

**THE EFFECT OF LIQUIDITY RISK MANAGEMENT ON FINANCIAL  
PERFORMANCE OF COMMERCIAL BANKS IN KENYA**

**BY:**

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## **DECLARATION**

I, the undersigned declare that this research project is my original work and affirm to the best of my knowledge that it has not been presented for any academic award in any University.

Signed..... Date.....

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This research project has been submitted for examination with my approval as the University supervisor.

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## **DEDICATION**

I dedicate this work to my friends and family

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## **LIST OF ABBREVIATIONS**

CBK - Central Bank of Kenya

CMA- Capital Markets Authority

CRB- Credit Reference Bureaus

IMF- International Monetary Fund

MFBs- Micro Finance Banks

MFC- Mortgage Finance Company

NIM- Net Interest Margin

NSE- Nairobi Securities Exchange

ROA- Return on Assets

ROE- Return on Equity

LA/TA-Liquid Assets to Total Assets

LA/TD-Liquid Assets to Total Deposits

BTB/TA-Balances due to Banks to Total Assets



## ABSTRACT

During the early “liquidity phase” of the financial crisis that began in 2007, many banks – despite adequate capital levels – still experienced difficulties because they did not manage their liquidity in a prudent manner. The crisis drove home the importance of liquidity to the proper functioning of financial markets and the banking sector. Prior to the crisis, asset markets were buoyant and funding was readily available at low cost. The rapid reversal in market conditions illustrated how quickly liquidity can evaporate, and that illiquidity can last for an extended period of time (Basel Committee on Banking Supervision, 2013). The aim of this study was to determine the effect of liquidity risk management on the financial performance of Commercial Banks in Kenya. The study adopted a descriptive study design. The population for this research are the 43 listed Commercial Banks in Kenya analyzed for a period from 2010-2013. The results of the study show that a unit increase in liquid assets to total assets ratio decreases return on assets by 1%. A unit increase in liquid assets to total deposits ratio decreases return on assets by 2.2%. A unit increase in borrowings from banks decreases return on assets by 14.2%. Finally the control variable which was asset quality shows that a unit increase in non-performing loans as a proportion of total loans would lead to a 12.4% decrease in return on assets. The study concludes that liquidity risk management has a significant negative relationship with financial performance of commercial banks. Borrowings from banks by commercial banks to meet shorter liquidity needs do have the greatest impact on liquidity at 14.2% and was significant at 5%. The study also concludes that holding more liquid assets as compared to total assets will lead to lower returns to commercial banks in Kenya but the effect of not significant at 5%. Holding more liquid assets as compared to total deposits will lead to lower returns to commercial banks in Kenya and the effect is significant at 5%.

# **CHAPTER ONE: INTRODUCTION**

## **1.1 Background of the Study**

Liquidity was an instrumental factor during the recent financial crisis. As uncertainty led funding sources to evaporate, many banks quickly found themselves short on cash to cover their obligations as they came due. In extreme cases, banks in some countries failed or were forced into mergers. As a result, in the interest of broader financial stability, substantial amounts of liquidity were provided by authorities in many countries, Graham and Bordeleau(2010). During the early “liquidity phase” of the financial crisis that began in 2007, many banks – despite adequate capital levels – still experienced difficulties because they did not manage their liquidity in a prudent manner. The crisis drove home the importance of liquidity to the proper functioning of financial markets and the banking sector (Basel Committee on Banking Supervision, 2013).

Since liquid assets such as cash and government securities generally have a relatively low return, holding them imposes an opportunity cost on a bank. In the absence of regulation, it is reasonable to expect banks will hold liquid assets to the extent they help to maximize the firm’s financial performance. Beyond this, policymakers have the option to require larger holdings of liquid assets, for instance, if it is seen as a benefit to the stability of the overall financial system. This study aims to establish the effect of liquidity risk management on the financial performance of commercial banks.

### **1.1.1 Liquidity Risk Management**

Liquidity is a bank’s capacity to fund increase in assets and meet both expected and unexpected cash and collateral obligations at reasonable cost and without incurring

unacceptable losses. The liquidity risk of banks arises from funding of long-term assets by short-term liabilities, thereby making the liabilities subject to rollover or refinancing risk. Liquidity risk is usually of an individual nature, but in certain situations may compromise the liquidity of the financial system. Liquidity risk management in banks is defined as the risk of being unable either to meet their obligations to depositors or to fund increases in assets as they fall due without incurring unacceptable costs or losses. Effective liquidity risk management helps ensure a bank's ability to meet its obligations as they fall due and reduces the probability of an adverse situation developing, Kumar and Yadav(2013).

A bank is responsible for the sound management of liquidity risk. A bank should establish a robust liquidity risk management framework that ensures it maintains sufficient liquidity, including a cushion of unencumbered, high quality liquid assets, to withstand a range of stress events, including those involving the loss or impairment of both unsecured and secured funding sources. Supervisors should assess the adequacy of both a bank's liquidity risk management framework and its liquidity position and should take prompt action if a bank is deficient in either area in order to protect depositors and to limit potential damage to the financial system Kumar and Yadav (2013).

Banks face two central issues regarding liquidity. Banks are responsible for managing liquidity creation and liquidity risk. Liquidity creation helps depositors and companies stay liquid, for companies especially when other forms of financing become difficult. Managing liquidity risk is to ensure the banks own liquidity so that the bank can continue to serve its function, Vossenand Ness (2010). During the early "liquidity phase" of the financial crisis that began in 2007, many banks – despite adequate capital levels – still experienced difficulties because they did not manage their

liquidity in a prudent manner. The crisis drove home the importance of liquidity to the proper functioning of financial markets and the banking sector. Prior to the crisis, asset markets were buoyant and funding was readily available at low cost. The rapid reversal in market conditions illustrated how quickly liquidity can evaporate, and that illiquidity can last for an extended period of time. The banking system came under severe stress, which necessitated central bank action to support both the functioning of money markets and, in some cases, individual institutions. In the aftermath of the crisis, there is a general sense that banks had not fully appreciated the importance of liquidity risk management and the implications of such risk for the bank itself, as well as the wider financial system.<sup>1</sup> As such, policymakers have suggested that banks should hold more liquid assets than in the past, to help self-insure against potential liquidity or funding difficulties. This has led to an international desire for common measures and standards for liquidity risk (Basel Committee on Banking Supervision, 2013).

### **1.1.2 Financial Performance of Commercial Banks**

Profit is the ultimate goal of commercial banks. To measure the profitability of commercial banks there are variety of ratios used of which Return on Asset (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) are the major ones, Murthy and Sree (2003). ROE is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholder equity invested or found on the balance sheet. ROE is what the shareholders look in return for their investment. ROA is a ratio of Income to its total asset (Khrawish, 2011). It measures the ability of the bank management to generate income by utilizing company assets at their disposal.

NIM is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders (for example, deposits), relative to

the amount of their (interest earning) assets. It is usually expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed funds divided by the average amount of the assets on which it earned income in that time period (the average earning assets). The NIM variable is defined as the net interest income divided by total earnings assets (Gulet al, 2011). Equity investors are concerned with the firm's ability to generate, maintain, and increase income. Profitability can be measured in many differing but interrelated dimensions. First there is the relationship of a firm's profits to revenue, that is, the residual return on the firm per sales dollar. Another measure, return on investment (ROI), relates profits to the investment required to generate them. Analysis of income is of vital concern to stock holders because they derive revenue in the form of dividends. Further, increased profits can cause an increase in market price, leading to capital gains (Nimer et al,(2013).

### **1.1.3 Relationship between Liquidity Risk Management and Financial Performance of Commercial Banks**

Konadu (2009) in a study in Ghana found no positive relationship between liquidity trend and profitability and concluded that there is a negative relationship between liquidity and profitability in the Ghana banking sector. Lamberg and Valming (2009) findings suggested that the adaptation of liquidity strategies do not have a significant impact on ROA. Only increased use of liquidity forecasting and short-term financing during financial crisis had a positive impact on ROA. Moreover, it was found that the importance of key ratios, which monitors companies liquidity have not changed between the studied time points. Li(2007) found that the result for liquidity on profitability is mixed and not significant, indicates that conclusion about the impact of liquidity remains questionable and further research is needed.

Lartey et al.(2013) found a weak positive relationship between the liquidity and the profitability of the listed banks in Ghana in their 2013 study. Olagunju et al.(2011) in their study in Nigeria concluded that for the success of operations and survival, commercial banks should not compromise efficient and effective liquidity management and that both illiquidity and excess liquidity are "financial diseases" that can easily erode the profit base of a bank as they affect bank's attempt to attain high profitability-level. A study in Canada by Graham and Bordeleau (2010) suggest that a nonlinear relationship exists, whereby profitability is improved for banksthat hold some liquid assets, however, there is a point beyond which holding further liquid assets diminishes a banks' profitability, all else equal. At the same time, estimation results provided some evidence that the relationship between liquid assets and profitability depends on the bank's business model and the risk of funding marketdifficulties. Adopting a more traditional (i.e., deposit and loan-based) business model allows abank to optimize profits with a lower level of liquid assets. Likewise, when the likelihood offunding market difficulties is low (proxied by economic growth), banks need to hold less liquidassets to optimize profits.

#### **1.1.4 Commercial Banks in Kenya**

As at 31st December 2013, the banking sector comprised of the Central Bank of Kenya, as the regulatory authority, 44 banking institutions (43 commercial banks and 1 mortgage finance company - MFC), 7 representative offices of foreign banks, 9 Microfinance Banks (MFBs), 2 credit reference bureaus (CRBs) and 101 forex bureaus. Out of the 44 banking institutions, 30 locally owned banks comprise 3 with public shareholding and 27 privately owned while 14 are foreign. The foreign owned financial institutions comprise of 10 locally incorporated foreign banks and 4 branches of foreign incorporated banks.

The banking sector registered enhanced performance during the period ended December 2013. The sector recorded a 16.6 percent growth in pre-tax profits during the year. Total net assets and total deposits held by commercial banks recorded growth rates of 16.0 percent and 13.3 percent respectively. The sector also recorded strong capitalization levels as a result of retention of profits and additional capital injection. The rating of the banking sector in December 2013 remained strong as in December 2012.

The Central Bank has adopted the Capital Adequacy, Asset Quality, Management Quality, Earnings and Liquidity (CAMEL) rating system in assessing the soundness of the commercial banks. The banking sector was rated strong in 2013, a similar rating attained in 2012. The institutions rated strong, satisfactory and fair in December 2013 were 18, 20 and 5 respectively. CBK requires commercial banks to observe the minimum liquidity ratio of 20 percent. Liquidity level indicates bank's ability to fund increases in assets and meet obligations as they fall due. Liquidity is one of the important financial stability indicators as liquidity shortfall in one bank can cause systemic crisis in the banking sector due to their interrelated operations. The banking sector's average liquidity in the twelve months to December 2013 was above the statutory minimum requirement of 12 percent, with all the banks meeting the minimum requirement. Liquidity ratio was 38.6 percent as at December 2013 compared to 41.9 percent registered in 2012. The decline in liquidity ratio is attributable to increased lending in 2013 as evidenced by the increase in loans to deposits ratio from 77.9% to 81.6% over the same period (Bank Supervision Report, 2013).

## 1.2 Research Problem

Commercial banks play a vital role in the economic resource allocation of countries. They channel funds from depositors to investors continuously. They can do so, if they generate necessary income to cover their operational cost they incur in the due course. In other words for sustainable intermediation function, banks need to be profitable. Beyond the intermediation function, the financial performance of banks has critical implications for economic growth of countries. Good financial performance rewards the shareholders for their investment. This, in turn, encourages additional investment and brings about economic growth. On the other hand, poor banking performance can lead to banking failure and crisis which have negative repercussions on the economic growth, Ongore and Kusa (2013). Liquidity problems may adversely affect the financial performance of a bank as well as its solvency. Some studies have shown a significant positive relationship between bank profits and liquidity while others have shown a weak positive relationship. Commercial banks in Kenya registered strong performance in 2013, exceeding the overall country economic growth. The banking sector in Kenya was rated strong in 2013 using the capital adequacy, asset quality, management quality, earnings and liquidity (CAMEL) rating system (Banking Supervision Report, 2013).

Referring to previous studies, the results concerning liquidity are mixed. Molyneux and Thornton (1992), found a negative and significant relationship between the level of liquidity and profitability. However, (Bourke, 1989), Kosmidou and Pasiouras (2005) found a significant positive relationship between liquidity and bank profits. (Li, 2007) found that the result for liquidity on profitability is mixed and not significant, indicates that conclusion about the impact of liquidity remains questionable and further research is needed. A study in Canada by Graham



and Bordeleau (2010) suggest that a nonlinear relationship exists, whereby profitability is improved for banks that hold some liquid assets, however, there is a point beyond which holding further liquid assets diminishes a bank's profitability, all else equal. At the same time, estimation results provided some evidence that the relationship between liquid assets and profitability depends on the bank's business model and the risk of funding market difficulties. Adopting a more traditional (i.e., deposit and loan-based) business model allows a bank to optimize profits with a lower level of liquid assets. Likewise, when the likelihood of funding market difficulties is low (proxied by economic growth), banks need to hold less liquid assets to optimize profits.

Olagunju et al, (2011) in their study in Nigeria concluded that for the success of operations and survival, commercial banks should not compromise efficient and effective liquidity management and that both illiquidity and excess liquidity are "financial diseases" that can easily erode the profit base of a bank as they affect bank's attempt to attain high profitability-level. Lartey et al. (2013) found a weak positive relationship between the liquidity and the profitability of the listed banks in Ghana in their 2013 study. It is therefore necessary to find what the relationship is in Kenya?

### **1.3 Research Objective**

To determine the effect of liquidity risk management on the financial performance of Commercial Banks in Kenya.

### **1.4 Value of the Study**

The recent crisis has underlined the importance of sound bank liquidity management. In response, regulators are devising new liquidity standards with the aim of making the financial system more stable and resilient. Liquidity problems may adversely

affect the financial performance of a bank as well as its solvency. It is therefore important that industry practitioners understand what effect liquidity management have on the financial performance of commercial banks. Bank's senior management teams will use this report to improve their effectiveness in the asset liability management committees.

From a policy perspective, the results of this study will be highly relevant. As policy makers devise standards establishing appropriate level of liquidity for banks, helping to ensure adequate stability for the overall financial system, they should bear in mind the trade-off between resilience to liquidity shocks and the cost of holding lower-yielding liquid assets. While holding liquid assets will make banks more resilient to liquidity shocks, thus reducing the negative externalities they might impose on other economic agents, holding too many may impose a significant cost in terms of reduced profitability. The study adds to the scholarly knowledge and further helps other scholars and academicians who may want to use the study to assess effect of liquidity management on Banks' financial performance.

## **CHAPTER TWO: LITREATURE REVIEW**

### **2.1 Introduction**

This chapter focuses on the review of literature related to this research. It focused on a review of past studies done on the effect liquidity risk management practices on financial performance of Commercial Banks. This chapter also presents a review of the theories guiding the study, meaning and importance of liquidity management to financial performance of commercial banks. The review also depends on theoretical literature such as books, research papers, magazines, financial reports and information from the Internet.

### **2.2 Theoretical Review**

#### **2.2.1 Liquidity Preference Theory**

Bibow (2005) Keynes describes liquidity preference theory saying that people value money for both "the transaction of current business and its use as a store of wealth. Thus, they will sacrifice the ability to earn interest on money that they want to spend in the present, and that they want to have it on hand as a precaution. On the other hand, when interest rates increase, they become willing to hold less money for these purposes in order to secure a profit.

Elgar (1999) One needs money because one has expenditure plans to finance, or is speculating on the future path of the interest rate, or, finally, because one is uncertain about what the future may have in store so it is advisable to hold some fraction of one's resources in the form of pure purchasing power. These motives became known as transactions-, speculative and precautionary motives to demand money. The banks'

liquidity preference approach suggests that banks pursue active balance sheet policies instead of passively accommodating the demand for credit.

### **2.2.2 Shiftability Theory**

This theory posits that a bank's liquidity is maintained if it holds assets that could be shifted or sold to other lenders or investors for cash. This point of view contends that a bank's liquidity could be enhanced if it always has assets to sell and provided the Central Bank and the discount Market stands ready to purchase the asset offered for discount. Thus this theory recognizes and contends that shiftability, marketability or transferability of a bank's assets is a basis for ensuring liquidity.

This theory further contends that highly marketable security held by a bank is an excellent source of liquidity. Dodds (1982) contends that to ensure convertibility without delay and appreciable loss, such assets must meet three requisites. Liability Management Theory Liquidity management theory according to Dodds (1982) consists of the activities involved in obtaining funds from depositors and other creditors (from the market especially) and determining the appropriate mix of funds for a particular bank. This point of view contends that liability management must seek to answer the following questions on how do we obtain funds from depositors?, how do we obtain funds from other creditors?, What is the appropriate mix of the funds for any bank? Management examines the activities involved in supplementing the liquidity needs of the bank through the use of borrowed funds.

The liquidity management theory focuses on the liability side of bank balance sheet. This theory contends that supplementary liquidity could be derived from the liabilities of a bank. According to Nwankwo (1991) the theory argues that since banks can buy

all the funds they need, there is no need to store liquidity on the asset side (liquidity asset) of the balance sheet.

Liquidity theory has been subjected to critical review by various authors. The general consensus is that during the period of distress, a bank may find it difficult to obtain the desired liquidity since the confidence of the market may have seriously affected and credit worthiness would invariably be lacking. However, for a healthy bank, the liabilities (deposits, market funds and other creditors) constitute an important source of liquidity.

### **2.2.3 Loanable Funds Theory**

The hypothesis of the loanable funds theory is that Individuals care only about real variables (output gains or losses, purchasing-power gains or losses). The marginal productivity of capital assets (MPk) is given and determined by the technical characteristics of the productive assets. The time preference of individuals is given by the taste of individuals. Entrepreneurs want to maximize their real profit Individuals want to maximize their utility by arbitraging between present consumption and future consumption (and so saving).

In the loanable funds market, the supply of loanable funds comes from the individuals who want to save. They are the lenders. The demand for loanable funds comes from the entrepreneurs who want to buy capital assets (i.e. to invest). They are the borrowers. Negotiations in the loanable market are made in terms of real rate of interest: savers can lend at  $r$ , and entrepreneurs have to borrow at  $r$ . Thus for the entrepreneurs where marginal gain is greater than  $r$  they invest more and vice versa. For individuals where marginal gain is greater cost they save and vice versa. An increase in investment will increase interest rates automatically.

## **2.3 Determinants of Financial Performance in Commercial Banks**

### **2.3.1 Macroeconomic Factors**

The macroeconomic policy stability, Gross Domestic Product, Inflation, Interest Rate and Political instability are also other macroeconomic variables that affect the performances of banks. For instance, the trend of GDP affects the demand for banks asset. During the declining GDP growth the demand for credit falls which in turn negatively affect the profitability of banks. On the contrary, in a growing economy as expressed by positive GDP growth, the demand for credit is high due to the nature of business cycle. During boom the demand for credit is high compared to recession (Athanasoglou et al., 2005). The same authors state in relation to the Greek situation that the relationship between inflation level and banks profitability is remained to be debatable. Money Supply has a significant positive relationship with profitability in the ROE model at 5% level of significance. All other macroeconomic or external variables like Growth Rate of RGDP and Inflation Rate did not significantly affect the profitability of banks in Nigeria for the period under review Ayanda et al. (2013).

### **2.3.2 Capital Adequacy**

Capital adequacy is a measure of a bank's financial strength, in terms of its ability to withstand operational and abnormal losses. Further considering the regulatory requirement on the minimum capital required to be maintained by banks, capital adequacy also indicates the ability of bank to undertake additional business. The size of capital provides financial flexibility for bank and financial institution. Banks with high capital ratio tend to earn more profit through translating the safety advantage into profit (Ayele, 2012). Capital adequacy ratio shows the internal strength of the bank to withstand losses during crisis. Capital adequacy ratio is directly proportional to the

resilience of the bank to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas, Ongore and Kusa (2013).

### **2.3.3 Asset Quality**

More often than not the loan of a bank is the major asset that generates the major share of the banks income. Loan is the major asset of commercial banks from which they generate income. The quality of loan portfolio determines the profitability of banks. The loan portfolio quality has a direct bearing on bank profitability. The highest risk facing a bank is the losses derived from delinquent loans (Dang, 2011). The ratio Loan Loss Reserves to Net Interest Revenue (LOS RNI) is a measure of bank's asset quality that indicates how much of the total portfolio has been provided for but not charged off. The higher the ratio the poorer the quality and therefore the higher the risk of the loan portfolio will be (Li, 2007).

### **2.3.4 Management Efficiency**

Management Efficiency is one of the key internal factors that determine the bank profitability. It is represented by different financial ratios like total asset growth, loan growth rate and earnings growth rate. Yet, it is one of the complexes subject to capture with financial ratios. Moreover, operational efficiency in managing the operating expenses is another dimension for management quality. The performance of management is often expressed qualitatively through subjective evaluation of management systems, organizational discipline, control systems, quality of staff, and others. Yet, some financial ratios of the financial statements act as a proxy for management efficiency. The capability of the management to deploy its resources efficiently, income maximization, reducing operating costs can be measured by financial ratios, Ongore and Kusa (2013).

### **2.3.4 Liquidity Management**

Liquidity refers to the ability of the bank to fulfill its obligations, mainly of depositors. According to Dang (2011) adequate level of liquidity is positively related with bank profitability. Thus banks that maintain adequate levels of liquidity tend to be more profitable. 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. Others are cash to deposit ratio, Ongore and Kusa (2013).

### **2.4 Empirical Studies**

Konadu (2009) did a study on liquidity and profitability: empirical evidence from listed banks in Ghana. The objective of the study is to determine the liquidity trend of selected banks, to ascertain the profitability trend of the selected banks and to establish and analyze the relationship between the banks liquidity and profitability levels from 2002 to 2006. The researcher considered only banks listed on the Ghanaian stock exchange. The banks randomly selected were Standard Chartered Bank Ghana Ltd, Cal Bank Ltd and SG-SSB Ltd.

The study the researcher considered current ratio, quick ratio, cash ratio, net operating cash flow ratio under liquidity ratios. Profitability ratios comprise of net profit margin, return on equity, return on assets and net asset turnover ratios. The researcher employed trend analysis to achieve the set objectives. The researcher found no positive relationship between liquidity trend and profitability. The research paper concluded that there is a negative relationship between liquidity and profitability in the Ghana banking sector.

Graham and Bordeleau (2010) did a study on the impact of liquidity on profitability of Banks in Canada. The study was aimed helping to distinguish empirically, whether



banks' holdings of liquid assets have a significant impact on their Profitability. Since liquid assets such as cash and government securities generally have a relatively low return, holding them imposes an opportunity cost on a bank. In the absence of regulation, it is reasonable to expect banks will hold liquid assets to the extent they help to maximize the firm's profitability. Beyond this, policymakers have the option to require larger holdings of liquid assets, for instance, if it is seen as a benefit to the stability of the overall financial system.

In the model, profitability is regressed as a non-linear expression of relative liquid asset holdings as well as a set of control variables. The relationship is a function of the liquid assets ratio, a measure of short-term funding reliance and general macroeconomic conditions. While controlling for other factors, the paper found evidence, based on a panel of Canadian and American banks from 1997 to the end of 2009, that profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks' profitability, all else equal.

Olagunju et al. (2011) did a study to examine liquidity management and commercial banks' profitability in Nigeria. The major aims of the study were to find empirical evidence of the degree to which effective liquidity management affects profitability in commercial banks and how commercial banks can enhance their liquidity and profitability positions. In attempt to achieve the objectives of the study, several findings were made through the analysis of both the structured and unstructured questionnaire on the management of banks and the financial reports of the sampled banks. The data obtained from the Primary and Secondary sources were analyzed through collection, sorting and grouping of the data in tables of percentages and frequency distribution.

A hypothesis was formulated and statistically tested through Pearson correlation data analysis. Findings from the testing of this hypothesis indicate that there is significant relationship between liquidity and profitability. That means profitability in commercial banks is significantly influenced by liquidity and vice versa. The study concluded that for the success of operations and survival, commercial banks should not compromise efficient and effective liquidity management and that both illiquidity and excess liquidity are financial diseases that can easily erode the profit base of a bank as they affect bank's attempt to attain high profitability-level.

Agbada and Osuji (2013) did a study to examine the efficacy of liquidity management and Banking Performance in Nigeria. The objective of the study is examining empirically the effect of efficient liquidity management on banking performance in Nigeria particularly in the aftermath of several banking reforms, rescue mission by the Central bank of Nigeria (CBN) and the attendant Merger and Acquisitions. The research design is survey design, accomplished through the administration of structured questionnaires. Data obtained were first presented in tables of percentages and pie charts and were empirically analyzed by Pearson product-moment correlation coefficient.

Research design referred to as 'Survey design' was adopted in sourcing for data in this study and it is aimed to study our research population by selecting and studying samples chosen from the population in order to arrive at logical deduction or inferences based on circumstantial evidence. The sampling technique adopted in this study is the Random sampling technique which gives a fair view of the population under study. The study targeted bank located in Asaba, Benin City and Lagos, Nigeria. Findings from the empirical analysis were quite robust and clearly indicate that there is significant relationship between efficient liquidity management and banking

performance and that efficient liquidity management enhance the soundness of bank. These findings which may have re-echoed results from similar researches re-emphasize that efficient liquidity management have important policy implications for developing and emerging economies.

Nimer et al. (2013) did a study on the impact of Jordanian Banks profitability through their return on assets. Bank profitability is the ability of a bank to generate revenue in excess of cost, in relation to the bank's capital base. This study sought to find out whether liquidity through quick ratio has significant impact on Jordanian banks profitability through return on asset (ROA). The study noted that a profitable banking sector is better able to resist negative impact and share in to the stability of the financial system.

The study used the 2005-2011 financial reports of 15 Jordanian banks listed at Amman Stock Exchange (ASE). The return on assets (ROA) compares income with total assets (equivalently, total liabilities and equity capital). The independent variable in this was the quick ratio i.e.  $\text{Cash} + \text{Short-term marketable investments} + \text{Receivables}$  divided by current liabilities. A simple regression was done to examine the study hypotheses. The study revealed that there is significant impact of independent variable quick ratio on dependent variable return on asset (ROA). That means profitability through return on assets (ROA) in Jordanian banks is significantly influenced by liquidity through quick ratio.

Ibe (2013) studies the impact of liquidity management on profitability on banks in Nigeria. The work was necessitated by the need to find solution to liquidity management problem in Nigerian banking industry. Three banks were randomly selected to represent the entire banking industry in Nigeria. The proxies for liquidity

management include cash and short term fund, bank balances and treasury bills and certificates, while profit after tax was the proxy for profitability.

Elliot Rothenberg Stock (ERS) stationary test model was used to test the run association of the variables under study while regression analysis was used to test the hypothesis. The result of this study has shown that liquidity management is indeed a crucial problem in the Nigerian banking industry.

Emami et al. (2013) studied the effect of liquidity risk on the performance of commercial banks in Iran. This study attempts to examine the effect of liquidity risk on the performance of commercial banks using of panel data related to commercial banks of Iran during the years 2003 to 2010. In the estimated research model, two groups of bank-specific variables and macroeconomic variables are used. In this research, the performance of fifteen Iranian banks is examined during an eight-year period from 2003 to 2010 using of panel data.

The required data is drawn from the studied banks and the data related to macroeconomic variables including the growth of gross domestic product, consumer price index are drawn from central bank's site in order to calculate the inflation ratio. To determine the kind of estimation method in panel data, different tests are used. To select between common effects and the fixed effects, Limner's F-test was used and to select one of the model for the fixed effects against the random effects, Hausmann test was used. The study found that liquidity risk has a significantly negative effect on both criteria of the performance i.e. return on asset and return on equity. It means that liquidity risk will cause to weaken the performance of bank.

Neupane and Subedi (2013) did a study on the determinants of banks liquidity and their impact on financial performance of Nepalese banks. The aim of the study was to

study the relationship between liquidity of selected Nepalese commercial banks and their impact on financial performance. In order to collect primary data, structured questionnaire were distributed whereas quarterly publication of banks were used as secondary sources and analyzed through different statistical tools such as descriptive statistics, correlation, and multiple regressions with variance inflation factor.

Multivariate linear regression model is used to include Liquid Assets to Total Assets Ratio, Loan to Deposit & Short Term Financing and Return on Assets for the data of six commercial banks in the sample covering the period from 2002/03 to 2011/12. Based on quantitative methods, hypothesis were tested and reached into the conclusion. Among the statistically significant factors affecting banks liquidity capital adequacy, bank size and growth rate of gross domestic product on the basis price level had negative impact on financial performance whereas, liquidity premium paid by borrowers had positive impact on financial performance. Therefore, the impact of bank liquidity on financial performance was non-linear.

Ongore and Kusa (2013) studied the determinants of financial performance of commercial banks in Kenya. One of the bank specific factors considered was liquidity management. The objective of this study was to fill in the gap left by scanty studies on the moderating effect of ownership structure on bank performance. The authors used linear multiple regression model and generalized Least Square on panel data to estimate the parameters.

This explanatory study is based on secondary data obtained from published statements of accounts of all commercial banks in Kenya, CBK, IMF and World Bank publications for ten years from 2001 to 2010. It uses panel data due to the advantage that it has. In this study 37 commercial banks were considered. Out of these 13 of

them are foreign owned banks and 24 are owned by locals. The findings showed that bank specific factors significantly affect the performance of commercial banks in Kenya, except for liquidity variable. Liquidity management was positively related to ROA, ROE and NIM but the relationship is very weak. This may be due to the fact that liquidity management is more related with fulfilling depositors' obligation (safeguarding depositors) than investment.

Maaka (2013) studied the relationship between liquidity risk and performance of commercial banks in Kenya. The objective of the study was to investigate liquidity risks faced by commercial banks in Kenya and establish the relationship between liquidity risk and the performance of banks in Kenya.

The study adopted correlation research design where data was retrieved from the balance sheets, income statements and notes of 33 Kenyan banks during 2008-2012. Multiple regressions were applied to assess the impact of liquidity risk on banks' profitability. Data was collected from annual reports submitted to the NSE and Capital Markets Authority. The F- test was used to determine the significance of the regression while the coefficient of determination,  $R^2$ , was used to determine how much variation in Y is explained by X. The findings of the study were that profitability of the commercial bank in Kenya is negatively affected due to increase in the liquidity gap and leverage.

## **2.5 Summary of Literature Review**

Empirical studies both in Kenya and beyond has come to different conclusion as to what the effect of liquidity management is on financial performance. Most of these studies have focused on profitability as the measure of financial performance. In

addition, most of the studies are focused on various determinants of profitability and not just liquidity risk management.

There are very few studies in Kenya or East Africa region. This region was not adversely affected by the financial crisis of 2007; however there was a liquidity crisis in 2011/2012. Maaka (2013) noted the need for further studies on liquidity risk management and financial performance. The gap identified can be filled by focusing on the following indicators of financial performance i.e. ROA, NIM and ROE as opposed to absolute profitability. Also the focus on interbank borrowing as an independent variable in addition to liquidity ratio will help identify what the effect is when banks with liquidity challenges have to borrow from the interbank market.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter outlines the research methodology adopted in the study. It covers research design, population, data collection and data analysis techniques.

### **3.2 Research Design**

This is a descriptive research. Descriptive research includes surveys and fact-finding enquiries of different kinds. The major purpose of descriptive research is description of the state of affairs as it exists at present. The main characteristic of this method is that the researcher has no control over the variables; he can only report what has happened or what is happening. It can involve collections of quantitative information that can be tabulated along a continuum in numerical form, such as scores on a test.

Descriptive research often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution. Most quantitative research falls into two areas: studies that describe events and studies aimed at discovering inferences or causal relationships. Descriptive studies are aimed at finding out "what is," so observational and survey methods are frequently used to collect descriptive data.

### **3.3 Population**

The population for this research was Commercial Banks in Kenya. As at 31st December 2013, the banking sector comprised of the Central Bank of Kenya, as the regulatory authority, 44 banking institutions (43 commercial banks and 1 mortgage finance company - MFC), 7 representative offices of foreign banks, 9 Microfinance Banks (MFBs), 2 credit reference bureaus (CRBs) and 101 forex bureaus. Out of the 44 banking institutions, 30 locally owned banks comprise 3 with public shareholding and 27 privately owned while 14 are foreign. The foreign owned financial institutions



comprise of 10 locally incorporated foreign banks and 4 branches of foreign incorporated banks (Bank Supervision Report, 2013).

Commercial Banks are licensed and regulated pursuant to the provisions of the Banking Act and the Regulations and Prudential Guidelines issued there under. Central Bank of Kenya plays close attention on Commercial Banks to ensure compliance with applicable laws and regulations. This study used the census approach where the entire population of forty three commercial banks will be analyzed for the period 2010 to 2013.

### **3.4 Data Collection**

Secondary data i.e. data collected by another person other than the researcher was the chosen data collection tool for this study. Secondary data provide large and high quality database that would be difficult to collect through individual researcher as is the case with primary data.

Central Bank of Kenya requires all Commercial Banks to publish financial statements on a quarterly basis thus the data was easily accessible. In addition banks that are listed in the Nairobi Securities Exchange (NSE) are required to file their financial statements with both the NSE and the Capital Markets Authority (CMA). This study focused on published accounts of commercial banks including the statement of financial position, income statement and other disclosures.

### **3.5 Data Analysis**

Multiple regressions was applied to examine the effect of liquidity management as measured through liquidity ratios on financial performance of Commercial Banks.

#### **3.5.1 Analytical Model**

Financial performance ratios were computed as follows:

The model specification adopted from Ibe (2013) took the form below

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e.$$

Where

Y is a measure of financial performance through return on assets.

Return on Assets=Profit after Tax/Average Assets

$b_0, b_1, b_2, b_3$ ; are regression coefficients or parameters;

$X_1, X_2, X_3$ ; are independent variables;

$X_1 = \text{Liquid assets to total assets} = (\text{Cash in hand} + \text{Balances with Central Bank} + \text{Treasury bills and bonds} + \text{Balances with other banks} - \text{Balances due to other banks}) / \text{Total Assets}$

$X_2 = \text{Liquid assets to total deposits} = (\text{Cash in hand} + \text{Balances with Central Bank} + \text{Treasury bills and bonds} + \text{Balances with other banks} - \text{Balances due to other banks}) / \text{Total Deposits}$

$X_3 = \text{Balances due to other banks} / \text{Total Assets}$

$X_4 = \text{Asset Quality} = \text{Non Performing loans} / \text{Gross Loans and Advances}$

Liquid assets consist of Cash in hand, balances with central bank, treasury bills and bonds less balances due to banks. Short term funding consists of balances due to other banks.

### **3.5.2 Statistical Test of Significance**

To test the significance of the relationship between the dependent and independent variables, the critical value of F and the test statistic were compared taking

cognisance of the degree of freedom  $k$  and  $n-k-1$ . Thus, if the absolute value of the  $F$  statistic is less than the absolute value of the critical value of  $F$ , the null hypothesis  $H_0$  is accepted otherwise  $H_0$  is rejected. The Statistical Package for Social Sciences (SPSS) was used to analyze the data.

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter presents the results of the study. The results are based on the analysis of financial results of 43 Commercial banks in Kenya over a period of 4 years (2010-2013). Multiple linear regressions were established through Ordinary Least Squares (OLS) so as to determine the effect of liquidity risk management on the financial performance of commercial banks in Kenya. The chapter presents the descriptive results as well as the regression analysis results. A discussion of findings is then made.

### 4.2 Response rate

Annual financial statements were obtained from 42 commercial banks for the period 2010 – 2013. Financial statements for Charterhouse Bank Ltd were not available as the bank had not been operating over this period. This data available represents 98% which is considered to be reasonably high.

### 4.3 Descriptive Statistics

**Table 1: Descriptive Statistics**

	ROA	LA/TA	LA/TD	BTB/TA	Asset Quality
Mean	0.022473	0.331441	0.445763	0.061527	0.080820
Median	0.023800	0.309000	0.427400	0.034750	0.054700
Std. Deviation	0.0260908	0.1478031	0.4020199	0.0995615	0.0720339
Minimum	-0.0930	-0.4610	-4.0680	0.0000	0.0100
Maximum	0.0726	0.7086	1.3208	0.7792	0.4041

The descriptive statistics in the table above indicates that the mean of Return on Assets, was 0.022473 for the period of study with a standard deviation of 0.0260908 implying that the variability of the ROA values was low across time as indicated by the low standard deviation. The minimum and maximum values for ROA were -0.0930 and 0.0726 respectively whereas the median value was 0.0238.

The mean value of liquid assets to total assets (LA/TA) was 0.331441 and its median was 0.309. The standard deviation of the liquid assets to total assets was 0.1478031 which also implies low variability in its values over time and had a maximum of 0.7086 and a minimum of -0.4610.

The results further indicate that, Balances due to other banks to total Assets (BTB/TA) had a mean of 0.061527 and a median of 0.034750. The standard deviation in this case being 0.0995615 which is also an indication of the low variability in the values of Balances due to other banks to total Assets. The minimum and maximum value of Balances due to other banks to total Assets was 0.0000 and 0.7792 respectively.

Finally, the results indicate that Asset Quality had a median of 0.054700 and a mean of 0.08082. Its standard deviation was 0.0720339 with minimum and maximum values of 0.0100 and 0.4041 respectively.

**Table 2: Test for Normality:Kolmogorov-Smirnov Test**

	LA/TA	LA/TD	BTB/T A	Asset Quality	ROA	Residual
Kolmogorov- Smirnov Z	1.361	3.621	3.197	2.078	2.154	1.342
Asymp. Sig. (2- tailed)	0.049	0.000	0.000	0.000	0.000	0.055

Kolmogorov-Smirnov test of normality was used in the study. The null hypothesis under this test is that the variables are not significantly different from a normal distribution. The table below shows the Kolmogorov-Smirnov test of normality for the variables. Residual was established to be normally distributed (p-value = 0.055) and this meets the criterion required for linear regression analysis.

#### 4.4 Correlational analysis

**Table 3: Correlation Matrix**

	ROA	LA/TA	LA/TD	BTB/TA	Asset Quality
ROA	1.00				
LA/TA	-0.021	1.00			
LA/TD	-0.108	0.650**	1.00		
BTB/TA	-.220**	-.589**	-.640**	1.00	
Asset Quality	-0.370**	-0.149	-0.083	0.179*	1.00

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

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

The table above indicates the correlation between the predictor and predicted variables. The table indicates that the correlation coefficient between Liquid assets to total asset and Liquid assets to total deposits is positive ( $r= 0.65$ ) and significant ( $p\text{-value}<0.000$ ) at 5%, and this therefore implies that an increase (or decrease) in Liquid assets to total asset would be accompanied by an increase (or decrease) Liquid assets to total deposits. The results further shows that the correlation between liquid assets to total asset and balances due to other banks to total Assets is negative ( $r= - .589$ ) and significant ( $p\text{-value}<0.000$ ) at 5%. Similarly, this indicates that an increase (or decrease) in liquid assets to total asset would be accompanied by a decrease (or increase) in balances due to other banks to total Assets. The correlation between Liquid assets to total deposits and balances due to other banks to total Assets is  $-0.640$  and is found to be significant at 5%, this implies that an increase (or decrease) in Liquid assets to total deposits would be accompanied by a decrease (or increase) in balances due to other banks to total Assets. Lastly, the correlation between balances due to other banks to total Assets and asset quality is positive ( $r= 0.179$ ) and significant ( $p\text{-value} = 0.035$ ) at 5%, this also indicates that that an increase (or decrease) in balances due to other banks to total Assets would be accompanied by an increase (or decrease) asset quality. Given that the correlation coefficients between the predictor variables are less than 0.8 Multicollinearity is not an issue for the variables used in the study.

## 4.5 Regression Analysis

**Table 4: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.684	0.645	0.228	0.0208302	1.831

The model summary table above outlines the overall fit of the model. R Square value indicates the amount of variance in the dependent variable; return on assets by the predictor variables; Liquid assets to total asset, Liquid assets to total deposits, ratio of balances due to other banks to total Assets and the asset quality. 64.5% of the variance in the independent Variable (ROA) is jointly accounted by the variations in the predictor variables. The durbin-watson statistic of 1.831 indicates that the residuals in the model are not serially correlated as the durbin-watson statistic is approximately 2.

**Table 5: Analysis of Variance (ANOVA)**

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.019	4	0.005	11.017	0.000
Residual	0.057	164	0.000		
Total	0.076	168			

ANOVA consists of calculations that provide information about levels of variability within a regression model and form a basis for the test of significance. The ANOVA table above indicates that the model is jointly significant ( $p\text{-value} < 0.05$ ) and thus the model is a good fit.



**Table 6: Coefficients**

	Coefficients		t	Sig.
	$\beta$	Std. Error		
Constant	0.054	0.007	8.282	0.000
LA/TA	-0.010	0.018	-0.592	0.555
LA/TD	-0.022	0.007	-3.294	0.001
BTB/TA	-0.142	0.029	-4.868	0.000
Asset Quality	-0.124	0.031	-3.995	0.000

The following regression equation was established

$$Y = 0.054 - 0.010X_1 - 0.022X_2 - 0.142X_3 - 0.124X_4$$

The table below presents the regression results where the predicted variable, Return on Assets is regressed against the predictor variables Liquid assets to total assets (LA/TA), Liquid assets to total deposits (LA/TD), Balances due to other banks to total Assets (BTB/TA), and Asset Quality. The results indicate that Liquid assets to total assets (LA/TA) is negative ( $\beta = -0.010$ ) and insignificant (p-value = 0.555).

The results also show that Liquid assets to total deposits (LA/TD) is negative ( $\beta = -0.022$ ) and significant (p-value < 0.05). This implies that an increase in the ratio of liquid assets to total deposits decreases the return on assets.

The results further show that, Balances due to other banks to total Assets (BTB/TA) is negative ( $\beta = -0.142$ ) and significant (p-value < 0.05) at 5%. This implies that an increase in the ratio balances due to other banks to the total assets would lead to a decline in the return on assets. Lastly, the regression results show that Asset Quality had a negative ( $\beta = -0.124$ ) and significant (p-value < 0.05) relationship at 5%. This

implies that an increase in the ratio of non-performing loans to Gross Loans and Advances would result to a decline in the return on assets of the company.

#### **4.6 Discussion of Research Findings**

From the findings of R square value indicates that there is variation in return on assets as a result of changes in liquid assets to total assets ratio, liquid assets to total deposits ratio, ratio of balances due to other banks to total assets and the asset quality. The resultant equation is as indicated below shows that commercial banks financial performance is impacted negatively by increase in liquidity measures.

$$Y = 0.054 - 0.010X_1 - 0.022X_2 - 0.142X_3 - 0.124X_4$$

Borrowing from Banks (X3) had the highest impact on liquidity at 14.2% which was largely similar to the control variable i.e. asset quality (X4) which had an impact of 12.4%. This implies that borrowing from Banks negatively impacted financial performance by 14.2% while asset quality negatively affected financial performance by 12.4%. A unit increase in borrowing from banks resulted in 14.2% reduction in Return on Assets. A unit increase in the proportion of non-performing loan in gross loans resulted in 12.4% reduction in Return on Assets. This is consistent with (Dang, 2011) found that the loan portfolio quality had a direct bearing on a bank's profitability. Banks with higher ratio of non-performing to performing loan book had lower returns. Li (2007) also found that banks with a higher loan loss ratio had lower returns.

Liquid assets to Total assets had an impact of 1% while Liquid assets to Total deposits had an impact of 2.2%. This implies that a unit increase in liquid assets to

Total assets resulted in a 1% decrease in Return on Assets. Similarly, a unit increase in loans to deposits ratio resulted in 2.2% reduction in Return on Assets. Graham and Bordeleau (2010) found that profitability is improved for banks that hold some liquid assets, however, there is a point at which holding further liquid assets diminishes a banks' profitability, all else equal. Konadu (2009) found no positive relationship between liquidity trend and profitability. The research paper concluded that there is a negative relationship between liquidity and profitability in the Ghana banking sector. Olagunju et al. (2011) found a significant relationship between liquidity and profitability of commercial banks in Nigeria. The study concluded that for the success of operations and survival, commercial banks should not compromise efficient and effective liquidity management and that both illiquidity and excess liquidity are financial diseases that can easily erode the profit base of a bank as they affect bank's attempt to attain high profitability-level.

Nimer et al. (2013) found that profitability through return on assets (ROA) in Jordanian banks is significantly influenced by liquidity. Ongore and Kusa (2013) on the contrary found that liquidity management was positively related to ROA, ROE and NIM but the relationship is very weak. They concluded that this may be due to the fact that liquidity management is more related with fulfilling depositors' obligation (safeguarding depositors) than investment

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents the summary of the study findings, conclusion and suggestion for further research.

### **5.2 Summary of Findings**

The objective of this study was to determine the effect of liquidity risk management and financial performance of commercial banks. The study adopted a descriptive study design. The population of the study was listed Commercial Banks in Kenya where published financial statements from 2010 - 2013 were analyzed. Data was analyzed using descriptive analysis and regression analysis.

The established regression equation for the period under review was

$$Y = 0.054 - 0.010X_1 - 0.022X_2 - 0.142X_3 - 0.124X_4$$

The above regression analysis reveals a significant negative relationship between liquidity risk management and financial performance of commercial banks. The results of the study show that a unit increase in liquid assets to total assets ratio decreases return on assets by 1%. A unit increase in liquid assets to total deposits ratio decreases return on assets by 2.2%. A unit increase in borrowings from banks decreases return on assets by 14.2%. Finally the control variable which was asset quality shows that a unit increase in non-performing loans as a proportion of total loans would lead to a 12.4% decrease in return on assets.

### **5.3 Conclusion**

The study concludes that liquidity risk management has a significant negative relationship with financial performance of commercial banks. Borrowings from banks

by commercial banks to meet shorter liquidity needs do have the greatest impact on liquidity at 14.2%. This shows that banks that utilized the interbank market for funding purposes during this period had to pay a higher cost for the funds thus impacting overall financial performance. The study thus concludes that banks that managed their liquidity risk prudently and did not need to borrow from the interbank market had better financial performance. This particular variable had a very high correlation with the control variable which is asset quality.

The study also concludes that holding more assets as compared to total assets or total deposits will lead to lower returns to commercial banks in Kenya. Commercial banks should therefore ensure there do not hold unnecessary liquidity. Commercial banks should hold adequate liquidity to meet customer needs but not to the extent of diminishing returns due to the lower return associated with liquid assets. The control variable for this study, which was asset quality as measured through the ratio of non-performing loans to total loans shows the negative impact deterioration of the loan book has on financial performance of commercial banks in Kenya. Therefore, all determinants of financial performance of commercial banks should be taken into account and not just liquidity risk management in isolation.

#### **5.4 Recommendations**

The study shows a significant negative relationship between liquidity risk management and financial performance of commercial banks in Kenya. It therefore means that management of commercial banks in Kenya should take keen interest in how they manage this risk in order to maximize return to the shareholder which is one of the major objectives of their existence.

This study shows a significant relationship on bank borrowing from other banks and return on assets. This is an indication that over the period of study borrowing from the interbank was generally more expensive than other sources of funding and therefore banks that had to borrow from the interbank market had a negative impact on their financial performance. Bank management can therefore avoid instances of having to borrow from the interbank market by planning adequately and in advance their liquidity requirements. The asset-liability committee should be actively involved in ensuring proper cash-flow planning is in place.

The other finding of this study was that liquid assets to total assets and liquid assets to total deposits negatively affected financial performance of commercial banks. It therefore means that the bank has to always ensure it maintains optimal levels of liquid assets that ordinarily have lower returns at the same time being able to meet client demands. Banks need to come with creative ways of ensuring they minimize withdrawals by the clients such as coming up with alternative channels like mobile banking. Also they may consider banking the complete chain of customers so that most of the payments and receipts remain within the bank thus reducing the need to maintain high levels of liquid assets.

## **5.5 Limitations of the Study**

The study focused on commercial banks that operate in Kenya. The study may therefore be limited by the population of the study that focused on Kenya only. The interpretations should therefore be limited to commercial banks in Kenya and should not be generalized to other countries as they have different operating environment from that of Kenya. Conditions prevailing in different countries e.g. recession may require different decisions on liquidity risk management.

The study also heavily relied on the financial results of commercial banks and therefore the results are skewed towards financial impact of liquidity risk management. There are several other factors that should be considered when liquidity risk management decisions are considered. One of the major factors is solvency; commercial banks should therefore be alert on any threats to their solvency.

The study focused on a specific period of four years. The operating environment during this period may differ from other periods such as during periods of war, economic boom and other shocks to the economy. The results may therefore be different should there be such shocks to the economy and in this case the decisions taken with regard to liquidity risk management for commercial banks may be different.

## **5.6 Suggestions for Further Research**

Further study in future can be done with emphasis on periods of economic shocks. The focus in this case should be how liquidity risk management impacts financial performance of commercial banks when it is not business as usual. For example when the exchange rate depreciates rapidly, when interest rates increases or decreases at a steep rate or when there is economic recession or boom.

Further studies can also be done on the impact of liquidity risk management with focus on product mix of sources of funding and investments. The study in this case would seek to establish how the mix of funding determines the level of liquid assets required and ultimately the impact on performance. For example, a commercial bank with a large component of funding in call accounts vis a vis another that has a large component of funding in fixed accounts.

Finally, further studies can be done on the impact of endowment risk on financial performance of commercial banks and how this affect liquidity risk management decisions. Endowment risk would occur for example where the funding for some liquid assets such as treasury bills that have a fixed come from sources whose cost is flexible therefore a risk that in a rising interest regime a commercial bank would make losses from such liquid assets.



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## APPENDICES

### Appendix 1: List of Commercial Banks in Kenya

- |    |                                |    |                                 |
|----|--------------------------------|----|---------------------------------|
| 1  | Kenya Commercial Bank Ltd      | 23 | Oriental Commercial Bank Ltd    |
| 2  | Standard Chartered Bank Ltd    | 24 | Habib A.G. Zurich               |
| 3  | Barclays Bank of Kenya Ltd     | 25 | Middle East Bank Ltd            |
| 4  | Co-operative Bank of Kenya Ltd | 26 | Dubai Bank Ltd                  |
| 5  | CFC Stanbic Bank Ltd           | 27 | Consolidated Bank of Kenya Ltd  |
| 6  | Equity Bank Ltd                | 28 | Credit Bank Ltd                 |
| 7  | Bank of India                  | 29 | Trans - National Bank Ltd       |
| 8  | Bank of Baroda Ltd             | 30 | African Banking Corporation Ltd |
| 9  | Commercial Bank of Africa Ltd  | 31 | Giro Commercial Bank Ltd        |
| 10 | Prime Bank Ltd                 | 32 | Equatorial Bank Ltd             |
| 11 | National Bank of Kenya Ltd     | 33 | Paramount Universal Bank Ltd    |
| 12 | Citibank N.A.                  | 34 | Jamii Bora Bank Ltd             |
| 13 | Bank of Africa Kenya Ltd       | 35 | Victoria Commercial Bank Ltd    |
| 14 | Chase Bank Ltd                 | 36 | Guardian Bank Ltd               |
| 15 | Imperial Bank Ltd              | 37 | Development Bank of Kenya Ltd   |
| 16 | NIC Bank Ltd                   | 38 | Fidelity Commercial Bank Ltd    |
| 17 | Guaranty Trust Bank Ltd        | 39 | Charterhouse Bank Ltd           |
| 18 | I&M Bank Ltd                   | 40 | K-Rep Bank Ltd                  |
| 19 | Diamond Trust Bank Kenya Ltd   | 41 | Gulf African Bank Ltd           |
| 20 | Family Bank Ltd                | 42 | First Community Bank Ltd        |
| 21 | Ecobank Ltd                    | 43 | UBA Bank Ltd                    |
| 22 | Habib Bank Ltd                 |    |                                 |