence  $H_{01}$  is rejected.
- ✓ There is negative relationship between management efficiency and financial performance of listed commercial banks. The t-value for  $X_2$  coefficient is -2.639 with a p-value of 0.011 which is less than 5% level of significance. Thus  $H_{02}$  is rejected and it is concluded that high expenditures have effect on the financial performance of listed commercial banks in Kenya.
- ✓ Liquidity management has positive relationship with financial performance of listed commercial banks. The regression coefficient  $X_3$  which measures liquidity by proxy variable Liquid Asset to Total Asset Ratio has t-value of 1.039 with a p-value of 0.304 which is greater than 5% significance level. Hence  $H_{03}$  is accepted.
- ✓ There is positive relationship between loan portfolio and financial performance of listed commercial banks. The  $X_4$  coefficient which shows loan portfolio measured by proxy variable Total loans to Total Assets ratio has t-value of 1.424 and p-value of 0.161 which is greater than 5% level of significance, hence  $H_{04}$  is accepted.

#### **Conclusions:**

The objective of this study was to evaluate the effect of capital adequacy on financial performance of listed commercial banks in Kenya. The study findings conclude that there is a significant positive relationship between the factors under study and the performance of listed commercial banks namely; asset quality, management efficiency, liquidity management and loan portfolio. The findings also indicate that the factors under study influenced financial performance of listed commercial banks. From the research findings and the answers to the research questions, below are some conclusions made from the study.



Asset quality was found to be negative which means that, increase in non-performing loans reduces financial performance of the listed commercial banks and vice-versa. Banks need to maintain low non-performing loans for better performance. Based on the regression equation, the t-value for  $X_1$  coefficient is -3.778 with a p-value of 0.000 which is less than 5% level of significance, hence  $H_{01}$  is rejected. It means, non-performing loans affects the financial performance of listed commercial banks in Kenya.

Management efficiency (Expenditure to Income Ratio) is negative but found to have a statistically significant effect on financial performance of listed commercial banks which reveals that banks with good income as compared to their expenditure tend to perform better financially. Management Efficiency measured by proxy variable Expenditure to Income Ratio shows negative correlation with financial performance. The t-value for  $X_2$  coefficient is -2.639 with a p-value of 0.011 which is less than 5% level of significance. Thus  $H_{02}$  is rejected and it is concluded that high expenditures have effect on the financial performance of listed commercial banks in Kenya.

Liquidity (Liquid Asset to Total Asset Ratio) has no statistically significant influence on financial performance which reveals that an increase in bank liquidity reflects bank's ability to meet its credit demand and cash flow requirements, hence high financial performance. Liquidity management measured by proxy variable Liquid Asset to Total Asset Ratio has a t-value of 1.039 with a p-value of 0.304 which is greater than 5% significance level. Hence  $H_{03}$  is accepted. The more the liquid the bank is the more financially perform. Loan portfolio measured by proxy variable Total loans to Total Assets ratio has t-value is 1.424 and p-value of 0.161 which is greater than 5% level of significance, hence  $H_{04}$  is accepted. It means the more the banks lends the more it earns from interest income and there financially it performs high.

#### **Recommendations:**

##### **Asset Quality:**

There is need for the listed commercial banks to ensure that non-performing loans are reduced so as to ensure that credit risk is reduced.

- As the banks take measures to reduce credit risk there is need also to improve on loan book so as to improve on asset quality. Proper analysis need to be done before lending so as to reduce credit risk.
- There is also need to do follow-up on customers so as to reduce the level of non-performing loans. It is the major concern of all commercial banks to keep the amount of non-performing loans to low level.
- This is so because high non-performing loan affects the profitability of the bank. Thus, low non-performing loans to total loans shows that the good health of the portfolio a bank. The lower the ratio the better performing the bank is (Sangmi and Nazir, 2010).

##### **Management Efficiency:**

Good management results to better performance of any institution. Inefficiency in management increase the operating cost of listed commercial banks hence reduces on financial performance.

- For listed commercial banks to improve on their financial performance, management should ensure efficiency in banks operations which will result to improve on service delivery hence improve in financial performance.
- All expenses need to be approved by the relevant authorities so as to avoid mismanagement of funds. The higher the operating profits to total income (revenue) the more efficient the management is in terms of operational efficiency and income generation. The other important ratio is that proxy to management quality is expense to asset ratio.
- The ratio of operating expenses to total asset is expected to be negatively associated with profitability. Management quality in this regard, determines the level of operating expenses and in turn affects profitability (Athanasoglou et al. 2005).

##### **Liquidity Management:**

Liquidity management is paramount to any commercial bank institution.

- The more the liquid the institution is the more likely that it will perform well financially since it has available cash for business operations.

- Listed commercial banks should not hold more fixed assets as compared to liquid assets. Rudolf (2009) emphasized that liquidity expresses the degree to which a bank is capable of fulfilling its respective obligations.
- In the present study liquidity of the banks is determined by liquid assets to total assets ratio. The most common financial ratios that reflect the liquidity position of a bank are customer deposit to total asset and total loan to customer deposits.

#### **Loan Portfolio:**

- One of the sources of the income for the commercial banks is interest income from the loans. This can only be achieved if banks can lend more without jeopardizing the operations of the institution
- There is need for the listed commercial banks to increase their loan portfolio for better earning from interest income. Loan portfolios are the major assets of commercial banks and other lending institutions. The value of the loan portfolio depends not only on the interest rates earned on loans but also on the likelihood that interest and principal will be paid (Jasson,2002).

#### **Suggestions for Further Studies:**

The study was done on the listed commercial banks. Every organization has its uniqueness on culture, staff, structure, resources and the environment it operates in is different from others.

- It is therefore recommended that the same study be undertaken among the non-listed commercial banks in order to determine the effect of capital adequacy on financial performance of commercial banks and comparison be made on the factors.
- A research can also be conducted to develop a greater insight on how other factors other than capital adequacy factors affect financial performance of listed commercial banks and compare results so as to ensure that all factors are considered.
- In addition, research should also be conducted on macro-economic variables affecting financial performance of listed commercial banks and also banks regulatory measures as a determinant of financial performance of listed commercial banks.
- Further, a research should be undertaken to establish the effect of capital adequacy on other financial institutions other than commercial banks including microfinance banks and Sacco's. This will help in establishing whether capitalization affect their financial performance.

### **REFERENCES**

- [1] Abiola, U and Olaisi. (2014): "Determinants of Bank Profitability: Company-Level Evidence from Nigeria," *Second Annual Conference, the Department of Finance, University of Lagos*, pp 1-6.
- [2] Agoraki, M., Delis, M., and Pasiouras, F., 2011. Regulations, competition and bank risk-taking in transition countries. *Journal of Financial Stability* 7, 38-48.
- [3] Al Tamini, Hisham (2013) "Development of accounting measurement for Judging capital adequacy in commercial banks, *An empirical study, commerce college scientific Journal, Issue 26*, pp. 329 –412.
- [4] Athanasoglou, P.P., Sophocles, N.B., Matthaios, D.D. (2005) *Bank-specific, industry-specific and macroeconomic determinants of bank profitability* . Working paper, Bank of Greece. 1(1), 3-4.
- [5] Bank for International settlements (2004), *The Implementation of the New Capital Adequacy Framework in Africa*.
- [6] Barakat, A. (December 2009). Banks Basel II Norms Requirement Regarding. *International Control Field Study on Jordan Banks*, Delhi Business Review.
- [7] Barrell, R., E. Davis, T. Fic, D. Holland, S. Kirby & Liadze, I. (2009), *Optimal regulation of bank capital and liquidity: How to calibrate new international standards*’, FSA Occasional Paper 38.
- [8] Barth, J.R., Caprio, G. and R. Levine, (2001), "Bank Regulation and Supervision: What Works Best," *Journal of Financial Intermediation*, 13, 205-248.

- [9] Basel Committee on Banking Supervision. 1999. Capital Requirements and Bank Behavior: The Impact of the Basel Accord. *Bank for International Settlements Working Paper No. 1*. Basle, Switzerland.
- [10] Basel Committee on Banking Supervision (2000), *Sound Practices for Managing Risks in Commercial Banks, Bank for International Settlements*.
- [11] Beckmann R. (2007). Profitability of western European banking systems: *Panel evidence on structural and cyclical determinants, Deutsche Bundesbank discussion paper, Series 2*.
- [12] Botoe, C. (2012). *The Impact of Liquidity on Profitability of Commercial Banks in Liberia*, Unpublished Thesis, University of Nairobi.
- [13] Brealey R.A., Myers S.C. and Allen F. (2003) *Principles of Corporate Finance*, 9<sup>th</sup> Edition, Mc Graw Hill Higher Education.
- [14] Calem PS, Rob R (1996). "The Impact of Capital-Based Regulation on Bank Risk-Taking: A Dynamic Model, Board of Governors of the Federal Reserve System," Finance and Economics Discussion Series 96/12 (February), 36.
- [15] Carey, M. (2001). *Parametrizing credit risk models with rating data*. Journal of banking and finance, 197-270.
- [16] Central Bank of Kenya, *CBK Annual reports 2007*, retrieved on 18<sup>th</sup> August 2010 from [www.centralbank.go.ke/publications/annual/index.html](http://www.centralbank.go.ke/publications/annual/index.html). Central Bank of Kenya website: <http://www.centralbank.go.ke>.
- [17] Cham, Yuk-Shee, Stuart Greenbaum, and Anjan Thakor (1992): "Is Fairly Priced Deposit Insurance Possible" Journal of Finance, 47, pp. 227-245.
- [18] Chiang, K. F., Hung-Chi L., and Wen-Chin L., (2013). An evaluation of key factors for bancassurance success. *International journal of application and innovation in engineering and management*, 2 (12), 190-198.
- [19] Cooper, R., and Schindler, S., (2006). *Business research methods*. Irwin: McGraw- Hill.
- [20] Dang, U. (2011). *The CAMEL Rating System in Banking Supervision: a Case Study of Arcada University of Applied Sciences*, International Business.
- [21] Flannery, C. (1989), "External control, corporate strategy and firm performance".
- [22] Foong, A. K. (2008). *Relationship between corporate governance and firm performance: an African perspective*.
- [23] Greenbaum, K.W. & Thakor, R.A. (1992) 'The impact of JIT-II-selling on organizational performance', *Industrial Management & Data Systems*, 107(7).
- [24] Gropp, R. & Heider, F. (2009). *The determinants of bank capital structure*. European Central Bank Working Paper No. 1096. September.
- [25] Ikpefan, O. A., (2013). Capital adequacy management and performance of Nigeria commercial bank 1986-2000. *African journals of business management*, 7 (30).
- [26] Ilhomovich, S. E., (2009). Factors affecting the performance of foreign banks in Malaysia. *Master of Science (banking), college of business (finance and banking)*, University of Utara, Malaysia.
- [27] Jasson, N (2002): *Regulating Bank Capital: The result of a market failure or of a regulation Bank capital failure*.
- [28] Koch, L (2000), "Capital adequacy: *The benchmark of the 1990's*". Bankers Magazine, Vol. 173, No. 1, pp. 14-18.
- [29] Kothari, C. R. (2004). *Research Methodology: Methods and Techniques (2<sup>nd</sup> ed.)*. New Delhi, New Age International.
- [30] Marcus, A. J. (1984): *Deregulation and Bank Financial Policy*. Journal of Banking and Finance 8: 557-565.
- [31] Mason G., Williams G., Crammer R. S., and Guile D. (2003). How much does higher education enhance the employment of graduates? *Higher education funding council for England*.
- [32] Mathuva, D. (2009). *The influence of working capital management components on corporate profitability: a survey on Kenyan listed firms*. Research Journal of Business Management, 3(1), 1-11.

- [33] Michael, Sproul. (1998). *The Quantity Theory Versus the Real Bills Doctrine in Colonial America*. In economics working papers.
- [34] Mishkin F.S. and Eakins S. (2007), *Financial Markets and Institutions*, Addison Wesley Publishers.
- [35] Mullei A. and Masai W. S. (2006), *Improving Financial Sector Performance in Kenya*, African Centre for Economic Growth.
- [36] Muriithi, M. (2013). The causes of non-performing loans in commercial banks in Kenya. *Unpublished thesis university of Nairobi*.
- [37] Mwangi, G. (2012). *The Effect of Credit Risk Management on the Financial Performance of Commercial Banks in Kenya*, Unpublished Thesis, University of Nairobi.
- [38] Myers, S. (1984). *The capital structure puzzle*. Journal of Finance 34, 575-592.
- [39] Naceur, S. B., & Goaied, M. (2001). *The effects of bank regulations, competition, and financial reforms on banks' performance*. Emerging markets review, 12(1), 1-20.
- [40] Nairobi Securities Exchange (2013). *The Launch of the 2013 Financial Reporting (FiRe) Award*. Site: <https://www.nse.co.ke/media-center/press-release.html?start=20>.
- [41] Nasieku C, (2014). *Basel capital adequacy framework affects economic efficiency and behavior of banking sector in Kenya*. MBA Thesis.
- [42] Njeule, M., A. (2013). *The Effects of Central Bank of Kenya Prudential Regulations on the Financial Performance of Commercial banks in Kenya*. MBA Thesis.
- [43] Nyong, I.M. (2008). *Financial Management: Capital Structure Planning and Policy* (pp.332, 333).
- [44] Odunga R. M., Nyangweso P. M., Carter D. A. and Mwarumba M. (2013). Credit Risk, Capital adequacy and operating efficiency of commercial banks in Kenya. *International journal of business and management invention*, 2(9); 6-12.
- [45] Ogiro W.A (2012). *A study of Capital structure in Kenya*. Unpublished MBA project, University of Nairobi.
- [46] 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), 01 – 30.
- [47] Ongore, V.O & Kobonyo, P.O (2012). *Effects of Selected Corporate Governance Characteristics on Firm Performance: Empirical Evidence from Kenya*, International Journal of Economics and Financial Issues Vol. 1, No. 3, 2011, pp.99-122.
- [48] Onoh, J.K (2002), *“Dynamics of Money, Banking and Finance in Nigeria, an Emerging Market”*, Astra Meridian Publishers, Lagos.
- [49] Peltzman, S. (1970). Capital investment in commercial banking and its relationship to portfolio regulation. *Journal of political economy*, 1-26.
- [50] Peura, S., and Keppo, J. (2006). Optimal bank capital with costly capitalization. *Journal of business* 79, 2162-2201.
- [51] Raheman A and Nasr M., (2007). Working capital management and profitability. A case study of Pakistani firms. *International review of Business research papers* 3(2) 275-296.
- [52] Reilly, F. K. and Brown, K. C. (2011). *Investment Analysis and Portfolio Management*. Australia: South-Western.
- [53] Richardson, D.C (2002) PEARLS monitoring system World Council information center. Maddison, WI, WOCCU Toolkit series NO.4.
- [54] Ross, S.A; Westerfield, R.W and Jaffe, J.F (2010). *Corporate Finance*. 5th Ed; international Editions, Irwin/McGraw-Hill.
- [55] Rudolf, Duttweiler (2009), *“Managing Liquidity in Banks: A Top down Approach”*. John Wiley and Sons, p1.

- [56] Said, R. M. and Tumin M. H., (2011). Performance and financial ratios of financial banks in Malaysia and China. *International review of business research papers* p. 157-169.
- [57] Sangmi, M., Tabassum, N. (2010). *Analyzing Financial Performance of Commercial Banks in India: Application of CAMEL Model*. Pakistan Journal Commercial Social Sciences.
- [58] Saunders A. and Cornet M.M. (2008), *Financial Institutions Management: A Risk Management Approach*, McGraw Hill Publishers.
- [59] Sinkey J.F (2002), *Commercial Bank Financial Management*, MacMillan Publishing Company.
- [60] Soludo .C.C. (2004). Consolidating the banking industry to meet the development challenges of the 21st century; *being an address to the special meeting of the bankers committees held on July 16th 2004 at the CBN headquarters Abuja*.
- [61] Williamson, J., (1963). Determining management behavior in European banking. *Journal of banking and finance* 28, 2427-2460.