Effect of Liquidity Risk Determinants on the Financial Performance of Commercial Banks Listed At the Nairobi Securities Exchange

Davies Muinde Musembi, Dr. Banafa Ali & Dr. William Kingi
Master of Business Administration, Finance Option
Technical University of Mombasa.

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 determine 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 examine the effect of liquidity level on financial performance of listed commercial banks, to examine the effect of capital adequacy on financial performance of listed commercial banks, to examine the effect of asset quality on financial performance of listed commercial banks and to examine 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 liquidity level had a positive effect on return on assets for listed commercial banks but the effect was not significant. 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 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 recommended that to optimize financial performance, commercial banks listed on the Nairobi Securities Exchange should identify and maintain optimal levels of liquidity. The study recommended that 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 recommended that commercial banks should contract and maintain high quality assets especially the loan portfolios. Also the study recommended that commercial banks listed on the Nairobi Securities Exchange should devise strategies to protect themselves against high inflation rates as well as inflation volatility.

INTRODUCTION

1.1 Background of the Study
The main role of banks in the financial system is to provide liquidity through intermediation. Banks intermediate between depositors and investors and provide illiquid loans to borrowers which are funded with liquid deposits from the depositors. In performing this role, banks transform short maturities into longer maturities in order to create funding liquidity for investors and to promote the efficient allocation of resources in the system (Strahan, 2008). This leaves the banks exposed to a maturity mismatch. This mismatch can cause instability in the bank in its role as provider of liquidity upon demand to depositors-through deposit transactions, or borrowers-through committed lines of credit (Drehmann and Nikolaou, 2009).

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). BIS
financial sector a liquidity shortage from the Central Bank of Kenya. Central bank of Kenya regulates and prudential guidelines issued by the regulations and prudent guidelines issued by the provisions of the Banking Act and commercial banks are licensed and regulated 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.

BIS (2008) recommend 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.

In Kenya commercial banks dominate the 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 prudent 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.

1.1.1 Liquidity Risk
Liquidity risk is the possibility that over a specific time period, the bank will become unable to settle obligations with immediacy (Drehmann and Nikolaou, 2009). It is a risk arising from a bank’s inability to meet its obligations when they come due without incurring unacceptable losses. This risk can adversely affect both banks’ earnings and the capital and therefore, it becomes the top priority of a bank’s management to ensure the availability of sufficient funds to meet future demands of providers and borrowers, at reasonable costs. The vulnerability of banks to liquidity risk is determined by the funding risk and the market risk. Liquidity risk needs to be monitored as part of the enterprise-wide risk management process, taking into account market risk and credit risk to ensure stability in the balance sheet and dynamic management of liquidity risk (Decker, 2010). Jenkinson (2008) notes that liquidity risk not only affects the performance of a bank but also its reputation. A bank may lose the confidence of its depositors if funds are not timely provided to them. The bank’s reputation may become at stake in this situation.

Vodova (2011) consider that there are a number of root causes of liquidity risk within the commercial banking system. Liquidity risk exposure exists when commercial banks don’t have adequate framework to satisfactorily account for the liquidity risks posed by individual products and business lines. Incentives at the business level get misaligned with the overall risk tolerance of the bank. Banks may fail to consider the amount of liquidity they might need to satisfy contingent obligations, either contractual or non-contractual, if they view funding of these obligations to be highly unlikely. Banks may also fail to adhere to the principles of liquidity risk management when liquidity is plentiful. Bunda and Desquilbet (2008) also cite the failure of central bank supervision on liquidity of commercial banks as a reason why bank managers’ may fail to comply with regulations.

1.1.2 Financial Performance
Financial performance measures how well a firm is generating value for the owners. It can be measured through various financial measures such as profit after tax, return on assets (ROA), return on equity (ROE), earnings per share and any market value ratio that is generally accepted (Pandey, 2010). The financial performance of financial institutions can be measured using a combination of financial ratios analysis, benchmarking, and
measuring performance against budget or a mix of these methodologies. The financial statements of financial institutions commonly contain a variety of financial ratios designed to give an indication of the corporation’s performance (Oye, 2006).

Rahaman (2010) argued that, financial performance of a firm normally originates from the financial position and structure of the firm. This information is derived from the financial statement which is the yard stick to evaluate and monitor performance. Business executives use financial statements to draft a comprehensive financial plan that will maximize shareholders wealth and minimize possible risks that may preexist. Financial statements evaluate the financial position and performance of a firm. These statements are prepared and produced for external stakeholders for example: shareholders, government agencies and lenders (Khrawish, 2011).

1.1.3 Effect of Liquidity Risk on Financial Performance
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 (BCBS 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 and 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 and 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).

1.1.4 Profile of Commercial Banks in Kenya
In Kenya the banking sector is regulated by and supervised by the Central Bank of Kenya. During the year ended December 2015, the sector comprised 43 commercial banks, 1 mortgage finance company, 10 microfinance banks, 8 representative offices of foreign banks, 86 foreign exchange bureaus, 14 money remittance providers and 2 credit reference bureaus. 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. The 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.

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 and 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 et al (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 and Mugenya (2015). The ability of commercial banks to manage liquidity risk is affected by macroeconomic factors such as inflation (Vodova, 2011; Bunda and Desquilbet, 2008)) and gross domestic product (Valla, 2006; Angora and 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 determine 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 determine the effect of capital adequacy on financial performance of commercial banks listed at the NSE in Kenya.
iii To determine the effect of asset quality on financial performance of commercial banks listed at the NSE in Kenya.
iv To determine the effect of inflation on financial performance of commercial banks listed at the NSE in Kenya.

1.4 Research Questions
This study sought to address the following research questions.

i What is the effect of liquidity level on financial performance of commercial banks listed at the NSE in Kenya?
ii What is the effect of capital adequacy on financial performance of commercial banks listed at the NSE in Kenya?
iii What is the effect of asset quality on financial performance of commercial banks listed at the NSE in Kenya?
iv What is the effect of inflation on financial performance of commercial banks listed at the NSE in Kenya?

1.5 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.
1.6 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 able to 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.

1.7 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.

1.8 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.

LITERATURE REVIEW

2.1 Introduction
This chapter reviews various theories suggested to explain liquidity risk within financial institutions, related empirical evidence and a discussion of the hypothesized variables. 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
This theory was developed by Moulton in 1918. 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. Brunetti, Filippo 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
congruent 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 and
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
and 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 comprise of four
independent variables and one dependent variable.
The selection of variables was based on previous
relevant studies.
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 will be used to measure effects of liquidity risk determinants. They include liquidity level, capital adequacy, asset quality and macroeconomic variables. The dependent variable is financial performance which will be 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 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 & Phillippatos, 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 and 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 (LCR and NSFR), 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, etc.). 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 & Kim (2011) in a study on European and North American banks in the 2002-2009 period 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 regression. 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.

Ogil 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 are indicators of the extent to which a bank is exposed to 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 likelihood 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.

2.7 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 (Aspachs et al, 2005); (Angora and Roulet, 2011); (Bonfim & Kim, 2011); (Chen et al, 2009); (Cucinelli, 2013); (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 Mughenya (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.

RESEARCH METHODOLOGY

3.1 Introduction

This chapter addresses the research design that was used to achieve the aims and objectives of the study. Part 3.2 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 testing that was used in the study are described in part 3.2 to 3.9.
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 and Mugenda, 2003). A population is defined as total collection of elements about which we wish to make some inferences (Cooper & Schindler, 2011). Kitchenham and Pfleeger (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 (2004) 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 (Appendix I). 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 liabilities 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 (Howitt and Cramer, 2011).

This study used proportional allocation to determine the size of each sample for different strata (Saunders, Lewis and Thornhill, 2007). The sample will be stratified into the 11 commercial banks as per CBK website. The sample size in this study will be determined using the following formula:
### Listed Commercial Banks

<table>
<thead>
<tr>
<th>Listed Commercial Banks</th>
<th>Number of ALCO Members</th>
<th>Percentage Ratio (%)</th>
<th>Number included in the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barclays bank ltd</td>
<td>8</td>
<td>11.11</td>
<td>5</td>
</tr>
<tr>
<td>I &amp; M Holding Ltd</td>
<td>6</td>
<td>8.33</td>
<td>3</td>
</tr>
<tr>
<td>CFC Stanbic ltd</td>
<td>8</td>
<td>11.11</td>
<td>5</td>
</tr>
<tr>
<td>Diamond Trust</td>
<td>6</td>
<td>8.33</td>
<td>3</td>
</tr>
<tr>
<td>Housing Finance Co.</td>
<td>4</td>
<td>5.56</td>
<td>2</td>
</tr>
<tr>
<td>Kenya Commercial Bank</td>
<td>8</td>
<td>11.11</td>
<td>5</td>
</tr>
<tr>
<td>National Bank of Kenya</td>
<td>8</td>
<td>11.11</td>
<td>5</td>
</tr>
<tr>
<td>NIC Bank ltd</td>
<td>6</td>
<td>8.33</td>
<td>3</td>
</tr>
<tr>
<td>Standard Chartered Bank of Kenya</td>
<td>6</td>
<td>8.33</td>
<td>3</td>
</tr>
<tr>
<td>Equity Bank Ltd</td>
<td>4</td>
<td>5.56</td>
<td>2</td>
</tr>
<tr>
<td>Cooperative Bank of Kenya ltd</td>
<td>8</td>
<td>11.11</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>72</strong></td>
<td><strong>100.00</strong></td>
<td><strong>42</strong></td>
</tr>
</tbody>
</table>

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). Other scholars argue that the purpose of pilot testing is to establish the accuracy and appropriateness of the research design and instrumentation (Saunders et al, 2007). Thus, to check the validity and reliability of the questionnaire in gathering the data required for the purposes of the study, a pilot study will be carried out.

Mugenda and Mugenda (2004) argue that the pre-test sample should be between 1% and 10% depending on the size of the sample, the larger the sample, the smaller the percentage. In this study, the questionnaire will be pilot tested on 10% of the population to ensure that the instrument is relevant and reliable. In a pilot test the respondents do not have to be statistically selected when testing for validity and reliability (Cooper & Schindler, 2006). The pre-test was conducted on two listed Commercial Banks at the NSE. The purpose of pre-testing was to refine the questionnaire and the record survey sheet and also ensure that the researcher knows exactly what to capture from the firms’ financial statements.
3.8.1 Validity of Research Instrument

Mcmillan & 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).

3.9 Data Processing and Analysis

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. 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. Data was analyzed using statistical software for social scientists version 22.

3.9.1 Model Specification

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

\[ \text{ROA}=\alpha +\beta_1\text{LIQ}+\beta_2\text{CAR}+\beta_3\text{ASSETQ}+\beta_4\text{INF}+\epsilon_i \]

Where:
- \( \alpha \) =constant term
- \( \beta_1, \beta_2, \beta_3, \beta_4 = \) Coefficients for the independent variables
- ROA = Return on assets
- LIQ = Liquidity level
- CAR = Capital adequacy ratio
- ASSETQ = Asset quality
- INF = Inflation
- \( \epsilon_i \) = 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.

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 Pilot Test Results

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 4.2.

<table>
<thead>
<tr>
<th>Composite</th>
<th>Dropped</th>
<th>Retained</th>
</tr>
</thead>
</table>

Table 4.2 Factor Analysis Results
To determine reliability, the study used cronbach’s alpha statistic with a threshold of more than 0.7.

Table 4.3 Reliability Test Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity level</td>
<td>0.913</td>
</tr>
<tr>
<td>Capital Adequacy</td>
<td>0.713</td>
</tr>
<tr>
<td>Asset Quality</td>
<td>0.703</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.843</td>
</tr>
</tbody>
</table>

Table 4.3 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.

4.3 Analysis of 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 4.4 below.

Table 4.4 Analysis of Response Rate

<table>
<thead>
<tr>
<th>No of respondents</th>
<th>%valid</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Returned</td>
<td>89</td>
<td>89</td>
</tr>
<tr>
<td>Not returned</td>
<td>11</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

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 (2004) assert that a response rate of more than 50% is adequate for analysis.

4.4 Analysis of Findings

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. The data obtained was analyzed using mean scores and standard deviations. A mean score of 1.5 or less implies that the respondents strongly agree with the statement, 1.6 to 2.5 implies respondents agreed while 2.6 to 3.5 not sure. A mean score of 3.6 to 4 implies respondents disagreed. A standard deviation of less than 1 means that there were no significant variations in responses while greater than 1 implies that there were significant variations in the responses.

4.4.1 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 4.5 below and table 4.6 in appendix IV.

Table 4.5 Effect of Liquidity level on financial performance

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate liquidity is paramount to the financial performance of commercial banks</td>
<td>37</td>
<td>1.6</td>
<td>0.5</td>
</tr>
<tr>
<td>The liquidity gap (loan less deposits) is an important determinant of financial performance for commercial banks</td>
<td>37</td>
<td>1.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Banks that maintain a high level of liquid assets perform better financially</td>
<td>37</td>
<td>2.3</td>
<td>1.1</td>
</tr>
</tbody>
</table>
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
Overall 37 1.6 0.6

Table 4.5 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). The overall standard deviation of 0.6 indicates that there were no significant variations in the responses.

4.4.2 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 4.7 and table 4.8 in appendix IV.

Table 4.7 Effect of Capital Adequacy on Financial Performance

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

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. The overall standard deviation of 0.6 indicates that there were no significant variations in the responses.

4.4.3 The effect of Asset quality on financial performance on 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 4.9 below and table 4.10 in appendix IV.

Table 4.9: Effect of Asset quality on financial performance

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

Overall

37  2.3  0.7

Table 4.9 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. The overall standard deviation of 0.7 indicates that there were no significant variations in the responses.

4.4.4 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 4.11 below and table 4.12 in appendix IV.

Table 4.11 Effect of Inflation on Financial performance

<table>
<thead>
<tr>
<th>Statement</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>High level of inflation affect financial performance commercial banks</td>
<td>37</td>
<td>1.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Inflation volatility affects financial performance of commercial banks more than the actual level of inflation</td>
<td>37</td>
<td>1.3</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td>37</td>
<td>1.4</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 4.11 shows that the respondents agreed that high levels of inflation affect co 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). The overall standard deviation of 0.5 indicates that there were no significant variations in the responses.

4.5 Correlation Analysis between Return on assets, Liquidity level, Capital adequacy, Asset quality and Inflation

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 4.13 Correlation Matrix: Correlation between Return on Assets, Liquidity level, Capital adequacy, Asset quality and Inflation

<table>
<thead>
<tr>
<th></th>
<th>Return on assets</th>
<th>Liquidity level</th>
<th>Capital adequacy</th>
<th>Asset quality</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Return on assets</strong></td>
<td>Pearson Correlation</td>
<td>.302</td>
<td>.794</td>
<td>.424</td>
<td>-.590</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.193</td>
<td>.24*</td>
<td>.018*</td>
<td>.429*</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td><strong>Liquidity Level</strong></td>
<td>Pearson Correlation</td>
<td>.201</td>
<td>-.224</td>
<td>.117</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.232</td>
<td>.013*</td>
<td>.491</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td><strong>Capital adequacy</strong></td>
<td>Pearson Correlation</td>
<td>-.097</td>
<td>-.763</td>
<td>.015*</td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.569</td>
<td>.011*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td><strong>Asset quality</strong></td>
<td>Pearson Correlation</td>
<td>.020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.13 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.

### 4.6 Regression Analysis

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 4.14:

**Table 4.14 Regression coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Constant</td>
<td>.053</td>
<td>.016</td>
</tr>
<tr>
<td>Liquidity</td>
<td>.003</td>
<td>.006</td>
</tr>
<tr>
<td>Capital adequacy</td>
<td>.004</td>
<td>.001</td>
</tr>
<tr>
<td>Asset quality</td>
<td>.006</td>
<td>.002</td>
</tr>
<tr>
<td>Inflation</td>
<td>-.004</td>
<td>.001</td>
</tr>
</tbody>
</table>

The result in table 4.14 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 of 0.046.

The resulting regression model was:

$$\text{ROA}=0.053+0.003\text{LIQ}+0.004\text{CAR}+0.006\text{ASSET}Q-0.004\text{INF}$$

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 liquidity level, capital adequacy, asset quality and inflation. The coefficient of liquidity 0.003 indicates the increase in return on assets that would occur due to a unit change in a bank's liquidity level. 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 4.15 Analysis of variance (ANOVA)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>.111</td>
<td>5</td>
<td>.022</td>
<td>11.032</td>
<td>.017*</td>
</tr>
<tr>
<td>Residual</td>
<td>.062</td>
<td>31</td>
<td>.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>.173</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.15 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 4.16 Model summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.801*</td>
<td>.642</td>
<td>.326</td>
<td>.044721</td>
</tr>
</tbody>
</table>

The coefficient of determination was found to be 0.642 as reported in table 4.16. This result showed that variation in liquidity level, capital adequacy, asset quality and inflation explained 64.2% of the variation in return on assets.

4.6 Hypothesis Testing

Hₐ₁: 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 .003 and a p-value of .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 (see Table 4.14). 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.

Hₐ₂: 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 .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 (see Table 4.14). 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.

Hₐ₃: 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 .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.

Hₐ₄: 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 -.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 (see Table 4.14). 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.

4.7 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. Liquidity gap was found to be an important determinant of financial performance of commercial banks listed at the NSE. Also the study noted that banks with high level of liquid assets perform better financially. These finding 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
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.

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 of findings

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

The study hypothesized that liquidity level does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya. It was found that liquidity level a positive effect on return on assets but the effect was not significant. Hence the null hypothesis could not be rejected. 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 Effect of capital adequacy on financial performance of commercial banks listed at the NSE in Kenya

The study hypothesized that capital adequacy does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya. It was found that capital adequacy had a positive effect on return on assets and the effect was significant. The null hypothesis was therefore rejected. 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 The effect of Asset quality on financial performance of listed commercial banks in Kenya
The study hypothesized that asset quality does not have a significant effect on financial performance of commercial banks listed at the NSE in Kenya. It was found that asset quality had a positive effect on return on assets and the effect was significant. This resulted in the null hypothesis being rejected. 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 The effect of Inflation on financial performance of listed commercial banks in Kenya
The study hypothesized that Inflation has no significant effect 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 determine the effect of capital adequacy on financial performance of commercial banks listed on the NSE. The study concluded 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 determine the effect of inflation on the financial performance of commercial banks listed on the NSE. The study concluded 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. In addition future research may evaluate the effect of interest rate regulation on the financial performance of commercial banks in Kenya.

REFERENCES


APPENDICES

Appendix I: 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 II: 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

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

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

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

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The quality of a bank’s assets affect the banks liquidity position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The quality of the bank’s loan book is a major determinant of financial performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Banks with diversified loan portfolios perform better financially</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Increase in nonperforming loans have a significantly negative effect on the financial performance of commercial banks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Commercial banks carefully evaluate loans applications and monitor borrower activities regularly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PART E
The effect of Inflation on financial performance on listed commercial banks in Kenya

STATEMENT

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High level of inflation affect financial performance commercial banks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Inflation volatility affects financial performance of commercial banks more than the actual level of inflation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

THANK YOU FOR YOUR COOPERATION

Appendix III: Record Survey Sheet

<table>
<thead>
<tr>
<th>Record Survey Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Financial Performance</td>
</tr>
<tr>
<td>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:</td>
</tr>
<tr>
<td>Data Element</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>Earnings after Tax</td>
</tr>
<tr>
<td>Total Assets</td>
</tr>
<tr>
<td>ROA</td>
</tr>
</tbody>
</table>

Appendix IV: Analysis of questionnaire results

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

Table 4.6: Liquidity Level result

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

Table 4.8: Capital adequacy result
1. The amount of capital in a bank affects the banks liquidity level
   Likert Mean: 1.6

2. Banks with a high level of core capital perform better financially
   Likert Mean: 1.6

3. An increase in statutory capital for commercial banks would improve the financial performance
   Likert Mean: 2.0

4. The ratio of core capital to customers deposit is an important financial performance measure for commercial banks
   Likert Mean: 1.7

Table 4.10: Asset quality result

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

Table 4.12 Inflation result

<table>
<thead>
<tr>
<th>STATEMENT</th>
<th>SA %</th>
<th>A %</th>
<th>N %</th>
<th>D %</th>
<th>Likert mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. High level of inflation affect financial performance commercial banks</td>
<td>48.6</td>
<td>51.4</td>
<td>0.0</td>
<td>0.0</td>
<td>1.5</td>
</tr>
<tr>
<td>2. Inflation volatility affects financial performance of commercial banks</td>
<td>62.2</td>
<td>37.8</td>
<td>0.0</td>
<td>0.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Average</td>
<td>55.4</td>
<td>44.6</td>
<td>0.0</td>
<td>0.0</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Appendix V: Financial Ratios: Return on assets

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

Appendix VI: Commercial banks listed on the NSE as at 31st December, 2015
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)