

**EFFECT OF LIQUIDITY RISK DETERMINANTS ON FINANCIAL
PERFORMANCE OF COMMERCIAL BANKS LISTED AT
NAIROBI SECURITIES EXCHANGE, KENYA**

DAVIES MUINDE MUSEMBI

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DECLARATION

This research project is my original work and has not been presented for a degree in any other University.

Signature.....

Date

Davies Muinde Musembi

MBA/0978/2014

This research project has been submitted for examination with my approval as University Supervisor;

Signature

Date

Dr. Abdulkadir Ali

Technical University of Mombasa, Kenya

Signature

Date

Dr. William Kingi

Technical University of Mombasa, Kenya

DEDICATION

This research project is dedicated to my family members; my father, Mr. Francis Muli, my mother, Mrs. Elizabeth Muli, my brothers; Sylvester Mulei, and Victor Musyoka and my sisters; Jennifer Mutunga and Fridah Muli, for their prayers and encouragement. May the Lord, God Almighty bless them abundantly.

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God bless you all.

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LIST OF ABBREVIATIONS AND ACRONYMS

ALMCO	Assets and Liability Management Committee
BIS	Bank of International Settlement
CBK	Central Bank of Kenya
MFI	Micro Finance Institutions
NIM	Net Interest Margin
NSE	Nairobi Securities Exchange
ROA	Return on Assets
ROE	Return on Equity

DEFINITION OF TERMS

Asset Quality	Relates to the proportion of nonperforming loans to total loans granted by a commercial bank (Li, 2007). The quality of banks assets, Loan portfolio, nonperforming loans and evaluation of loan applications is considered in this research.
Capital Adequacy	Measure of a bank's financial strength, in terms of its ability to withstand operational costs and fund liquidity (Ayele, 2012). Measured as the ratio of core capital divided by total deposits (Bonfim & Kim, 2012). In this case the amount of capital, increments in the core capital and the level of core capital was considered.
Financial Performance	Financial performance is a measure of efficiency in management of current assets and rate of acquisition of new assets. It is a measure of efficiency to meet its obligation by ensuring sound liquidity, solvency and profitability as well maintaining positive value of assets (Pandey, 2010). In this case Return on Assets (ROA) was used to measure the financial performance.
Inflation	Refer to a persistent rise in the general level of prices or a decline in the value of money over a period. Inflation is measured in terms of year on year change in all items using consumer price index (Rother, 2004). This research considered the effect inflation levels and inflation volatility on financial performance of Commercial banks listed at NSE.

Liquidity Level

The amount of liquid assets held by a bank. It is measured as the ratio between credit granted and deposits taken from customers (Brunnermeier, 2009). The aspects of liquidity level considered in this research were; liquidity adequacy, Liquidity gap, liquidity ratios and liquidity requirements of the banks listed at the NSE.

Nairobi Securities Exchange (NSE)

Securities exchange is an exchange where stock brokers and traders can buy and sell shares of stock, bonds, and other securities The Nairobi Securities Exchange, the leading securities exchange in East Africa (CBK, 2015). The secondary data o financial performance of listed commercial banks was obtained from the NSE handbook. The list of Commercial banks listed was also obtained from the NSE handbook.

ABSTRACT

Commercial banks play a crucial role of providing liquidity in the financial market. In performing this role, banks are inherently exposed to liquidity risk. Liquidity risk arises from the fundamental role of banks in the maturity transformation of short term deposits into long term loans. The overall objective of this study was to examine the effect of liquidity risk determinants on financial performance of commercial banks listed at the Nairobi Securities Exchange. The research used a descriptive survey research design. The target population comprised of the 11 commercial banks listed at the Nairobi Securities Exchange. The study made use of primary and secondary data. A questionnaire was used to collect the primary data. A sample of 42 members of the assets and liabilities management committee was used. Secondary data was collected from banks annual reports submitted to the Central Bank of Kenya. Stratified sampling technique was used to select members of the sample. The study found that liquidity level had a positive effect on return on assets for listed commercial banks but the effect was not significant. Data was analyzed using multiple regression methodology in accordance with the objectives of the study. Correlation analysis was used to determine the relationship between liquidity risk determinants and financial performance. The study found that capital adequacy had a significant positive effect on return on assets for commercial banks listed on the Nairobi Securities Exchange. It was found that for commercial banks listed on the Nairobi Securities Exchange, asset quality had a significant positive effect on return on assets. Also the study found that inflation had a significant negative effect on return on assets for commercial banks listed on the Nairobi Securities Exchange. The study concluded that that liquidity levels had a positive effect on financial performance of listed commercial banks but the effect was not significant. It also concluded that capital adequacy had a positive and significant effect on the financial performance of listed commercial banks. The study makes the following recommendations; that to optimize financial performance, commercial banks listed on the Nairobi Securities Exchange should identify and maintain optimal levels of liquidity to optimize financial performance; listed commercial banks should increase the amount of core capital since capital adequacy was noted to have a positive effect on financial performance. Further the study recommends that commercial banks should contract and maintain high quality assets especially the loan portfolios and should also devise strategies to protect themselves against high inflation rates as well as inflation volatility.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Liquidity risk arises from the fundamental role of banks in the maturity transformation of short term deposits into long term loans. It is the inability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses. It is the risk that a bank will be unable to meet its obligations as they come due because of the inability to liquidate assets or inadequate funding sources (Decker, 2010). Bank of International Settlement (2008) explains that bank's liquidity is the ability to fund increases in assets and meet obligations as they come due. Liquidity risk refers to risks resulted from a financial institution's failure to pay its debts and obligations when due because of its inability to convert assets into cash. Liquidity risk can also refers to the inability to procure enough fund due to exceptionally high costs of liquidity transformation that may affect the financial institution's incomes and capital fund, either now or in the future. Fernando (2009) noted that liquidity risk has become more critical for commercial banks for two reasons; change in the traditional banking intermediation model and increased competition from other banks and non-bank financial institutions, as well by securities markets. Drehmann and Nikolaou (2009) stated that liquidity risk can adversely affect the earnings and capital of banks. Thus bank's management must ensure there are sufficient funds to meet future demands of providers and borrowers at reasonable costs.

Bank of International Settlement (2008) recommends that a bank's senior management should develop policies and a culture in accordance with the banks articulated liquidity risk tolerance. Directors of banks should at least annually review a report on the bank's liquidity

risk position, approve effective policies on liquidity risk management, and ensure the effectiveness of the senior management. In addition, banks should take into account the liquidity risk arising from all activities of the banks thereby aligning the incentives of the banks' individual business lines with their actual risk exposures for the banks as a whole.

Longworth (2014) asserted that liquidity was a key factor during the 2008-09 financial crisis in which the banks funding sources dried up quickly and they found themselves short on cash to cover their obligations as they came due. Banks had not fully appreciated the importance of liquidity risk management and the implications of such risk for the bank itself. As result, policymakers have suggested that banks should hold more liquid assets than in the past, to help self-insure against potential liquidity or funding difficulties (Bank of International Settlement, 2010). Liquid assets such as cash and government securities generally have a relatively low return; therefore, holding them imposes an opportunity cost on a bank. In the absence of regulation, it is reasonable to expect that banks will hold liquid assets to the extent they help to maximize the firm's profitability (Ongore & Kasu, 2014).

According to Bunda and Desquilbet (2008), banks that hold some liquid assets experience improved profitability however, there is a point at which holding further liquid assets diminishes a banks' profitability. This is consistent with the argument that the opportunity cost of holding low-return assets eventually outweighs the benefit of any increase in the bank's liquidity. Likewise, there is a similar estimated benefit to holding more liquid assets when economic conditions deteriorate. The ultimate objective of any commercial bank is to maximize the profit. But, preserving liquidity of the commercial bank is equally an important objective too. The dilemma that is faced by the management of commercial banks

is that increasing profits at the cost of liquidity can bring serious problems to the bank. Therefore, there must be a trade-off between these two objectives of the firms (Sufian & Chong, 2009). One objective should not be at cost of the other because both have their importance. If banks do not care about profitability, they we cannot survive for a longer period. On the other hand, if they do not care about liquidity, they may face the problem of insolvency or bankruptcy. For these reasons liquidity risk in commercial bank should be given proper consideration and will ultimately affect the profitability of the bank (Vodova, 2011).

Commercial banks dominate Kenya's financial sector and as such the process of financial intermediation in the country depends heavily on commercial banks (Kiganda, 2014). Kenyan commercial banks are licensed and regulated pursuant to the provisions of the Banking Act and the regulations and prudential guidelines issued by the Central Bank of Kenya. Central bank of Kenya regulations requires commercial banks to maintain a liquidity buffer of twenty percent (CBK, 2015). In a country where commercial banks dominate the financial sector a liquidity shortage from the commercial banks would have an immense implication on the economic growth of the country. As at December 2014 Kenya had 43 commercial banks (CBK, 2015).The banking sector is the largest sector by the number of listed companies at the Nairobi Securities exchange with eleven commercial banks being listed under the sector. Listing at the Nairobi Securities Exchange can be considered an important aspect for a bank as will provide a bank with an easier access to capital markets where it can issue securities to finance a liquidity gap.

Ogilo and Mugenya (2015) investigated the determinants of liquidity risk among commercial banks in Kenya. Capital adequacy and leverage were noted as significantly affecting liquidity risk. Makaa (2013) pointed that liquidity risk affected profitability of commercial banks in Kenya negatively. Increase in liquidity gap causes banks to borrow from the repo market at higher rate pushing up the cost of banks. According to Mwangi (2014) management of liquidity risk is a critical determinant of banks financial performance. Banks manage liquidity risk by borrowing from the interbank market to meet short term liquidity needs. In addition holding a high level of liquid assets in relation to total assets reduces the returns to commercial banks.

Recent events in Kenya's banking sector such as the placement under receivership and eventual liquidation of Dubai bank ltd, placement under receivership of Imperial bank ltd and Chase bank ltd are indicative of industry with gaps that need further regulation to ensure stability and resilience. The reasons for these failures were noted as; failure to maintain adequate capital and liquidity ratios as well as provisions for non-performing loans and weak corporate governance structures (CBK, 2015). Liquidity is one of the important financial stability indicators. Liquidity shortfall in one bank can cause systemic crisis in the banking sector due to their interconnected operations. The role of central bank liquidity can be important in mitigating the effects a liquidity crisis, yet it is not a panacea. It can act as an immediate but temporary buffer to liquidity shocks, thereby allowing time for supervision and regulation to confront the causes of liquidity risk.

1.2 Statement of the Problem

The fundamental role of commercial banks of providing liquidity by transforming short term deposits into long term loans leaves commercial banks inherently exposed to liquidity risks, the risk that demands for repayment outstrip the capacity to raise new liabilities or liquefy assets (Drehmann & Nikolaou, 2009). Liquidity problems may adversely affect the financial performance of a bank as well as its solvency.

Several studies have evaluated the effect of liquidity risk on financial performance of commercial banks. Lartey (2013) found a weak positive relationship between the liquidity risk and the profitability of Ghana's listed banks. However, Bourke (1989), Kosmidou and Pasiouras (2005) found a significant positive relationship between liquidity risk and bank profits. Li (2007) concluded that the effect of liquidity risk on profitability is mixed and not significant. Chen, Kao and Yeh (2009) found that liquidity risk had a positive and significant effect on financial performance of commercial banks. Alzorqan (2014) in a study of the relationship between bank liquidity risk and performance, found a significant negative relationship between Loan-deposit ratio, current ratio and banks performance. Graham and Bordeleau (2010) suggest that a nonlinear relationship exists, where by 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.

Locally several studies have used measures of liquidity risk in evaluating the determinants of commercial banks performance. Muteti (2012) noted that the effect of liquidity risk on financial performance was inconclusive. Maaka (2013) noted that liquidity risk had a

negative effect on bank profitability. Ogilo and Mugenya (2015) found that capital adequacy and leverage were significant determinants of liquidity risk while liquid asset ratio, ownership type and bank size didn't have a significant effect on liquidity risk.

Based on the reviewed studies, the empirical evidence on the effect of liquidity risk on financial performance is mixed. Commercial banks manage liquidity risk by managing certain aspects of banks performance such as customer deposits, loans; capital adequacy and asset quality (Ogilo & Mugenya, 2015). The ability of commercial banks to manage liquidity risk is affected by macroeconomic factors such as inflation (Vodova, 2011; Bunda & Desquilbet, 2008)) and gross domestic product (Valla, 2006; Angora & Roulet, 2011). The effect of liquidity risk on financial performance of commercial banks cannot be regarded as conclusive. This study sought to examine the effect of liquidity risk determinants on financial performance of commercial banks by taking a different perspective; by examining how the factors that influence banks liquidity risk affect financial performance of commercial banks.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of the study was to examine how liquidity risk determinants affect financial performance of commercial banks listed at the NSE.

1.3.2 Specific Objectives

The specific objectives were to;

- i To determine the effect of liquidity level on financial performance of commercial banks listed at the NSE in Kenya.
- ii To establish the effect of capital adequacy on financial performance of commercial banks listed at the NSE in Kenya.
- iii To determine whether asset quality has effect on financial performance of commercial banks listed at the NSE in Kenya.
- iv To establish the effect of inflation on financial performance of commercial banks listed at the NSE in Kenya.

1.4 Research Hypotheses

The research hypotheses are:-

H₀₁: Liquidity level does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya.

H₀₂: Capital adequacy does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya.

H₀₃: Asset quality does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya.

H₀₄: Inflation has no significant effect on the financial performance of commercial banks listed at the NSE in Kenya.

1.5 Significance of the Study

The regulation and supervision of banks have been reviewed and will likely be subject to revision in order to deal with the problems of inadequate liquidity and capital, to mitigate liquidity risk, and to prevent future financial crises. This study will promote an understanding of liquidity risk, its determinants and how it affects financial performance of commercial banks. By understanding the factors that have a significant effect on liquidity risk bank managers will be develop better liquidity risk management policies. Further they will be able to gainfully manage those factors with a view to improve the financial performance of the banks they manage. Regulators and supervisors of commercial banks will be able to develop better policies that enhance stability and resilient banking sector.

1.6 Scope of the Study

This research study is concerned with the effect of liquidity risk determinants on the financial performance of commercial banks in Kenya. Specifically it addresses determinants of liquidity risk namely liquidity level, capital adequacy, asset quality, inflation rate and the gross domestic product growth rate affect financial performance of commercial banks listed on the NSE. It will be cover to the 11 commercial banks listed at the Nairobi Securities Exchange by end of 2015. The findings of this study will be generalized for all companies

making them very useful not only to the firms listed but also for other banks in Kenya, the stock market and economy at large. The research study relied on primary data ALCO members and secondary data collected from consolidated financial statements of the commercial banks from the year 2011 to 2015.

1.7 Limitations of the Study

There were two challenges in this study. First, the study experienced an initial slow response from the respondents who complained about the length of the questionnaire. This was mitigated by having constant follow up on phone and physical visits to the respondents' offices. Secondly, the research considered the influence of liquidity risk determinants on financial performance of listed commercial banks. However, there are other factors that might be significantly influencing the financial performance of these institutions. Assuming their influence to the financial performance while taking liquidity as the only factor effecting performance would hinder the understanding of the financial performance determinants in the sector.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter is organized to start with the theoretical framework, conceptual framework, and discussion of research variable and empirical review, followed by critical review of the literature , summary of literature and finally research gaps.

2.2 Theoretical Framework

The theoretical framework of the study will involve the theories expounded to explain the occurrence of liquidity risk among financial institutions. The theories reviewed include; shift ability theory, financial intermediation theory and risk absorption hypothesis.

2.2.1 Shift ability Theory

Shift ability theory was developed in 1918 by M.G Mouton and published in an article named '*Commercial banking and capital formation*'. 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 shift ability, 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 (Maaka, 2013).

The theory came to focus following the 2007 global financial crisis as the interbank markets run short of liquidity. Brunnetti, Fillipo and Harris (2011) argued that the subprime crisis demonstrated potentially serious liquidity problems in the interbank market. Banks were unsure about the depth of the problems on other banks' balance sheets and were simply unwilling to lend to each other without substantial accommodations for counterparty risks. Tirole (2010) pointed that during the period of distress, banks 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.

2.2.2 Financial Intermediation Theory

Diamond (1984) analyzed the provision of liquidity (the transformation of illiquid assets into liquid liabilities) by banks. They argued that investors (depositors) are risk averse and uncertain about the timing of their future consumption needs. Without an intermediary, all investors are locked into illiquid long term investments that yield high payoffs only to those who consume late. Those who must consume early receive low payoffs because early consumption requires premature liquidation of long-term investments. Banks can improve on a competitive market by providing better risk sharing among agents who need to consume at different times. An intermediary promising investors a higher payoff for early consumption and a lower payoff for late consumption relative to the non-intermediated case enhances risk sharing and welfare.

In the theory, demand deposit contract is seen as providing an optimal insurance contract but it has an undesirable equilibrium (bank run), in which all depositors panic and withdraw immediately, including even those who would prefer to leave their deposits in the bank if

they were not concerned about the bank failing. Bank runs cause real economic problems because even healthy banks can fail, leading to a recall of loans and the termination of productive investment. Liquidity stress in one or a few bank can have systemic effect on the entire banking sector resulting in bank runs (Diamond, 1984).

Allen and Santomero (1998) offered a different dimension in the role of financial intermediation by considering the role of financial intermediaries in risk management. They argued that risk management has become a key area of intermediary activity. Intermediaries facilitate risk transfer and dealing with the increasing complex maze of financial instruments and markets. They note that by dealing in financial assets, intermediaries are by definition in the financial risk business. By virtue of the fact that they originate, trade, or service financial assets, intermediaries are managing and trading risk. Risks inherent in financial assets is decomposed into three subgroups; risks that can be eliminated or avoided by business practices; risks that can be transferred to other participants; risks that must be actively managed at the firm level (Kimani, 2015).

Commercial banks engage in actions that reduce the chances of liquidity risk by avoiding high risk borrowers who are likely to default loan payments. This is done through actions such as due diligence procedures and portfolio diversification. However such action will not rid all the risks related to the transaction. There remains some portion of systematic risk and unsystematic risks that are integral to a product's unique business purpose. Such risk can be managed through hedging or risk transference or managed at a firm level (Allen & Santomero, 1998). Liquidity risk within commercial banks is often managed through

transfer such as through deposit insurance or managed internally by compliance with guidelines issued by respective central banks and regulatory authorities.

2.2.3 Risk Absorption Theory

Diamond and Dybvig (1983) framed a risk absorption hypothesis linking a bank capital to liquidity creation. The hypothesis stems from the role of banks as risk transformers. The risk absorption hypothesis predicts that increased capital enhances the ability of banks to create liquidity. Liquidity creation increases the bank's exposure to risk because banks that create more liquidity will face greater losses when they are forced to sell illiquid assets to satisfy the liquidity demands of customers while bank capital allows the bank to absorb greater risk.

Risk absorption effect is relatively strong for large banks because these institutions are subject to more regulatory and market discipline. The effect may be relatively strong for banks with low capital ratios of any size because these banks have thin buffers to absorb risks and tend to face more regulatory, market, and/or owner pressures to control risk taking. That the net effect of capital on liquidity creation is positive and statistically significant is consistent with the risk absorption effect (Berger & Bouwan, 2009).

2.3 Conceptual Framework

Theories provide a conceptual framework, so that knowledge, both existing and new, can be interpreted for empirical application in comprehensive manner. In this study the conceptual framework comprised of four independent variables and one dependent variable. The selection of variables was based on previous relevant studies.

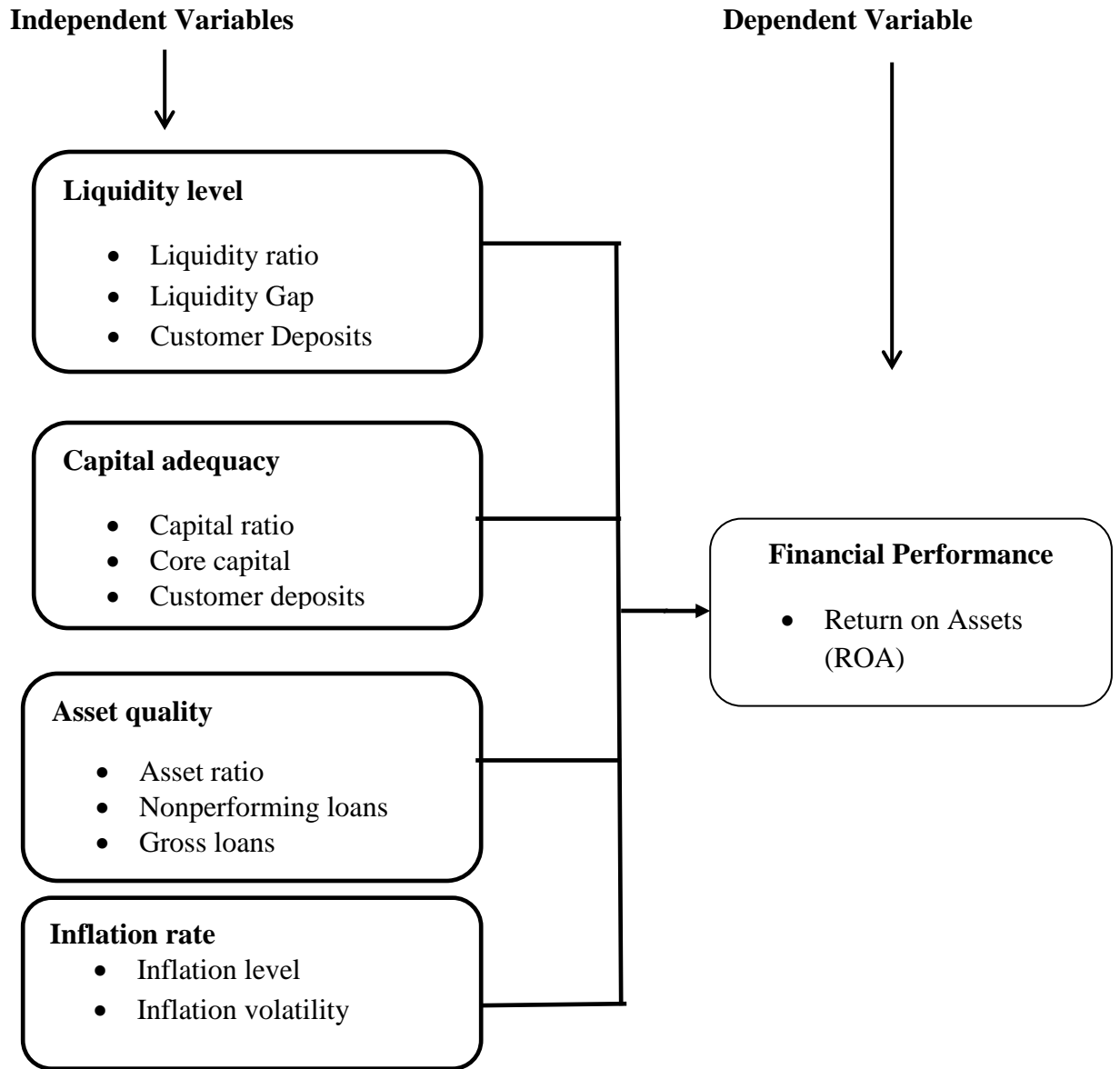


Figure 2.1 Conceptual Framework

Figure 2.1 shows the conceptualization of the dependent and independent variables of the related study. The independent variables of this study indicate the statistics that was used to measure effects of liquidity risk determinants. They include liquidity level, capital adequacy, asset quality and inflation. The dependent variable is financial performance which was measured by return on assets (ROA).

2.3.1 Liquidity Level

Loans to customer deposits the ratio, measured as the ratio between credit granted and deposits taken from customers provide a broad structural characterization of banks' liquidity risks. Since customers deposits are a broadly stable funding source, those banks that finance most or all of their credit with deposits should, all else same, be less exposed to liquidity risk. On the other hand banks that show a large funding gap, that is, a very high loan-to-deposit ratio, will be more exposed to liquidity risk, as they will need to rely on wholesale funding markets. As a result banks in which wholesale market funding as a percentage of assets is higher will be more sensitive to refinancing risk (Brunnermeier, 2009).

2.3.2 Capital Adequacy

Bonfim and Kim (2012) define capital adequacy is the Tier 1 capital ratio determined as core capital divided by total deposits. Ayele (2012) points that capital adequacy is a measure of a bank's financial strength, in terms of its ability to withstand operational costs and fund liquidity. Capital adequacy also indicates the ability of bank to undertake additional business. The size of capital provides financial flexibility for bank and financial institution. Ongore and Kasu (2013) argued that capital adequacy ratio shows the internal strength of the bank to withstand losses during crisis.

2.3.3 Asset Quality

Dang (2011) noted that loans are the major asset of commercial banks from which they generate income. The loan portfolio quality has a direct bearing on bank liquidity since the highest risk facing a bank is the losses derived from delinquent loans. Li (2007) posited that ratio of loan loss provision to total loans 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 hence the higher the liquidity risk of the loan portfolio will be. The loans loss provision to total loan is an indicator of asset quality. Banks which have a higher ratio of loan loss provisions to total loans have lower asset quality and tend to incur higher credit risk. Higher risk-taking banks are less efficient. Credit risk is measured as loans loss provision divided by total loans. This is an important factor because poor asset quality is seen as the most prominent cause of bank failures (Yildirim & Philippatos, 2007).

2.3.4 Inflation

Inflation rate is measured by annual growth rate of the consumer price index negatively affects the bank efficiency, because inflation tends to increase cost and reduce cost efficiency. Inflation reflects potential inefficiencies due to price (high interest margin) behaviour of banks a symptom of high inflationary conditions (Grigorian & Manole, 2006). Bunda and Desquilbet (2008) noted that the rate of inflation increases the vulnerability of banks to nominal values of loans provided to customers. Vodova (2011) pointed that liquidity is negatively related to inflation rate.

2.3.5 Measurement of Financial Performance

Metcalf & Titard (1976) pointed out that the financial performance is to convey an understanding of some financial aspects of a firm and its analysis identifies the financial strengths and weaknesses of the firm. Mwangi (2010) did a study on the effect of financial structure on the financial performance of firms listed at the NSE. He collected data using structured questionnaires. The study identified a strong positive relationship between short term debt financing and the firms' return on equity, liquidity, and return on investment. This

hypothesis was contrasted by a number of studies, to them the benefit of short term debt financing is less than its negative aspects, and hence argue that firms will always prefer to fund investments by internal sources first before considering external sources of funds (Jensen & Meckling, 1976).

Commonly used indicators of financial performance of commercial banks include return on assets (ROA), return on Equity (ROE) and net interest margin. Khrawish (2011) define return on assets as the ratio of income to total asset. It measures the ability of the bank management to generate income by utilizing company assets at their disposal. It indicates the efficiency of the management of a company in generating net income from all the resources of the institution. Return on equity is the ratio of net income after taxes divided by total equity capital. 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. It represents the rate of return earned on the funds invested in the bank by its shareholders. ROE reflects how effectively a bank management is using shareholder funds (Khrawish, 2011). Gul, Faiza and Khalid (2011) defined NIM as the net interest income divided by total earnings assets. NIM is the difference between the interest income generated by banks and the amount of interest paid on deposits scaled by the amount of interest earning assets. It is 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.

2.4 Empirical Review

Trabelsi (2015) studied the impact of liquidity risk determinants on profitability on Islamic banks in Bahrain. The aim of the study was to investigate the impact of the significant determinants of liquidity risk on the profitability of Islamic commercial banks in Bahrain during the 2007-2013 periods as well as to assess the impact of the global financial crisis on the profitability of these banks during the recovery period. Multiple regressions analysis was applied. The study used two independent variables; return on assets and return on equity. The dependent variables consisted of capital adequacy, financial leverage, deposits, gross domestic product, bank size and global financial crisis. The study found that Capital adequacy, financial leverage, deposits and GDP have a positive and significant impact on ROE and ROA; whereas bank size and the global financial crisis had a negative and statistically significant effect on ROA and ROE.

Angora and Roulet (2011) underline the relationship between liquidity risk measured with two new liquidity indicators proposed by the Basel Committee, some balance sheet indices (ROA, the natural logarithm of total assets, the ratio between loans to customers and total loans, etc.) and some macroeconomic indicators (GDP annual growth rate, the spread between the interbank rate and central bank policy rate. In general, the study highlights that the liquidity risk ratio has a negative relationship with most of the indicators analyzed including size and the ratio between regulatory capital and total assets, while the liquidity measure has a significant and positive relationship with macroeconomic variables such as GDP and the central bank policy rate.

Bonfim and Kim (2011) in a study on European and North American banks in the 2002-2009 periods illustrate how banks manage liquidity risk. In particular, using regression analysis based on panel data, the authors consider three different measures of liquidity risk and attempt to understand whether banks tend to take more risks in a crisis period and if they follow similar strategies in these periods. The authors also identify the determinants of liquidity risk. The results highlight that the type of relationship between liquidity risk and size, performance and the ratio between loans and deposits depends on the type of liquidity risk measure used. Bank size generally has a positive impact on bank liquidity, while the performance measure has an ambiguous relationship with liquidity risk.

Ajibike and Aremu (2015) evaluated the impact of liquidity on Nigerian bank performance. They sought to raise understanding of the role of liquidity on the performance of commercial banks in Nigeria. The study used Generalized Method of Moments (GMM) estimation technique for a panel of 13 banks from the period of 2004 to 2012. The study found a positive relationship between liquidity and bank performance. It concludes that bank liquidity, size of the board and debt structure is significant determinants of banks performance in Nigeria. On the basis of the findings, they recommended that banks should increase their liquidity base to achieve higher performance.

Chen, Kao and Yeh (2009) investigated the relationship between banks liquidity risk and its performance of 12 commercial banks in advanced economic countries during the years 1994-2006. The study used panel data regression. It noted that liquidity risk is an endogenous determinant of bank performance measured by measured by return on assets,

return on equity and net interest margins. The study found a positive and statistically significant relationship between liquidity risk and financial performance.

Alzorqan (2014) studied the relationship between bank liquidity risk and performance in Jordan. The aim of the study was to investigate the difficulty of estimating the level of bank liquidity that commercial banks must keep them that guarantee the fulfillment of all its financial obligations, and at the same time enable them to maximize investments and profits. The study regarded liquidity risk as an endogenous determinant of bank performance, and apply panel data instrumental variables regression to estimate the impact of liquidity risk on banks performance. The study established that there is a significant relationship between Loan-deposit ratio, current ratio and banks performance.

Maaka (2013) studied the relationship between liquidity risk and financial performance of commercial banks in Kenya. The objective of the study was to establish the relationship between liquidity risk and financial performance of commercial banks in Kenya. A correlation research design was adopted. Secondary data from the balance sheets, income statements was used. The study used a sample of 33 commercial banks in Kenya over the period 2008-2012. Multiple regressions were used to assess the impact of liquidity risk on banks' profitability. The study found that profitability of the commercial bank in Kenya was negatively affected due to increase in the liquidity gap and leverage. With a significant liquidity gap, the banks may have to borrow from the repo market even at a higher rate thereby pushing up the cost of banks. The level of customer deposit was also found to positively affect the bank's profitability and it will therefore be encouraged for banks to open more branches in the country.

Kimani, Mugo, Njeje and Otieno (2015) studied the factors affecting liquidity risk management practices in microfinance institutions in Kenya. The study adopted a survey research design. The target population included all the 128 employees from the 6 selected MFIs in Kenya. A sample of 96 employees were drawn and used in the study. The study used primary data collected using a questionnaire. Data was analyzed using multiple regressions. The study found out that Micro Finance Institutions internal control systems, policies, Board oversight and risk monitoring significantly affects its liquidity risk management practices. It recommended that MFIs document their local strategies applied in liquidity risk management; effective internal control processes be introduced through implementation of computerized financial management systems; institutions should employ effective policies that impacts positively on the overall liquidity risk management functions; the Board should develop initiatives to facilitate review of liquidity management framework and also provide strategic direction to the liquidity risk management function and the MFIs to maintain adequate information systems for measuring, monitoring, controlling and reporting on liquidity risks.

Ogilo and Mugenya (2015) studied the determinants of liquidity risk of commercial banks in Kenya. The objective of the study was to establish the determinants of liquidity risk on commercial banks in Kenya. The study employed a descriptive research design. A census targeting the 43 commercial banks licensed in Kenya was conducted. It evaluated the effect of capital adequacy ratio, liquid assets ratio, ownership type, size and leverage on loan deposit ratio. The multiple regression analysis indicated that capital adequacy ratio and leverage were individually significant determinants of liquidity risk. Liquid asset ratio,

ownership type and size individually were not significant determinants of liquidity risk. The result of F test indicated that collectively capital adequacy, liquid asset ratio, ownership type, size and leverage were significant determinants of liquidity risk. The study concluded that collectively capital adequacy ratio, liquid asset ratio, ownership type, size and leverage were significant determinants of liquidity risk.

Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from emerging economies. Liquidity risk was measured using liquid assets to total assets ratio. The result showed that the size of a bank had a positive effect on liquidity risk, the ratio of equity to assets as a measure of capital adequacy had a negative effect on liquidity risk. The presence of prudential regulation compelling banks to be liquid enough, the share of public expenditure on GDP as a measure of supply of relatively liquid assets and the rate of inflation which increases the vulnerability of banks to nominal values of loans provided to customers were found to have negative effect on liquidity risk. The association between assets growth and financial performance was also found to be positive and significant.

Muteti (2012) studied the relationship between financial risk management and financial performance of commercial banks in Kenya. The study objective was to evaluate the relationship that existed between financial risk management and financial performance. The study adopted descriptive research design. It used Secondary Data collected from the Central Bank of Kenya and Commercial Banks in Kenya. Multiple regression analysis was used in data analysis. The financial risks considered included; credit risk, interest rate risk, foreign exchange risk, liquidity risk. The study found that credit risk, interest rate risk, foreign exchange risk, liquidity risk had a negative relationship with financial performance of

commercial banks in Kenya. The study recommended that management of commercial banks should better control credit risk exposure; maintain safe levels of liquidity and hedge against foreign exchange risk and interest rate risk.

Vodova (2011) studied the determinants of liquidity of commercial banks in Czech Republic during the 2006-2009 periods. The study emphasizes the determinants of liquidity risk measured with different balance sheet indices. The results show that the liquidity of Czech commercial banks is higher when capital adequacy is higher and when the interest rates on loans are higher. Furthermore, the liquidity measures identify a positive relationship with capitalization and with size, while they are negatively linked with inflation rate and GDP rate. The study finds that bigger banks present lower liquidity where it would seem that bigger banks are less motivated to hold liquidity since they rely on government intervention in case of shortages.

Aspachs, Nier and Tiesset (2005) evaluated bank specific and macroeconomic determinants of liquidity among UK banks. The ratio of liquid assets to the total assets was regressed against bank specific and macroeconomic variables. The results indicated that the probability of obtaining support from the lender of last resort, which should lower the incentive for holding liquid assets was positively related to liquidity risk. The desire to achieve higher net interest margins (higher profitability) which serves as a measure of opportunity costs of holding cash positively affected liquidity risk just as loan growth since higher loan growth signals increase in illiquid assets. It was also indicated that while the size of a bank had a non-linear effect on liquidity risk, GDP growth as an indicator of business cycle and short term interest rate had positive effects on liquidity risk.

Cucinelli (2013) evaluated the determinants of bank liquidity risk within the context of Euro area. The objective of this study was to analyze the type of relationship that exists between liquidity risk, measured with the liquidity coverage ratio and the net stable funding ratio, and some specific bank structure variables (size, capitalization, assets quality and specialization). The sample composed of 1080 listed and non-listed Eurozone banks. The study used ordinary least square regression using panel data analysis. The study found that bigger banks have a higher liquidity risk exposure, while banks with higher capitalization present a better liquidity on long horizon. The assets quality impacts only on the measure of the short term liquidity risk. The more specialized on the lending activity bank is engaged, showed a more vulnerable funding structure.

2.5 Critique of Empirical Literature

From the reviewed literature, various measures have been used to measure liquidity risk. Commonly referred to measures include loans to customers deposit ratio, interbank ratio and liquidity ratio. These ratios consider liquidity risk from different perspective and seek to provide a holistic view of liquidity risk. Loans to deposit ratio is an indicator of the extent to which a bank is exposed to liquidity risk in the event of depositors demanding their deposits which are held in long term rather illiquid loans. The higher this ratio is the higher the higher the liquidity risk a bank is exposed to. The interbank ratio considers the bank's ability to cover a short fall in liquidity from the interbank market. A high interbank ratio tends to reduce banks' exposure to liquidity risk. Liquidity ratio, the ratio of liquid assets to customer's deposits demonstrated a banks' ability to cover depositors demand on their

deposits from their most liquid assets. A high liquidity ratio will be indicative of lower liquidity risk but as noted earlier high liquidity results in lower profits due forgone investment opportunity. Liquidity risk management must therefore be looked at from two dimensions, the benefits of having liquidity and the risk of liquidity being low.

To understand and be able to manage liquidity risk, it is paramount for those responsible to understand the determinants of liquidity risk. Literature offers a range of factors that explain liquidity risk among commercial banks. Factors that affect liquidity risk are both bank specific as well as macroeconomic factors. The bank specific factors identified in literature include; bank size, liquid asset ratio, capital adequacy, asset quality, loan growth, ownership type, specialization, stock market listing and profitability. The macroeconomic factors include GDP growth and inflation rates. It would also be useful to take into account some other influences, such as leverage, listing status (public or private) changes in regulation, specialization and measure of lagged liquidity.

2.6 Research Gaps

Liquidity risk among commercial banks has drawn considerable interest among researchers. However most of the research studies are based on developed market economies especially Europe by Aspachs et al, (2005); Angora & Roulet, (2011); Bonfim & Kim (2011); Chen *et al* (2009); Cucinelli (2013); and Vodova, (2011). Further, the findings of these studies are mixed. Studies evaluating the determinants of liquidity risk in developing economies are however limited. Bunda and Desquilbet (2008) provide some evidence from developing economies focusing. Ogilo and Mugenya (2015) attempted to identify the determinants of

liquidity risk in Kenya, the study focused only on bank specific factors and failed to consider macroeconomic factors.

The contribution of this study is threefold; first, it provides more evidence on the factors that determine liquidity risk for commercial banks in developing countries, secondly, it considers both bank specific factors and macroeconomic determinants of liquidity risk and finally, evaluates how these factors affect the financial performance of commercial banks.

2.7 Summary

Liquidity risk has become a major area of concern for commercial banks managers and for regulators especially after the 2007-08 financial crises. There is more emphasis in financial system on understanding the determinants of liquidity risk and how better it can be managed. Liquidity risk captures the inability of a financial intermediary to service their liabilities as they fall due. By the nature of their operations commercial banks are inherently exposed to liquidity risk. Banks transform short term liquid deposits into long term illiquid loans. Liquidity is one of the important financial stability indicators since liquidity shortfall in one bank can cause systemic crisis in the banking sector due to their interconnected operations. Liquidity crises at one bank can easily spread to other banks resulting in bank runs.

High levels of liquidity held by a bank tend to reduce a bank's profitability due to the forgone returns on investments. On the other hand low liquidity levels exposes banks to liquidity stress with likely consequences of being put under receivership and eventual liquidation. Notably the root causes of liquidity risk include, failures of commercial banks to

have adequate framework for liquidity management, failure to adhere to the principles of liquidity risk management, failure of the central bank supervisory function, managerial incentives that are not properly aligned with the business risk tolerance and information asymmetries that exist within the financial system. Liquidity risk is determined by both bank specific and macroeconomic factors.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter addresses the research design that was used to achieve the aims and objectives of the study. The chapter also discusses the research design and the justification is given. The target population, sampling frame, sample size and sampling technique, data collection methods, data collection procedures, pilot test, data processing and analysis, statistical model and hypothesis testing that was used in the study are described.

3.2 Research Design

According to Shaughnessy, Zechmeister and Zechmeister (2002) there are many different types of research designs that can be used in research. This study used descriptive research design. Kothari (2004) indicates that, 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. Zikmund (2003) notes that, 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. The design is appropriate for the study as it will involve fact finding and reporting facts as they existed. Morgan (2007) explained that the advantage of this design is that the researcher is able to use various forms of data as well as incorporating human experience. The results will be reported using descriptive and inferential statistics.

3.3 Target Population

Population is the entire group of individuals, events or objects with some observable characteristics (Mugenda & Mugenda, 2008). A population is defined as total collection of elements about which we wish to make some inferences (Cooper & Schindler, 2011). Kitchenham and Pflieger (2002) assert that a target population is a group of individuals to whom the survey applies. Other scholars (Enarson, Kennedy & Miller, 2004) define target population as the collection of individuals about whom conclusions and inferences are made. Mugenda and Mugenda (2008) assert that target population is that population to which a researcher wants to generalize the results of his study. The target population was the 11 commercial banks listed at the Nairobi Securities Exchange between 2011 and 2015. This period is selected as it was preceded by the 2007/09 global financial crisis that brought banks liquidity into focus (Vodova, 2011).

3.4 Sampling Frame

According to Zikmund (2010) a sampling frame is the list of elements from which the sample may be drawn. Sampling frame is also defined as a list of elements from which a sample is actually drawn (Cooper & Schindler, 2011). For the purpose of this study sampling frame constitutes the members of the assets and liability management committee (ALCO) for each of the commercial banks listed at the NSE. The list of the members of these committees will be obtained from the annual reports of the commercial banks. This sampling frame is justified on the basis that the members of the assets and liabilities management committee are engaged in the daily liquidity risk management of the banks hence poses a good understanding of liquidity risk in commercial banks.

3.5 Sampling Size and Sampling Technique

The term sample is defined in various ways by different scholars. Bryman (2008) and Spiegel (2008) define a sample as a part of the total population. However, Kothari (2004) defines a sample as a collection of units chosen from the universe to represent it. The sample should be as representative as possible of the entire population.

In this study the sampling frame consists of the members of the assets and liabilities management committee for each of the list of commercial banks listed the NSE. The targeted sample size for this study is 42 respondents comprising 58.48 % of the members of the ALCO for the 11 listed commercial banks. After identifying the ALCO members for each bank, the sample were selected using stratified random sampling. Stratified random sampling is a probability sampling technique in which each element of the sample frame has an equal chance of being included in the sample. Probability sampling is superior to non-probability sampling in ensuring that selected samples represent the population (Hewitt & Cramer, 2011).

This study used proportional allocation to determine the size of each sample for different strata (Saunders, Lewis & Thornhill, 2007). The strata used for this study were the tier classification used by Central Bank of Kenya to classify banks into tier one, tier two or tier three. The sample size in this study will be determined using the following formula:

$$n = N (cv^2) / (cv^2 + (N-1) e^2)$$

Where n = sample size

N = target population

cv = co-efficient of variation which is taken as 0.5

e = Tolerance at desired level which is taken at 0.05 or at 95% confidence level

Using this formula, the sample size was computed thus:

$$N = 72 * (0.5)^2 / \{(0.5)^2 + (72-1) (0.05)^2\}$$

$$N = 72 * 0.25 / \{0.25 + (71 * 0.0025)\}$$

$$N = 18 / 0.4275$$

N = 42.105. This constituted 58.48 % of the target population.

The sample will be determined as shown in table 3.1 below

Table 3.1: Determination of Sample Size

Strata (Bank Tier)	Number of Banks in the stratum	Number of ALCO Members	Number included in the Sample Proportion
Large	6	48	28
Medium	5	24	14
Total	11	72	42

3.6 Data Collection Methods

The study used a questionnaire and a record survey sheet to obtain primary data and secondary data respectively. Data for the variables was collected from financial statements using a record survey sheet. Using record survey sheet, important figures from statements of comprehensive income and financial position were recorded for subsequent analysis. Data was obtained from Nairobi Securities Exchange Handbook and respective banks website. The data collected span a period of five years covering the period 2011 to 2015. The reason to restrict the period of the study to five years is because it constitutes the latest data which

will be readily available for this period. Primary data was obtained using a questionnaire structured according to each of the research objective

3.7 Data Collection Procedures

The data was collected through the use of record survey sheet and a self-administered questionnaire. Record survey sheet will be used to collect secondary data from financial statements that were obtained from the Nairobi Securities Exchange Handbook, Central Bank of Kenya and the respective banks website. Questionnaires were used by the researcher to obtain information or data from the respondents. Cooper and Schindler (2011) support the use of self-administered questionnaires in descriptive studies because they cost less. Saunders et al (2007) argue that self-administered questionnaires are usually completed by the respondents' electronically using internet, posted to respondents who return them by post after completion, or delivered by hand to each respondent and collected later. In this study drop and pick method was be used to administer the questionnaires. This method is convenient to use, cheap, easier and quicker to administer. It is also highly convenient for the respondents as they can complete the questionnaire during their spare time when their work load is manageable.

3.8 Pilot Test

The purpose of a pilot test is to detect weaknesses in the design and implementation of the record survey sheet and to provide proxy for data collection of a probability sample (Cooper & Schindler, 2011).

A pilot study was carried out to check on validity and reliability of the questionnaire in gathering the data. A sample of 2 listed Commercial Banks was picked. Return rate was 100%. Factor analysis was carried out with a threshold of a factor loading of 0.3. All composite measures that gave a factor loading of less than 0.3 were subsequently dropped from the questionnaire. The composite measures that were retained constituted all the questions in the questionnaire that were administered to the respondents during main study. The results of factor analysis are as shown in table 3.2.

Table 3.2 Factor Analysis Results

	Composite Measures	Dropped Measures	Retained Measures
Liquidity Level	5	0	5
Capital Adequacy	4	0	4
Asset Quality	5	0	5
Inflation	2	0	2

3.8.1 Validity of Research Instrument

Mcmillan and Schumacher (2010) describe validity as the degree of congruence between explanations of phenomena and the realities of the world. While absolute validity is difficult to establish, demonstrating the validity of a developing measure is very important in research (Bryman, 2008). This study will use both construct validity and content validity.

Construct validity is the extent to which the measurement questions actually measure the presence of those constructs one intended to measure (Saunders et al, 2007). In this study and for the purpose of construct validity, the questionnaire was divided into several sections to ensure that each section assesses information for a specific objective, and also ensure that the same is closely tied to conceptual framework of the study.

Content validity is the extent to which the measurement device provides adequate coverage of investigative questions. Creswell (2003) suggests that a colleague and / or an external auditor can provide additional insight into the study and research findings. To ensure content validity the questionnaire was subjected to thorough examination by two independent resource persons, from the Kenya Bankers Association. The resource persons were asked to evaluate the statements in the questionnaire for relevance and whether they were meaningful and clear.

3.8.2 Reliability of Research Instrument

Reliability has been defined by various scholars as the repeatability, stability or internal consistency of a questionnaire (Bryman, 2008; Cooper & Schindler, 2011; McMillan & Schumacher, 2010). The study used the Cronbach's alpha to determine how reliable the instrument was. Items in the questionnaire underwent reliability analysis in accordance with the four factors extracted. Gliem and Gliem (2003) recommend a Cronbach that exceeds 0.7. In this study, reliability of 0.7 and above was considered acceptable and the formula developed by Cronbach was used to calculate the alpha (Cronbach, 1951).

To determine reliability, the study used cronbach's alpha statistic with a threshold of more than 0.7.

Table 3.3 Reliability Test Results

Variable	Cronbach's alpha
Liquidity level	0.913
Capital Adequacy	0.713
Asset Quality	0.703
Inflation	0.843

Table 3.3 above showed the result of reliability test. All variables gave a cronbach's alpha of more than 0.7 and therefore were retained for analysis (Cronbach, 1951)

3.9 Data Processing and Analysis

Data was analyzed using statistical software for social scientists version 22 using multiple regression methodology in accordance with the objectives of the study. Correlation analysis was used to determine the relationship between liquidity risk determinants and financial performance. To establish the effect of liquidity risk determinants on financial performance, liquidity ratio, capital adequacy ratio, asset quality ratio, GDP growth and inflation rate was be regressed on return on assets.

3.9.1 Model Specification

The multiple regression models used to establish the determinants of liquidity risk was of the specific form;

$$ROA = \alpha + \beta_1 LIQ + \beta_2 CAR + \beta_3 ASSETQ + \beta_4 INF + \epsilon_i$$

Where:

α =constant term

$\beta_1 \beta_2 \beta_3 \beta_4 \beta_5$ = Coefficients for the independent variables

ROA= Return on assets

LIQ= Liquidity level

CAR=Capital adequacy ratio

ASSETQ=Asset quality

INF=Inflation

ϵ_i = Error term

3.9.2 Test of Statistical Significance

The statistical significance of each independent variable explaining liquidity risk was tested using student t-test at 5% level of significance. F-test was used to evaluate the overall significance of the regression model. The coefficient of determination, R^2 was used to assess the strength of the overall regression model.

3.9.3 Hypothesis Testing

Hypothesis testing explained whether the selected independent variable explain the financial performance of non-financial firms listed at NSE. The conclusions on the hypothesis are determined from the significance of the regression coefficient of each variable while the sign of the coefficients of each variable indicate the relationship between the independent and the dependent variables choice, whether there was a positive or negative relationship between them. If the p-value computed from the regression analysis is larger than the 5% significance level, then the hypothesis was rejected while when the p-value was smaller than the 5% significance level value the hypothesis was not rejected.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter focused on the analysis of the data collected and discussions of the findings. The chapter was organized to start with the pilot test results, followed by an analysis of the response rates, then analysis of findings, correlation analysis, regression analysis and finally discussion of the results. Data was analyzed using SPSS and presented using tabulations. Multiple regression technique was also used in the analysis.

4.2 Response Rates

Analysis of the rate at which questionnaires that was given out to the respondents and how they were returned for analysis in complete form is as analyzed in table 4.1 below.

Table 4.1 Analysis of Response Rate

	No of respondents	%valid	Cumulative %
Returned	37	89	89
Not returned	5	11	100
Total	42	100	

In this study, a target of 42 respondents was made. Only 5 questionnaires out of the 42 were not returned. This represented a response rate of 89 percent which is considered sufficient for the study. A high response rate is helpful to ensure that results are representative of the target population. Mugenda and Mugenda (2008) assert that a response rate of more than 50% is adequate for analysis.

4.3 Research Findings of Descriptive Analysis

The variables Liquidity level, Capital Adequacy, Asset Quality, and Inflation were used in this study as independent variables whilst the variable Financial Performance was used as dependent variables. The following section presents the research finding for each of the objectives in the study. The respondents were asked to indicate the extent to which they agreed or disagreed with specific statements on each aspect of financial performance of listed commercial banks.

4.3.1 The effect of liquidity level on financial performance of commercial banks listed at the NSE in Kenya

To establish the effect of liquidity level on financial performance of commercial banks, the respondents were asked to indicate whether they agreed or disagreed with some statements.

The results obtained are shown on table 4.2 below and table 4.3 in appendix 4.

Table 4.2 Effect of Liquidity Level on Financial Performance

Statement	N	Mean	Std. Deviation
Adequate liquidity is paramount to the financial performance of commercial banks	37	1.6	0.5
The liquidity gap (loan less deposits) is an important determinant of financial performance for commercial banks	37	1.6	0.6
Banks that maintain a high level of liquid assets perform better financially	37	2.3	1.1
Increase in the minimum liquidity requirement for commercial banks would have a negative effect on financial performance of commercial banks	37	2.3	1.0
Commercial banks keep a regular watch over their liquidity ratios to comply with statutory requirements	37	1.7	0.6

Key: 0 ⇔ 1.5 strongly agree 1.6 ⇔ 2.5 agree, 2.6 ⇔ 3.5 not sure and 3.6 ⇔ 4.0 Disagree

Table 4.3 shows that the respondents agree that adequate liquidity is paramount to the financial performance of commercial banks (1.6) and liquidity gap is an important determinant of financial performance for commercial banks (1.6). Also the respondent agree that banks that maintain a high level of liquid assets perform better financially (2.3) they also agree that increase in the minimum liquidity requirement for commercial banks would have a negative effect on financial performance of commercial banks. The respondents agreed that commercial banks keep a regular watch over their liquidity ratios to comply with statutory requirements (1.7).

4.3.2 Effect of capital adequacy on financial performance of commercial banks listed at the NSE in Kenya

Results on whether the respondents agreed or disagreed to various statements relating to the effect of capital adequacy on the financial performance of commercial banks are presented in table 4.4 and table 4.5 in appendix 4.

Table 4.4 Effect of Capital Adequacy on Financial Performance

Statement	N	Mean	Std. Deviation
The amount of capital in a bank affect the banks liquidity level	37	1.6	0.5
Banks with a high level of core capital perform better financially	37	1.6	0.5
An increase in statutory capital for commercial banks would improve the financial performance	37	2.0	0.9
The ratio of core capital to customers deposit is an important financial performance measure for commercial banks	37	1.7	0.6

Key: 0 ⇔ 1.5 strongly agree 1.6 ⇔ 2.5 agree, 2.6 ⇔ 3.5 not sure and 3.6 ⇔ 4.0 Disagree

Table 4.7 indicate that the respondents agreed that the amount of bank capital affect the liquidity level of commercial banks (1.6) they also agreed that banks with high level of core capital perform better financially (1.6). Further the respondents agreed that increase in statutory capital for commercial banks would improve banks financial performance (2.0). The respondents also agreed that the ratio of core capital to customer deposits was an important measure of financial performance.

4.3.3 The effect of asset quality on financial performance of listed commercial banks in Kenya

To establish the effect of asset quality on financial performance of commercial banks, the respondents were asked to indicate whether they agreed or disagreed with some statements. The results obtained are shown on table 4.6 below and table 4.7 in appendix 4

Table 4.6: Effect of Asset Quality on Financial Performance

Statement	N	Mean	Std. Deviation
The quality of a bank's assets affect the banks liquidity position	37	1.8	0.6
The quality of the bank's loan book is a major determinant of financial performance	37	1.6	0.5
Banks with diversified loan portfolios perform better financially	37	3.4	0.8
Increase in nonperforming loans have a significantly negative effect on the financial performance of commercial banks	37	1.8	0.6
Commercial banks carefully evaluate loans applications and monitor borrower activities regularly	37	3.1	0.9

Key: 0 ⇔ 1.5 strongly agree 1.6 ⇔ 2.5 agree, 2.6 ⇔ 3.5 not sure and 3.6 ⇔ 4.0 Disagree

Table 4.6 indicates that the respondents agreed that the quality of banks assets affect the liquidity position of commercial banks (1.8). The respondents agree that quality of the bank's loan book is a major determinant of financial performance (1.6). However the respondents were not sure that banks with diversified loan portfolios perform better financially (3.4). They agreed that increase in nonperforming loans have a significantly negative effect on the financial performance of commercial banks (1.8). The respondents were not sure whether commercial banks carefully evaluate loan applications and monitor borrowers' activities regularly.

4.3.4 The effect of Inflation financial performance on listed commercial banks in Kenya

To establish the effect of inflation on financial performance of commercial banks, the respondents were asked to indicate whether they agreed or disagreed with some statements.

The results obtained are shown on table 4.8 below and table 4.9 in appendix 4.

Table 4.8 Effect of Inflation on Financial performance

Statement	N	Mean	Std. Deviation
Level of inflation affect financial performance commercial banks	37	1.5	0.5
Inflation volatility affects financial performance of commercial banks more than the actual level of inflation	37	1.3	0.4

Key: 0 ⇔ 1.5 strongly agree 1.6 ⇔ 2.5 agree, 2.6 ⇔ 3.5 not sure and 3.6 ⇔ 4.0 Disagree

Table 4.8 shows that the respondents agreed that high levels of inflation affect performance of commercial banks (1.5). The respondents strongly agreed that inflation volatility affects financial performance of commercial banks more than the actual level of inflation (1.3).

4.4 Inferential Analysis of the Findings

The relationship between the independent variables (Return on assets, Liquidity level, Capital adequacy, Asset quality and Inflation) and the dependent variable (financial performance) was determined using an inferential analysis. This involved a coefficient of determination as well as a multiple regression analysis.

4.4.1 Correlation Analysis of the Findings

A correlation coefficient is a statistic that describes the degree of linear association between two variables. The table below shows the correlation between return on assets, liquidity level, capital adequacy, asset quality and inflation.

Table 4.10 Correlation Matrix

		Return on assets	Liquidity Level	Capital adequacy	Asset quality	Inflation
Return on assets	Pearson Correlation	1	0.302	0.794	0.424	-0.590
	Sig. (2-tailed)		0.193	0.024*	0.018*	0.429
	N	37	37	37	37	37
Liquidity Level	Pearson Correlation		1	0.201	-0.224	0.117
	Sig. (2-tailed)			0.232	0.013*	0.491
	N		37	37	37	37
Capital adequacy	Pearson Correlation			1	-0.097	-0.763
	Sig. (2-tailed)				0.569	0.015*
	N			37	37	37
Asset quality	Pearson Correlation				1	0.020
	Sig. (2-tailed)					0.011*
	N				37	37
Inflation	Pearson Correlation					1
	Sig. (2-tailed)					
	N					37

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

Table 4.10 shows that return on assets and liquidity had a correlation coefficient of 0.302 with a p-value of 0.193. This showed that return on assets and liquidity level had a positive correlation. The correlation was not significant at 5% level of significance since the p-value

0.193 is greater than 0.05. Return on assets and capital adequacy had a correlation coefficient of 0.794 with a p-value of 0.024. This result showed that return on assets and capital adequacy had a positive correlation and the correlation was significant at 5% as the p-value 0.024 is less than 0.05. The coefficient of correlation between return on assets and asset quality was found to be 0.424 with a p-value of 0.018. Return on assets and asset quality had a positive correlation. The correlation is significant since p-value 0.018 is less than 0.05. The correlation coefficient between return on assets and inflation was determined as -0.59 with a p-value of 0.429. The correlation was thus not significant at 5% level of significance since the p-value 0.429 is greater than 0.05.

4.4.2 Regression Analysis of the Findings

To evaluate the effect of liquidity level, capital adequacy, asset quality and inflation the respondent's response to these variables were regressed on a five year average return on assets for the listed commercial banks. The results of this regression are presented in table 4.11.

Table 4.11 Regression coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	0.053	0.016		3.369	0.002
Liquidity	0.003	0.006	0.094	0.479	0.635
Capital adequacy	0.004	0.001	0.127	4.704	0.024
Asset quality	0.006	0.002	0.234	3.347	0.019
Inflation	-0.004	0.001	-0.139	-2.825	0.046

The result in table 4.11 showed that the regression had a constant of 0.053. Liquidity has a coefficient of 0.003 with a p-value of 0.635. Capital adequacy had a coefficient of 0.004 with a p-value of 0.024. Asset quality had a coefficient of 0.006 with a p-value of 0.019. Inflation had a coefficient of -0.004 with a p-value 0.046.

The resulting regression model was;

$$ROA=0.053+0.004CAR+0.006ASSETQ-0.004INF$$

The constant value of 0.053 indicates the return on assets that would be obtained when liquidity level, capital adequacy, asset quality and inflation were zero. This can be interpreted as the level of return on assets not influenced by capital adequacy, asset quality and inflation. The coefficient of capital adequacy 0.004 indicates the increase in return on assets that are associated to a unit increase in the amount of bank capital. The coefficient of asset quality 0.006 indicates the increase in return on assets associated with a unit increase in the quality of banks assets. The coefficient of inflation -0.004 indicated the rate at which return on assets would decline a unit increase in the rate of inflation.

Table 4.12 Analysis of variance (ANOVA)

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	0.111	5	0.022	11.032	0.017 ^a
Residual	0.062	31	0.002		
Total	0.173	36			

Table 4.12 showed the result of analysis of variance. The analysis indicates the overall significance of the variable in a regression on the dependent variable. The F ratio was found to be 11.032 with a significance probability of 0.017.

Table 4.13 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.801 ^a	0.642	0.326	0.044721

The coefficient of determination was found to be 0.642 as reported in table 4.13. This result showed that variation in liquidity level, capital adequacy, asset quality and inflation explained 64.2% of the variation in return on assets.

4.5 Hypothesis Testing

H₀₁: Liquidity level does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya.

The results obtained indicate that the regression coefficient for liquidity level was 0.003 and a p-value of 0.635. Since P-value was > 0.05 it meant that the effect of liquidity level on return on assets of commercial banks listed at the NSE in Kenya was not significant at 5% level. This implied that a significant proportion of the variance of return on assets of commercial banks was not explained by liquidity level. Thus the null hypothesis that liquidity level did not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya was not rejected.

H₀₂: Capital adequacy does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya.

The results obtained indicate that the regression coefficient for capital adequacy was 0.004 with a p-value of 0.024. Since p-value was < 0.05 ; capital adequacy had a significant effect on financial performance of commercial banks listed at the NSE in Kenya. This implied that a significant proportion of the variance of return on assets of commercial banks was explained by capital adequacy (Table 4.11). Thus the null hypothesis that capital adequacy did not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya was rejected.

H₀₃: Asset quality does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya.

The results obtained indicate that the regression coefficient for asset quality was 0.006 and a p-value of 0.019. Since p-value was < 0.05 , the effect of asset quality on return on assets for commercial banks listed at the NSE in Kenya was significant. This implied that significant proportion of the variance of return on assets of commercial banks was explained by asset quality (Table 4.11). Thus the null hypothesis that asset quality did not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya was rejected.

H₀₄: Inflation has no significant effect on the financial performance of commercial banks listed at the NSE in Kenya.

The results obtained indicate that the regression coefficient for inflation was -0.064 and a p-value of 0.046. Since p-value is < 0.05 , the effect of inflation on return on assets of commercial banks listed at the NSE in Kenya was significant. This implied that a significant

proportion of the variance of return on assets of commercial banks was explained by inflation (Table 4.11). Thus the hypothesis that inflation did not have a significant effect on the return on assets of commercial banks listed at the NSE in Kenya was rejected.

4.6 Discussion of Findings

The overall objective of this study was to determine how liquidity risk determinants affect financial performance of commercial banks listed at the NSE. The identified liquidity risk determinants were liquidity level, capital adequacy, asset quality and inflation specifically the study sought to examine the effect of liquidity level, capital adequacy, asset quality and macroeconomic factors on financial performance of commercial banks listed at the NSE in Kenya.

Liquidity is the ability of a commercial bank to meet its obligation as they fall due. This study found that liquidity is paramount to the financial performance of commercial banks. Liquidity gap was found to be an important determinant of financial performance of commercial banks listed on the NSE. Also the study noted that banks with high level of liquid assets perform better financially. These findings concur with those of Ajibike and Aremu (2015) that liquidity risk (liquidity gap) was a major determinant of commercial bank profitability. The study noted that increase in the minimum liquidity requirement for commercial banks would have a negative effect on financial performance of commercial banks. This finding could be attributed to the opportunity cost of holding liquid assets as noted in Aspachs et al (2005). Compliance with liquidity guidelines issued by regulators is important for commercial banks consistent with the findings of this study that commercial banks keep a regular watch over their liquidity ratios to comply with statutory requirements.

The study did not reject the hypothesis that liquidity level does not have a significant effect on financial performance of commercial listed on the NSE. This contradicted the finding by Makaa (2013) who found that liquidity had a significant negative effect on financial performance of commercial banks.

The amount of capital in a bank influences its flexibility and the ability to take on additional business. This study found that capital adequacy had a positive effect on return on assets. This indicated that banks with higher levels of capital perform better financially. This concurred with the findings of Trabelsi (2015). Consistent to this line of argument is the finding of this study that increase in the amount of statutory capital would improve financial performance of commercial banks listed on the NSE. Similar to Bonfim & Kim (2011) the study noted that the amount of bank capital affect the liquidity risk of commercial banks.

The quality of a bank's assets is largely dependent on its loan portfolio composition. The quality of assets determines the collectability of capital loans and interest thereon. As posited in Li (2007) and Cucinelli (2013) this study found that the quality of banks assets affects the liquidity position of the bank. The study noted that asset quality had a positive effect on financial performance. This suggested that banks with high quality assets perform better financially. Similar sentiment are expressed in Ongore and Kasu (2013) that found nonperforming loans (associated with poor assets quality) as having a negative effect on financial performance.

Inflation erodes the purchasing power of money. It increases the vulnerability of banks to nominal values of loans provided to customers. This study noted that inflation has a negative effect on the financial performance of commercial listed on the NSE. High levels of inflation

affect the financial performance of banks and the effect is significant. This is consistent with Ongore and Kasu (2013) and Bunda and Desquilbet (2008) that inflation is negatively correlated with financial performance of commercial banks. However this study observed that inflation volatility affects financial performance more than the actual levels of inflation.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this chapter the researcher summarizes the findings of the study based on the findings of the four objectives. In each case the researcher briefly states the findings and the effect on financial performance. At the end of the chapter, the researcher's states recommendations and highlight areas that need further research.

5.2 Summary

The overall objective of this study was to examine the effect of liquidity risk determinants on financial performance of commercial banks listed at the Nairobi Securities Exchange. The specific objectives of the study were; to determine the effect of liquidity level on financial performance of listed commercial banks, to establish the effect of capital adequacy on financial performance of listed commercial banks, to determine the effect of asset quality on financial performance of listed commercial banks and to establish the effect of inflation on financial performance of listed commercial banks. The research used a descriptive survey research design. The target population comprised of the 11 commercial banks listed at the Nairobi Securities Exchange. The study made use of primary and secondary data. A questionnaire was used to collect the primary data. A sample of 42 members of the assets and liabilities management committee was used. Secondary data was collected from banks annual reports submitted to the Central Bank of Kenya. Stratified sampling technique was used to select members of the sample. The study found that capital adequacy had a

significant positive effect on return on assets for commercial banks listed on the Nairobi Securities Exchange. It was found that for commercial banks listed on the Nairobi Securities Exchange, asset quality had a significant positive effect on return on assets. Also the study found that inflation had a significant negative effect on return on assets for commercial banks listed on the Nairobi Securities Exchange.

5.2.1 Liquidity Level

The study sought to determine the effect of liquidity level on the financial performance of commercial banks listed at the NSE in Kenya. With respect to this objective the study found that adequate liquidity was paramount to the financial performance of commercial banks listed on the NSE, liquidity gap was an important determinant of financial performance of commercial banks listed on the NSE and also found that commercial banks that maintain a high level of liquidity perform better financially. The study also found that increase in the minimum liquidity requirement for commercial banks would have a negative effect on financial performance of commercial banks and that commercial banks listed on the NSE keep a regular watch over their liquidity ratios to ensure compliance with statutory requirements. The study found that the hypothesis that liquidity level did not have a significant effect on financial performance of commercial banks listed on the NSE could not be rejected at 5% level of significance.

5.2.2 Capital Adequacy

The studies also sought to establish the effect of capital adequacy on the financial performance of commercial banks listed at the NSE in Kenya. The study found that banks with high level of core capital perform better financially and that increase in statutory capital for commercial banks listed on the NSE would improve banks financial performance.

Further it was found that the amount of bank capital affect the liquidity level of commercial banks.

5.2.3 Asset Quality

The study also sought to determine the effect of capital adequacy on the financial performance of commercial banks listed at the NSE in Kenya With respect to this objective, the study found that the quality of a bank's loan book was a major determinant of financial performance of listed commercial banks. The study found that increase in nonperforming loans affects the financial performance of commercial banks negatively. The study found that the quality of banks assets affect the liquidity position of commercial banks. The study failed to establish whether banks with diversified loan portfolios performed better financially. It also failed to establish whether commercial banks carefully evaluate loan applications and monitor borrowers' activities regularly.

5.2.4 Inflation

The study also sought to establish the effect of inflation on the financial performance of commercial banks listed at the NSE in Kenya. It was found that inflation had a negative effect on return on assets and the effect was significant. Thus the null hypothesis was rejected. The study found that high levels of inflation affect the financial performance of banks listed on the NSE. However it was found that inflation volatility had affected the financial performance of commercial than the actual levels of inflation.

5.3 Conclusions

This study sought to determine the effect of liquidity level on the financial performance of commercial banks listed on the NSE. The study concluded that liquidity levels had a positive

effect on financial performance of listed commercial banks but the effect was not significant. Further it was concluded that adequate liquidity is of paramount importance in the financial performance of commercial banks listed on the NSE. The study also concluded that liquidity gap is an important determinant of financial performance of commercial banks. The study also concluded that that an increase in the minimum liquidity ratio requirement for commercial banks would adversely affect financial performance. Further the study concluded that listed commercial banks do comply with the minimum statutory liquidity ratio.

The second objective of the study was to establish the effect of capital adequacy on financial performance of commercial banks listed on the NSE. The study established that capital adequacy had a positive and significant effect on the financial performance of listed commercial banks. Further the study concluded following; the amount of banks capital affected the liquidity level of commercial banks, banks with high level of core capital perform better financially, an increase in statutory capital would improve the financial performance for commercial banks listed on the NSE and that the ratio of core capital to customers deposit were an important measure of financial performance for commercial banks.

The third objective of the study was to determine the effect of asset quality on the financial performance of commercial banks listed on the NSE. The study concluded that asset quality had a positive effect on the financial performance of commercial banks listed on the NSE and the effect was significant. Further the study concluded the following; the quality of a bank's assets affected its liquidity position, the quality of a bank's loan book were a major

determinant of financial performance for commercial banks, increase in nonperforming loans negatively affected the financial performance of commercial banks and that commercial banks do not carefully evaluate loan applicants and monitor borrowers' activities regularly.

On the fourth objective the study sought to establish the effect of inflation on the financial performance of commercial banks listed on the NSE. The study established that inflation had a significantly negative effect on the financial performance of listed commercial banks. Further the study concluded that high levels of inflation affected the financial performance of commercial banks. However inflation volatility affected financial performance more than did the actual levels of inflation.

5.4 Recommendations

Based on the first objective the study recommends that since liquidity levels had a positive effect on financial performance and was noted as being of paramount importance in the performance of commercial banks, the listed commercial banks should maintain their levels of liquidity at optimal levels. Also the study recommended that commercial banks should manage the liquidity gap carefully as it was noted to be an important determinant of financial performance. Further the study recommends that the regulator of commercial banks should be cautious about increasing the minimum liquidity ratio as this would adversely affect the financial performance of commercial banks.

On the second objective the study recommends that listed commercial banks should increase the amount of core capital since capital adequacy was noted to have a positive and significant effect on financial performance and also because the amount of banks capital

affected the banks liquidity risk. Further the ratio of core capital to customers deposit was an important measure of financial performance.

The study found that asset quality had a positive effect on the financial performance of listed commercial banks. It therefore recommends that commercial banks should maintain level quality of assets especially loans as the quality of the bank's loan book was noted a major determinant of financial performance. Also the study recommends that banks should enhance their screening of borrowers so as to lend only to good quality credits and also monitor the activities of the borrower closely once a loan is granted to ensure the loaned money are properly utilized and the loans serviced.

The study found that high levels of inflation affected the financial performance of listed commercial banks negatively and that inflation volatility was of more effect than the actual levels of inflation. The study recommended that commercial banks should devise strategies to protect themselves against spikes in inflation rates as well as inflation volatility. Such may involve originating loans which are inflation protected.

5.5 Suggestions for Further Research

This study considered only one macroeconomic variable-inflation. Further research may evaluate the effect of other macroeconomic variables such as GDP growth and broad money supply on the financial performance of commercial banks. Also this study measured financial performance using return on assets which are subject to bias in measurement. Further research may evaluate the effect of liquidity risk determinants on stock returns of listed commercial banks.

This study focused only on the listed commercial banks in Kenya. Additional research may consider evaluating the effect the effect of liquidity risk determinants on the non-listed commercial banks, microfinance institutions and savings and credit societies. Further additional research may evaluate the effect of credit risk management on the financial performance of commercial banks in Kenya. In addition future research may evaluate the effect of interest rate regulation on the financial performance of commercial banks in Kenya.

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APPENDICES

Appendix 1: Letter Seeking Authority

DAVIES MUSEMBI

Cell: 0716 461739

Email: davies.mulih@gmail.com

THROUGH BANK MANAGER

To

Chief Finance Officer

Dear Respondent,

REF: REQUEST FOR AUTHORITY TO CARRY OUT ACADEMIC RESEARCH

I am a graduate student of Technical university of Mombasa pursuing Master in Business Administration –Finance option. As part of the requirements for the award of this degree, I am expected to carry out a research and present a report to the university. My research interest is on **EFFECT OF LIQUIDITY RISK DETERMINANTS ON THE FINANCIAL PERFORMANCE OF LISTED COMMERCIAL BANKS AT NSE IN KENYA**

I am kindly requesting for your support to enable me achieve this endeavor by allowing all the departmental heads to participate in answering the questionnaires. The information provided shall be analyzed to determine **the effect of liquidity risk determinants on the financial performance of listed commercial banks at NSE in Kenya**

You are assured of absolute confidentiality, as the information collected will be strictly for academic purposes only.

Thank you.

Yours faithfully,

Davies Musembi

Appendix 2: Questionnaire

Introduction

I am a student at Technical University of Mombasa pursuing Master in Business Administration (Finance Option). My Research Project is **on effect of liquidity risk determinants on the financial performance of listed commercial banks at NSE in Kenya**. This questionnaire is aimed at collecting information on the given topic. The information provided will be held confidential and used for the purpose of enabling the researcher accomplishes the academic requirement.

Instructions

Please respond each question by putting a tick (√)

PART - A

Background Information

Bank.....

Branch.....

PART-B

The effect of Liquidity level on financial performance on listed commercial banks in Kenya

Instruction: Below are lists of statements pertaining liquidity risk among commercial banks. Please indicate whether you agree or disagree with each statement by ticking (√) on the spaces that specify your choice from the options that range from "strongly agree" to "strongly disagree". Each choice will be identified by numbers ranging from 1 to 4.

Note: SA- Strongly Agree= 1, A- Agree= 2, N-Not sure=3, D-Disagree= 4

STATEMENT	SA	A	N	D
1. Adequate liquidity is paramount to the financial performance of commercial banks				
2. The liquidity gap (loan less deposits) is an important determinant of financial performance for commercial banks				
3. Banks that maintain a high level of liquid assets perform better financially				
4. Increase in the minimum liquidity requirement for commercial banks would have a negative effect on financial performance of commercial banks				
5. Commercial banks keep a regular watch over their liquidity ratios to comply with statutory requirements				

PART- C**The effect of capital adequacy on financial performance on listed commercial banks in Kenya**

STATEMENT	SA	A	N	D
1. The amount of capital in a bank affect the banks liquidity level				
2. Banks with a high level of core capital perform better financially				
3.An increase in statutory capital for commercial banks would improve the financial performance				
4. The ratio of core capital to customers deposit is an important financial performance measure for commercial banks				

PART-D**The effect of Asset quality on financial performance on listed commercial banks in Kenya**

STATEMENT	SA	A	N	D
1. The quality of a bank's assets affect the banks liquidity position				
2. The quality of the bank's loan book is a major determinant of financial performance.				
3.banks with diversified loan portfolios perform better financially				
4.Increase in nonperforming loans have a significantly negative effect on the financial performance of commercial banks				
5.Commercial banks carefully evaluate loans applications and monitor borrower activities regularly				

PART E**The effect of Inflation on financial performance on listed commercial banks in Kenya**

STATEMENT	SA	A	N	D
1. level of inflation affect financial performance commercial banks				
2. Inflation volatility affects financial performance of commercial banks more than the actual level of inflation				

Thank you for your cooperation

Appendix 3: Record Survey Sheet

Financial Performance of the Listed Commercial Banks

Financial Performance is a measure of efficiency to meet financial obligation by ensuring sound liquidity, solvency and profitability as well maintaining positive value of assets. It's measured by Return on Assets (ROA) given by Earnings After Profit divided by Total Assets. The following information will help to establish the ROA:

Data Element	Financial Year				
	2015	2014	2013	2012	2011
Earnings after Tax					
Total Assets					
ROA					

Appendix 4: Analysis of questionnaire results

Key: 1 = Strongly Agree, 2 = Agree, 3 = Not sure, 4 =Disagree

Table 4.3: Liquidity Level result

STATEMENT	1 %	2 %	3 %	4 %	Likert Mean
1. Adequate liquidity is paramount to the financial performance of commercial banks	40.5	59.5	0.0	0.0	1.6
2. The liquidity gap (loan less deposits) is an important determinant of financial performance for commercial banks	43.2	54.1	2.7	0.0	1.6
3. Banks that maintain a high level of liquid assets perform better financially	27.0	37.8	13.5	21.6	2.3
4. Increase in the minimum liquidity requirement for commercial banks would have a negative effect on financial performance of commercial banks	24.3	45.9	8.1	21.6	2.3
5. Commercial banks keep a regular watch over their liquidity ratios to comply with statutory requirements	32.4	62.2	5.4	0.0	1.7
Average	33.48	51.9	5.94	8.64	

Table 4.5: Capital adequacy result

STATEMENT	SA %	A %	N %	D %	Likert Mean
1. The amount of capital in a bank affect the banks liquidity level	40.5	59.5	0.0	0.0	1.6
2. Banks with a high level of core capital perform better financially	35.1	64.9	0.0	0.0	1.6
3. An increase in statutory capital for commercial banks would improve the financial performance	24.3	51.4	16.2	8.1	2.0
4. The ratio of core capital to customers deposit is an important financial performance measure for commercial banks	32.4	62.2	5.4	0	1.7

Table 4.7: Asset quality result

STATEMENT	SA %	A %	N %	D %	Likert Mean
1. The quality of a bank's assets affect the banks liquidity position	24.3	73	0.0	2.7	1.8
2. The quality of the bank's loan book is a major determinant of financial performance.	40.5	56.8	2.7	0.0	1.6
3. banks with diversified loan portfolios perform better financially	5.4	5.4	37.8	51.4	3.4
4. Increase in nonperforming loans have a significantly negative effect on the financial performance of commercial banks	32.4	56.8	10.8	0.0	1.8
5. Commercial banks carefully evaluate loans applications and monitor borrower activities regularly	2.7	24.3	32.4	40.5	3.1

Table 4.9 Inflation result

STATEMENT	SA %	A %	N %	D %	Likert mean
1. High level of inflation affect financial performance commercial banks	48.6	51.4	0.0	0.0	1.5
2. Inflation volatility affects financial performance of commercial banks more than the actual level of inflation	62.2	37.8	0.0	0.0	1.3
Average	55.4	44.6	0.0	0.0	1.4

Appendix 5: Financial Ratios: Return on assets

YEAR	2015	2014	2013	2012	2011	AVERAGE
HFCK	0.021243	0.025944	0.02217	0.030527	0.021478	0.024272
EQUITY	0.072576	0.076547	0.074411	0.068419	0.065784	0.071547
KCB	0.059321	0.054888	0.05181	0.049849	0.043254	0.051824
COOP	0.044271	0.046772	0.047951	0.036764	0.031245	0.041401
STAN	0.06423	0.060383	0.058923	0.050255	0.04871	0.0565
BBK	0.054388	0.057587	0.07034	0.071803	0.06984	0.064791
I&M	0.056439	0.054933	0.051595	0.057956	0.051356	0.054456
CFC	0.043135	0.041031	0.035328	0.022329	0.023212	0.033007
DTB	0.044675	0.048766	0.049412	0.041935	0.03945	0.044848
NIC	0.044359	0.048894	0.042359	0.045678	0.042315	0.044721
NBK	0.01898	0.019234	0.01708	0.035593	0.023145	0.022806

Appendix 6: Commercial banks listed on the NSE as at 31st December, 2016

1. Barclays Bank Ltd
2. I&M Holdings Ltd
3. CFC Stanbic Holdings Ltd
4. Diamond Trust Bank Kenya Ltd
5. Housing Finance Co Ltd
6. Kenya Commercial Bank Ltd
7. National Bank of Kenya Ltd
8. NIC Bank Ltd
9. Standard Chartered Bank Ltd
10. Equity Bank Ltd
11. The Co-operative Bank of Kenya

Source: (NSE, 2016)