

## Determinants Of Liquidity Levels Of Commercial Banks Listed On Nairobi Securities Exchange In Kenya

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**ABSTRACT:** Liquidity level in the financial sector is key to financial intermediation, economic growth and economic sustainability and key to all nations in the world. This is evident in the development of guidelines and policies on liquidity management. The CBK has set the liquidity ratio at 20%. Despite this commercial banks listed in the NSE posted averages of 37%, 41.9% and 38.6% in 2011, 2012 and 2013 respectively according to CBK begging the question of what else determines this liquidity levels other than this statutory requirement. This study purposed to investigate the factors that determine the liquidity levels of commercial banks listed on NSE. The study specifically sought to: evaluate the influence of investment strategies, management policies and structure of loans on the liquidity levels of commercial banks listed at NSE. The anchor theory is the Keynesian theory on liquidity preference. A cross sectional approach and correlational research design was used. The target population for the study comprised of 254 divisional and departmental managers where a sample of 64 was selected using stratified random sampling technique. Data was collected using a questionnaire which was pre-tested to identify errors. Pretest data using test-retest method had a correlation of 0.782 indicating high levels of reliability. Analysis of data was done using descriptive and regression analysis. The regression model indicated that there was correlation between the independent and dependent variables with an R of 0.247 at  $p > 0.05$ . The results show that with a one unit change in the investment strategies of the bank the liquidity levels will increase by approximately 0.595 at  $p > 0.08$ . Secondly with a one unit change in loan structure of the banks it alters liquidity levels by approximately 1.480 at  $p < 0.009$ . Lastly with one unit change in management policy the liquidity levels change by -1.754 at  $p > 0.006$ . The study concluded that all the independent variables affected liquidity levels but at varying extents. However structure of loans was established to have more positive effect on liquidity levels. Although management policy had a negative effect it had the highest correlation with liquidity levels. The research recommends that banks must undertake due diligence on their investments options, further classify the loan structures to include very short term and very long term classes and that managerial decision be made based on factual information and data rather than intuition to ensure profitability and a better managed level of liquidity.

**Key Words:** Assets, Commercial Bank, Liabilities, Liquidities

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Date of Submission: 20-11-2018

Date of acceptance: 06-12-2018

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### INTRODUCTION

Globally in recent years, the world economy has experienced a number of financial crises. Often, at the center of these crises are issues of liquidity in the banking sector and financial markets. Ideally, commercial banks that hold cash reserves below a regulatory minimum set by the regulator of commercial banks are deemed to have violated their license requirements and face the risk of losing their trading licenses. The seeds of a financial crisis may also be sown during times of excessive liquidity for example, when crises are likely to occur, banks seem less willing to lend and therefore hold more liquidity.

For commercial banks, liquidity entails their ability to meet customers demand for cash, both at the banking halls, clearing house and Automated Teller Machines (ATM) withdrawals, meet daily loan disbursement demands and thirdly meet their operational expenses without incurring unacceptable losses in so doing. This is closely tied to the liquidity management policies which involve the techniques used by banks management to ensure the bank has cash to meet the above obligations. Therefore, liquidity management would include the strategy that a bank adopts to balance the available cash to show how much the bank will need for payments to its customers and suppliers (Acharya, Shin & Yorulmazer, 2011). Liquidity management is an important determinant of the financial stability of financial institutions. The objective of liquidity management is to ensure that banks are able to meet in full all their financial obligations as they fall due (Ashcraft, 2006).

The main objective of asset liability management in Banks is not to eradicate or eliminate risk, but to manage it in a way that the volatility of net interest income is minimized in the short run and economic value of the bank is protected in the long run (Berger et al., 2010). Liquidity is a prime concern in a banking environment and a shortage of liquidity has often been a trigger for bank failures. Holding assets in a highly liquid form tends to reduce the income from that asset (cash, for example, is the most liquid asset of all but pays no interest) so banks will try to reduce liquid assets as far as possible (Acharya & Naqvi, 2010).

However, a bank without sufficient liquidity to meet the demands of their depositors risks experiencing a bank run. The result is that most banks now try to forecast their liquidity requirements and maintain emergency standby credit lines at other banks (Blundell-Wignall & Atkinson, 2010). Studies done in various world markets depict that liquidity levels of commercial banks attracts a lot of attention from scholars and practitioners. In the United States of America (USA) it has been established that commercial banks will continue to hold significant liquidity into the foreseeable future but there is an opportunity for banks to reduce their liquid assets by more than \$100 Billion through improved management of contingent liquidity needs and liquidity forecasting (Buehler, Noteboom & Williams, 2013). In the United Kingdom (UK), the prudential liquidity guidance regime is designed such that Liquid Asset Buffers (LAB) can be drawn down in the event of a liquidity stress and used for the duration of the period of stress; and indeed certain banks have used their buffers when needed. All of their buffer can be used in a stress and they will be given reasonable time to rebuild their buffers subsequently (Bank of England, 2013). Judit & Major (2001) studied the liquidity management operations at the National Bank of Hungary and established that the rise of monetarist theories and negative experiences with high inflation have been responsible in the past decade for the growing acceptance of the view that delivering price stability and thus ensuring predictable economic environments should be the final goal of monetary policy.

In India, Mayank and Mishra (2012) hold the view that banks should have a formal contingency plan of policies and procedures to use as a blueprint in the event the bank is unable to fund some or all of its activities in a timely manner and at a reasonable cost. The financial sector in Kenya has seen a total of 50 banks collapse due to a myriad of reasons, liquidity being one of them. The commercial banks that have collapsed due to liquidity related issues include Bullion Bank, Trust Bank and Euro Bank. The survival of commercial banks depends greatly on how liquid they are since illiquidity being a sign of imminent distress can easily erode the confidence of the public in the banking sector and results to deposit (Gatev et al., 2009). There are two categories of bank liquidity: Precautionary and transactional liquidities. Precautionary liquidity is the ratio of total cash, demand deposit at central bank, and demand deposit at other banks, to total asset while transactional liquidity is the ratio of total traded securities of central bank, government, and others, to total asset (Acharya and Naqvi, 2010).

Adequate liquidity enables a bank to meet three risks namely: funding risk (the ability to replace net out flows of funds either through withdrawals of retail deposits or non-renewal of wholesale funds), time risk (the ability to compensate for non receipt inflows of funds if the borrower fails to meet their commitment at a specific time) and lending risk (ability to meet requests for funds from important customers) (Olagunju, Adeyanju & Olabode, 2013). For a corporation with a published balance sheet there are various ratios used to calculate a measure of liquidity. These include the current ratio which is the simplest measure and calculated by dividing the total current assets by the total current liabilities. A value of over 100% is normal in a non-banking corporation. However, some current assets are more difficult to sell at full value in a hurry. Secondly, the quick ratio is calculated by deducting inventories and prepayments from current assets and then dividing by current liabilities, giving a measure of the ability to meet current liabilities from assets that can be readily sold. However, a better way for a trading corporation to meet liabilities is from cash flows, rather than through asset sales. Therefore, a third ratio; operating cash flow ratio, can be calculated by dividing the operating cash flow by current liabilities. This indicates the ability to service current debt from current income, rather than through asset sales (Distinguin, Roulet & Tarazi, 2013).

The regulator of commercial banks in Kenya, Central Bank of Kenya (CBK) stipulates the minimum holding of liquid assets held by commercial banks with the current ratio being 20% of the total deposits held by the commercial bank. The minimum holding of liquid assets also acts as a buffer to ensure that commercial banks can meet their current financial obligations if there is a freeze in funding markets. This regulation is aimed at maintaining liquidity and preventing market crashes stemming from shortages of liquidity. This required buffer is different from the bank's excess buffer. The excess buffer is considered to be the holding of liquid assets in excess of requirements. This helps banks ensure that the liquidity demands of their customers can be met in times of increased liquidity pressure (Acharya, et al. 2011).

The purpose of the regulation among others is to; ensure that each institution meets the minimum liquidity requirements, guide institutions in the formulation of liquidity risk management strategies, policies, procedures, management information systems, internal controls and contingency plans for unexpected distress situations, protect deposit funds, promote a stable and efficient banking system, and endear confidence in the financial sector. The CBK supervisory department continues to adopt and implement effective and sound

supervisory methods in order to minimize the risk inherent in the banking system in Kenya by ensuring that the funding gap for commercial banks is managed through a stable funding base along with detailed forecasting. Under section 19 of the Banking Act in Kenya, an institution shall maintain a minimum holding of liquid assets as the Central Bank of Kenya may determine from time to time. For instance, the current liquidity ratio stands at 20% of the total liabilities (CBK, 2014).

Although the Central Bank of Kenya has set the liquidity ratio at 20%, many banks in Kenya are still operating way above this ratio such as averages of 37%, 41.9% and 38.6% in 2011,2012 and 2013 respectively according to CBK Statistics begging the question of what else determines this liquidity while some have been reported to have gone below this ratio (CBK, 2014) leading to their downfall. Holding assets in highly liquid form tend to reduce the income from that asset. Hence, bank liquidity management is important for both bank managers and policymakers in safeguarding overall financial stability (Acharya & Naqvi, 2010). Therefore, there still exists a need for a study to identify the other factors, apart from monetary policy of CBK, which influence the general liquidity levels of commercial banks in Kenya and despite the ramifications of high liquidity.

### **Statement of the Research Problem**

Although the Central Bank of Kenya has set the liquidity ratio at 20%, many banks in Kenya are still operating way above this ratio such as averages of 37%, 41.9% and 38.6% in 2011,2012 and 2013 respectively according to CBK Statistics while some have been reported to have gone below this ratio (CBK, 2014) leading to their downfall. Findings from previous studies indicate that profitability of commercial banks is determined by the liquidity management framework of the banks while poor liquidity management is the main reason for failure of commercial banks. It had also been established that high interest rates result in low loan uptake by clients and thus increase the liquidity levels of commercial banks.. However, these studies had a limited scope of the factors influencing liquidity levels of commercial banks with their focus being on commercial banks within a given locality. In addition, the main determinants of liquidity levels among commercial banks had been categorized into internal and external factors. Holding assets in highly liquid form tend to reduce the income from that asset. Hence, bank liquidity management is important for both bank managers and policymakers in safeguarding overall financial stability and ensure profitability from normal operations. Arguably then, why is it that banks have consistently posted liquidity ratios higher than the CBK guideline? Therefore, there still exists a need for a study to identify the other factors, which influence the general liquidity levels of commercial banks in Kenya other than the CBK guideline and despite the ramifications of high liquidity.

### **Objectives of the Study**

The general objective of the study was to investigate the factors that determine the liquidity levels of commercial banks listed on NSE. The specific objectives that guided the study were;

1. To evaluate the influence of investment strategies on the liquidity levels of commercial banks listed on Nairobi Securities Exchange.
2. To establish the influence of management policies on the liquidity levels of commercial banks listed at Nairobi Securities Exchange.
3. To determine the influence of structure of loans on the liquidity levels of commercial banks listed at Nairobi Securities Exchange.

### **Research Hypothesis**

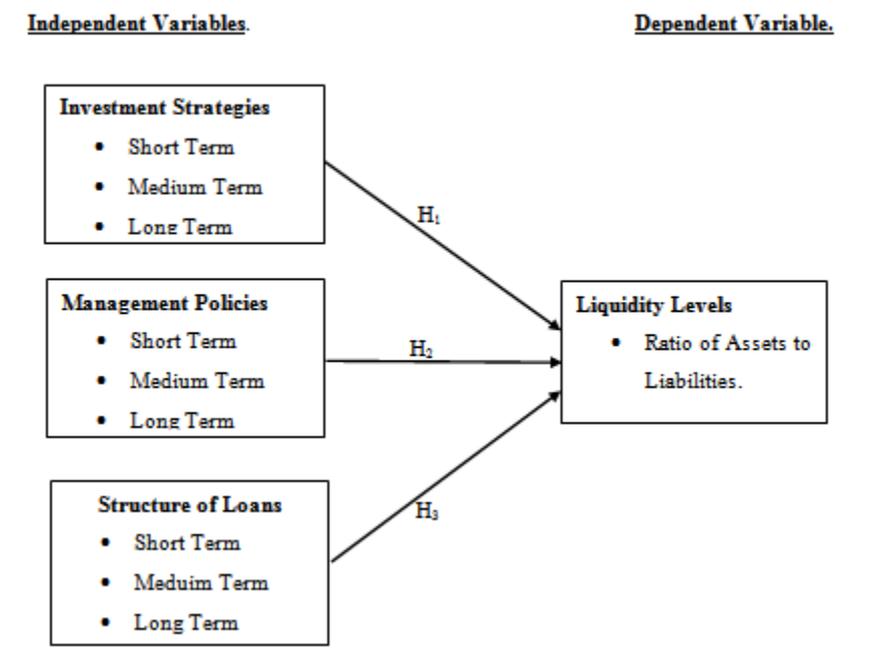
Based on the study objectives the following null hypothesis were formulated.

HO<sub>1</sub> Investment strategies do not influence the liquidity levels of commercial banks listed at Nairobi Securities Exchange?

HO<sub>2</sub> Management policies do not influence the liquidity levels of commercial banks listed at Nairobi Securities Exchange?

HO<sub>3</sub> Structure of loans do not influence the liquidity levels of commercial banks listed at Nairobi Securities Exchange?

**Conceptual Framework**



Source: (Self Conceptualization, 2014)

**Figure 1.1 Conceptual Framework of the relationship between determinants of liquidity levels and liquidity level**

The conceptual framework shows that the independent variables (Investment strategies, management policies, and structure of loans) influence the dependent variable (ratio of assets to liabilities (liquidity level) of commercial banks). The context of the study was the commercial banks listed at Nairobi Securities Exchange.

**LITERATURE REVIEW**

**2.1 Theoretical Perspective**

The study has been anchored on the Keynesian theory of liquidity preference encompassing the transactionary, speculative and precautionary motives that explain the basis upon which financial institutions determine the amount of liquid assets to hold at any one particular time. The other theories include Keynesian the credit market theory and the loanable funds theory:

**Keynesian Theory**

The Keynesian theory states that in liquidity preference of a household or firm is determined by three main motives: Transactionary motive, speculative motive and precautionary motive. Therefore, the amount of money held by commercial banks depends on the extent to which these three motives are competing with each other. For instance, if the commercial bank intends to invest in infrastructural development like a new banking system; it would need to hold large volumes of liquid assets so as to finance the project. This might affect the size of assets and liabilities that the bank would hold. Secondly, if there is a public initial offering in the offing and the commercial banks intends to buy a large issue, then it might hold more cash for speculative purpose and therefore affect its assets and liabilities portfolios. Lastly, if there is a pending case in court that might result in huge financial implications, then the commercial bank would also hold a considerable amount of liquid assets in anticipation of the court verdict and thereby affect the liquidity levels of the bank (Fofack, 2005). Consequently, the Keynesian theory could be used to explain liquidity management choices in commercial banks. However, the specific motives of level of liquidity differ from bank to bank depending on factors which we seek to investigate.

**Credit Market Theory**

This theory postulates that the current prices in the credit market affects the liquidity levels of lending institutions. For instance, if collateral and other restrictions remain constant, the interest rate is the only price mechanism. However, if there is an increasing demand for credit then the commercial banks will avail more credit to the customers. On the other hand, if the interest rate rises and there is low demand for credit, then the commercial banks will divert the liquid assets to other investments in order to sustain their profitability. In practice, if commercial banks want to control the supply side of the credit market, they would increase their

interest rates thereby making credit more expensive and vice versa (Fofack, 2005). Based on the interest rate variable, the credit market theory can be used the liquidity management choices adopted by Commercial Banks. i.e. Interest rates influence the liquidity management options for commercial banks.

Therefore if credit prices affect the level of liquidity in the market, what determines the rates which in turn influence liquidity levels?

### **2.2.3 Loanable Funds Theory**

The loanable funds theory contends that the demand of loanable funds originates from domestic business, consumers, governments and foreign borrowers while the supply of loanable funds is generated by domestic savings, dispersion of money balances and money creation in the banking system and foreign lending. The theory holds that equilibrium will be reached only when the demand and supply factors reach equilibrium. Therefore, this theory suggests that the liquidity levels of commercial banks would be a function of the demand or supply side factors of the loanable funds. If the supply side is more than the demand side, then the liquidity levels will be higher and vice versa (Altunbas et al. 2009).

Apart from the demand and supply side of the loanable fund theory, we seek to find out how the structure of the loans so demanded or supplied affect the level of liquidity in the said commercial banks.

## **2.2 Empirical Literature Review**

Various empirical studies have been carried out to investigate the extent to which management policies, investment strategies, interest rates and structure of loans influence the liquidity levels of lending institutions including commercial banks.

### **2.2.1 Investment Strategies**

A few studies have been conducted to establish the effects of investment strategies on the liquidity of organizations. Munchil (2010) conducted a survey of the determinants of liquidity of companies listed at Nairobi Securities Exchange. The findings indicated that, in order to promote effective diversification of investments, companies should regularly gauge their capacity to raise funds quickly from each of their investments. It should identify the main factors that affect its ability to raise funds and monitor those factors closely to ensure that estimates of fund raising capacity remain valid. An organization should also establish a funding strategy that provides effective diversification in the sources and tenor of funding and maintain an ongoing presence in its chosen funding markets and strong relationships with funds providers. However, the study only concentrated on the effects of assets management practices on the liquidity of organizations and did not focus on the liability management practices.

Kithinji (2010) assessed the effect of credit risk management on the profitability of commercial banks in Kenya. The findings revealed that the percentage of the profits of commercial banks originating from commissions and fees was higher than the percentage of profit earned from loans and advances. The findings indicated that, a commercial bank should actively manage its intraday liquidity positions and risks to meet payment and settlement obligations on a timely basis under both normal and stressed conditions and thus contribute to the smooth functioning of payment and settlement systems. There is also need for the bank to actively manage its collateral positions, differentiating between encumbered and unencumbered assets and monitor the legal entity and physical location where collateral is held and how it may be mobilized in a timely manner. The findings indicated that there is need for organizations, including commercial banks, to identify sources of potential liquidity strain and to ensure that current exposures remain in accordance with a the organization's established liquidity risk tolerance. For instance, a commercial bank should use stress test outcomes to adjust its liquidity risk management strategies, investment policies, and positions and to develop effective contingency plans. A bank should have a formal Contingency Funding Plan (CFP) that clearly sets out the strategies for addressing liquidity shortfalls in emergency situations. A CFP should outline policies to manage a range of stress environments, establish clear lines of responsibility, include clear invocation and escalation procedures and be regularly tested and updated to ensure that it is operationally robust (Gorton & Winton, 2000). A bank should also maintain a cushion of unencumbered, high quality liquid assets to be held as insurance against a range of liquidity stress scenarios, including those that involve the loss or impairment of unsecured and typically available secured funding sources. There should be no legal, regulatory or operational impediment to using these assets to obtain funding (Ndichu et al. 2013). These studies were anchored on the assumption that doubtful debts and bad debts were the reason for instability in the liquidity levels of commercial banks in Kenya. Other contributors to the liquidity level of commercial banks including investment strategies, management policies and structure of loans were not investigated.

Odongo (2008) investigated the effects of liquidity levels on the stock returns of companies listed at Nairobi Securities Exchange. The findings indicated that liquidity levels of companies had a double effect on the stock returns. For instance, high liquidity levels was identified as a mechanism through which companies would take advantage of fluctuations in share prices by buying huge issues during a bullish season and making huge capital gains in the short term. However, during seasons of low share prices, high liquidity levels was identified as the main source of opportunity costs of missed opportunities like real estate and offshore investments. In

conclusion, the findings indicated that liquidity levels of companies affected the stock returns in various ways depending on the prevailing market conditions. The findings indicated that a bank should clearly articulate a liquidity risk tolerance that is appropriate for its business strategy and its role in the financial system. The study focused on how commercial banks would enhance their liquidity through earnings from trading in stock of listed companies, real estate and offshore investments but did not consider the effects that other factors like structure of loans and management policies would have on the liquidity levels of listed companies.

Masuku (2014) conducted a study of the determinants of excess liquidity in the listed banks in Kenya. The findings indicated that the nature of investment options in the capital market and money market affected liquidity levels of commercial banks. For instance, the availability of a bullish securities exchange would attract more buyers of equities who will access their bank deposits to execute the purchases thus reducing the liquidity levels of commercial banks. On the other hand, in times of a bearish market, the rush to sell off equities would lead to more bank deposits which would increase the liquidity level of commercial banks. Other investment options that were identified to be determinants of liquidity levels of commercial banks included investment opportunities in real estate, government securities treasury bills, treasury bonds and infrastructure bonds) and corporate securities including commercial papers, corporate bonds and debentures. This study focused on the effects of investment options on excess liquidity of commercial banks in Kenya but did not expose the role of investment options on the fluctuations in liquidity levels of commercial banks. In addition, the study did not explore the effects of other factors like management policies and structure of loans on the liquidity levels of commercial banks.

In summary therefore, the above mentioned empirical studies established that the main preoccupation of commercial banks in the management of liquidity levels is the maintenance of their capacity to raise funds quickly from each of their investments. The studies also investigated the effects of investment strategies on the management of credit risk, profitability and contingency plans of commercial banks. However, the studies did not establish the specific effects of investment strategies on the level of assets and liabilities held by commercial banks at any one particular time. In addition, the studies did not determine the effects of management policies and structure of loans on the liquidity levels of commercial banks listed on NSE.

### **2.2.2 Management Policies**

In many jurisdictions across the world, banking legislation normally contains specific liquidity requirements that must be met. These regulations that ensure proper management of financial resources are generally referred to as prudential guidelines. The prudential guidelines should not be viewed as the primary method of managing risk but should be a minimum guide to the basic controls to be established by financial institutions in the management of risks. The prudential guidelines are also aimed at enhancing management of liquidity of the financial institutions and guiding the day to day fund management (Altunbas et al.,2009).

A savings institution should have a formal liquidity policy that was developed and written by the officials with the assistance of management. The policy should be reviewed and revised as needed, no less than annually. The policy should be flexible, so that managers may react quickly to any unforeseen events. A liquidity policy should specifically state: Who is responsible for liquidity management, what is the general methodology of liquidity management, how will liquidity be monitored or, in other words, what liquidity management tools will be used, what are the timeframes to be used in cash flow analysis, the level of detail, and the intervals at which the cash flow tools used are to be updated (Cooperman, Mills, & Gardner, 2000).

Chisoko and Pierre (2012) sought to establish how Zimbabwe commercial banks managed liquidity risk in a hyperinflationary environment. The findings showed that liquidity risk management during the hyperinflation was a challenge because the instruments used by the Reserve Bank of Zimbabwe to fight inflation had negative effect on commercial banks asset and liability management. In line with this, the monetary authorities were recommended to put in place measures which took into consideration the impact of their policies on bank liquidity risk management when there are problems of high inflation. The study also recommends commercial banks to take proactive management measures and long term views to operations, in other words beyond the current challenges posed by inflation by creating new demand for their products. However, the focus of the study was management of risk in a hyperinflationary environment and not in the day-to-day operations of commercial banks.

Ashcraft (2006) recommends three mechanisms that banks can use to insure against liquidity crises: Holding buffer of liquid assets on the asset side of the balance sheet. A large enough buffer of assets such as cash, balances with central banks and other banks, debt securities issued by governments and similar securities or reverse repo trades reduce the probability that liquidity demands threaten the viability of the bank. Second mechanism is connected with the liability side of the balance sheet where banks can rely on the interbank market where they borrow from other banks in case of liquidity demand. Third mechanism concerns the liability side of the balance sheet, as well where the central bank typically acts as a lender of last resort to provide emergency liquidity assistance to particular illiquid institutions and to provide aggregate liquidity in case of a

system-wide shortage. However, the three mechanisms guards against liquidity crises but are not a solution to maintenance of adequate levels of liquidity on a day to day basis.

Mayank and Mishra (2012) in their study of the emerging trend of changing liquidity and liquidity risk management in Indian banking industry recommended that banks should have a formal contingency plan of policies and procedures to use as a blueprint in the event the bank is unable to fund some or all of its activities in a timely manner and at a reasonable cost. Indeed, industry experts generally agree that these crises tend to develop very rapidly. The researchers held that comprehensive contingency funding plan can provide a useful framework for meeting both temporary and long-range liquidity disruptions of commercial banks. However, this study confirmed the importance of contingency plans in liquidity management but did not explore other forms of management policies that would also contribute to attainment of adequate liquidity levels among the commercial banks listed on NSE.

Loo (2007) conducted a survey of the effects of liquidity management approaches on the profitability of commercial banks in Kenya. The findings indicated that there existed various liquidity management approaches ranging from authorized sources of liquid assets, authorized channels of investment, limits of loans, limits of borrowings and general controls on liquid assets of commercial banks in Kenya. This study suggested that the flexibility, inclusivity and communication of the management approaches have effects on profitability of commercial banks. The findings indicated that the policy should establish minimums and maximums for total cash assets and for the amount to be kept on-site and how often decisions about liquidity should be reviewed, including: assumptions used to develop the cash flow budget, the minimum cash requirement as described in daily cash forecasting, and any of the established ratio targets. This study was preoccupied with delivery of targeted profits through proper liquidity management. In addition, liquidity decisions need to be made rapidly to avoid a crisis; therefore the liquidity manager should have some authority. This authority should have limits; for example, another signature should be required for unusually large transactions. If liquid funds are not invested in another financial institution or other type of investment, then there should be very specific policies on how excess funds are to be handled, such as who has access to them and where they are to be kept (Cooperman, Mills, & Gardner, 2000).

The management policies should also address the question of which assets are considered to be liquid and the established limits for the maximum amount to be invested in any one bank, to limit exposure to a bank failure. Senior management should develop a strategy, policies and practices to manage liquidity risk in accordance with the risk tolerance and to ensure that the bank maintains sufficient liquidity. They should also continuously review information on the bank's liquidity developments and report to the board of directors on a regular basis. In other words, a bank's board of directors should review and approve the strategy; policies and practices related to the management of liquidity at least annually and ensure that senior management manages liquidity risk effectively. Lastly, the policy should stipulate who may access or establish a line of credit for short-term liquidity needs and what are acceptable reasons or scenarios for accessing the line of credit (Gorton & Winton, 2000). However, the study identified the liquidity management approaches that would assure commercial banks of the targeted profits but did not explore other mechanisms like appropriate investment decisions and a balanced portfolio of loans.

In summary therefore, the empirical studies indicated that management policies ranged from authorized sources of liquid assets, limits of loans, limits of borrowings and general controls on liquid assets. The policies were evaluated in relation to their effects on managing crises like hyperinflation and their contributions to profitability levels. However, the studies did not evaluate the specific effects of management policies on the liquidity levels of commercial banks.

### **2.2.3 Structure of Loans**

The structure of loans refers to whether loans are short, medium or long term. A substantial proportion of liquidity is required when a higher portion of the loans are long term loans (Mervyn, 2010). Aikaeli (2006) investigated the determinants of excess liquidity in Tanzanian commercial banks. The findings indicated that high cost of funds, credit risks, volatility of deposit holders' cash preference, and the rate of required reserves perpetuated accumulation of excess liquidity in commercial banks in Tanzania. The main determinant of excess liquidity in Tanzania commercial banks was identified as the high interest on loans which made potential investors to shy away from borrowing from the commercial banks. Indeed, these empirical findings and conclusions had important policy implications on price stability, risks minimization, proper supervision and optimal liquidity management by the commercial banks in Tanzania.

Berger and Udell (2006) explored how bank characteristics and the institutional environment influence the composition of banks' loan portfolios. In this study, the researchers sought to establish the determinants of the composition of banks' loan portfolios for 220 banks in 20 transition countries. The study revealed that bank ownership, bank size, and legal creditor protection were important determinants of the composition of banks' loan portfolios. In addition, commercial banks that perceived pledge and mortgage laws to be of high quality

chose to focus more on mortgage lending. The study recommended that prudent risk selection is vital to maintaining favorable loan quality. In addition, the findings proposed that management must have established the following to strengthen the management of loans portfolios: Short and long-term minimum capital or equity to total assets goal ratios, the maximum percentage of assets to be held by any one client, in different types of loans and investments, in fixed rate investments and loans with a maturity greater than one year, and invested in fixed assets. Other minimum standards in management of loans include: The desired diversification of savings and deposits to eliminate potential concentration risk (having too much in anyone type of deposit or with any one client) and the maximum maturities for all types of loans, investments, and deposits (Berger & Udell, 2006). This study emphasized the need to guard against bad debts in the creation of loan portfolios as a means of attaining adequate liquidity levels. However, the study did not provide an insight on the effects of each type of loan on the overall liquidity of commercial banks.

Akeyo (2010) investigated the relationship between interest rates and liquidity of companies listed at Nairobi Securities Exchange. This study confirmed the earlier findings of Kinyu (2009) and Muchil (2010); that the liquidity of companies was determined by management policies, investment plans, and nature of business operations, nature of industry, types of financial obligations and the background of managers employed by the corporate entity. However, the findings indicated that the main determinant was not the prevailing economic conditions as held by Muchil (2009). Instead, Akeyo (2010) observed that the main determinant of liquidity levels of organizations was the investment strategy of the firm. The findings supported the need to establish fixed or variable interest rate loans and deposits as a pricing strategy for loans and savings products that are based on what it actually costs to offer the products and what the local market will bear. However, the study did not explore the role played by the structure of loans in determining the liquidity of companies listed on NSE.

In summary therefore, the above mentioned empirical studies established that the loan structure decisions of commercial banks affected the size of loan portfolios, the desired diversification of savings and deposits and the maximum maturities for all types of loans, investments and deposits. However, the findings did not investigate the specific effects of the size and nature of loan portfolios to the liquidity levels of commercial banks.

#### **2.2.4 Monetary Policy**

Monetary policy refers to the actions of the Central Bank to regulate the money supply which could be through discretionary monetary policy instruments such as the open market operation (OMO), discount rate, reserve requirement, moral suasion, direct control of banking system credit, and direct regulation of interest rate. Monetary policy is one of the principal economic management tools that governments use to shape economic performance (Loayza, and Schmidt-hebbel, 2002).

Amidu (2006) assessed the link between monetary policy and bank lending behaviour in Ghana and established that for monetary policy to operate through a credit channel, not only must there be bank dependent borrowers, but monetary policy must also directly affect banks' willingness to lend. Kimani (2013) assessed the effects of monetary policy on lending behaviour of commercial banks in Kenya. She established that monetary policy objectives are concerned with the management of multiple monetary targets among them price stability, promotion of growth, achieving full employment, smoothing the business cycle, preventing financial crises, stabilizing long-term interest rates and the real exchange rate. She also found out that in Kenya, emphasis of monetary policy is usually on maintaining price stability or ensuring low inflation rates. She also concluded that the effectiveness of monetary policy on the real economy is still an issue under intense debate particularly related to the efficacy of the transmission. The above mentioned studies show that the effect of monetary policy on liquidity of a commercial bank is dependent on the nature of the monetary policy and the response that commercial banks exhibit in terms of their investment strategies, management policies and structure of loans.

### **RESEARCH METHODOLOGY**

This chapter focuses on the research design, the study area, target population, sample size and sampling procedure, data types and data collection methods, validity and reliability checks, data analysis and data presentation methods and closes with the contributions of the study.

#### **3.1 Research Design**

This study employed a cross-sectional survey design and correlational design. Orodho (2003) points out that the cross-sectional survey design can be used when collecting information about peoples' attitudes, opinions, habits or any of the variety of education and social issues. Orodho (2005) holds that the cross sectional survey design describes the state of affairs as it exists by use of statistical figures and it is used when collecting information about the relationship of values of two related variables (Kombo & Tromp, 2006). The defining feature of a cross-sectional study is that it can compare different population groups at a single point in time. The benefit of a cross-sectional study design is that it allows researchers to compare many different cases

at the same time. In this study the ten banks listed on the NSE were all used. By the virtue of assessing relationship between the variables; independent variables (investment strategies, management policies and structure of loans) on the dependent variable (liquidity levels) correlational was also adopted.

### **3.2 Study Area**

The ideal setting for any study is one where a researcher has interest in, one which is easily accessible and one that allows the researcher's immediate rapport with the respondents (Kombo & Tromp, 2006). The study was carried out in Nairobi County, Kenya where the commercial banks had their administrative headquarters and the head offices for the assets and liabilities departments that dealt with the liquidity management activities. Specifically, the study was conducted within three major locations: the Nairobi Central Business District, the Upperhill Area and Westlands where all banks had their headquarters.

### **3.3 Target Population**

This study targeted the Divisional and Departmental managers who deal with liquidity management. They were 254 managers of the 10 commercial banks listed in the NSE as the respondents. The listed commercial banks were Standard Chartered Bank, CFC Stanbic Bank, Cooperative Bank of Kenya, Diamond Trust Bank, Kenya Commercial Bank, NIC Bank, Equity Bank, Barclays Bank, I & M Holdings and National Bank of Kenya.

### **3.4 Sampling Technique and Sample Size**

The study employed stratified random sampling technique to select respondents from the 10 commercial banks listed on Nairobi Securities Exchange. In order to select a wide representation of the managers from the listed commercial banks, the sample size was made up of at least a third of each category of the population stratum. Mugenda & Mugenda (1999) holds that a sample size of at least 10% is an adequate representation of the target population.

### **3.5 Data Collection**

#### **3.5.1 Sources and Type of Data**

The study used primary and secondary data. The research permit was sought from the heads of Corporate Affairs of the respective commercial banks. Primary data was collected by use of a semi-structured research questionnaire (Appendix III) while secondary data was collected from published audited financial statements and websites commercial banks and Central Bank of Kenya.

#### **3.5.2 Data Collection Procedure**

Due to the nature of the respondents, the questionnaires were dropped to the respondents by the researcher. This ensured that the respondents were informed of the purpose of the study and assured of the confidentiality involved in the study. In order to increase the response rate, the respondents were reminded to complete the questionnaires via telephone calls and physical visits were made to pick the questionnaires.

#### **3.5.3 Instrument for Data Collection**

The instrument for data collection was questionnaires for primary data. The questionnaire was used because it provides reliable, valid and theoretically satisfactory results in cases where the respondents have first-hand information on a phenomenon (Orodho, 2006). Secondary data was collected from websites, publications and audited financial reports.

#### **3.5.4 Reliability Test for Data Collection Instrument**

The reliability test of the research instrument was done by use of the Test-retest method. Mugenda & Mugenda (1999) hold that the test-retest method is the simplest way of testing the stability and reliability of a research instrument over time. The test-retest coefficient was a measure of how consistent the results of the test and those of the retest were correlated. Of the 74 respondents, 10 respondents were used for pretesting and thus were not used in the final sample. A correlation factor of 0.9 and greater was considered excellent reliability, between 0.9 and 0.8 was considered good reliability while a correlation of between 0.8 and 0.7 was acceptable reliability. Test retest method had a correlation factor of 0.782 which was considered acceptable.

#### **3.5.5 Validity Test for Data Collection Instrument**

Validity is the degree to which results obtained from the analysis of the data actually represents the phenomena under study (Mugenda & Mugenda, 1999). The researcher checked the face validity of the research instrument by evaluating the logical sequence of the questions. Content validity was tested by ascertaining the

representativeness of the questions in relation to the universe of questions that could have been asked on the variables of the study.

**3.6 Data Analysis**

Simple descriptive statistics including the mean and standard deviation was used to summarize the findings from the questionnaires. Multiple regression analysis was used to establish relationships between the independent variables and the dependent variable of the study. In order to establish the relationship between the dependent and independent variables, the following multiple regression model was used:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 \dots\dots\dots(3.1)$$

Where: Y =Liquidity differential (Bank liquidity ratio – statutory liquidity ratio);  $\beta_0$  = Constant Term;  $\beta_1, \beta_2$  and  $\beta_3$ = Beta coefficients; X1= Average Score on Investment Strategies; X2= Average Score on Management Policies; X3= Average Score on Structure of Loans;  $\epsilon$  = Error term

**RESULTS AND DISCUSSIONS**

**Regression Analysis**

The study sought to develop a linear model using regression analysis to establish the effect of investment strategies, structure of loans and management policies on liquidity in listed commercial banks. The model was in the form of:

$$Y_i = \beta_0 + \beta_1X_{1i} + \beta_2X_{2i} + \beta_3X_{3i} + \beta_4X_{4i} + \epsilon \quad (4.1)$$

Where: Y = liquidity ratio differential (Bank liquidity – statutory liquidity)  $\beta_0$  = is a constant  $\beta_1, \beta_2, \beta_3, \beta_4$  = Beta Coefficients X1 = Investment strategies, X2 = Management policies, X3 = Structure of loans and  $\epsilon$  represents an error term

**4.7.1 Model Summary**

**Table 4.1: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.247 <sup>a</sup>	0.061	-0.017	3.21728

Source: Survey Data (2015)

From the model summary on Table 4.26 presents the relationship between the variables in the study. The R represents the correlation between the dependent and independent variables in the study. The correlation coefficients (0.247) indicates that there was a significant relationship between the independent variables and dependent variable. The findings show that a significant relationship exists between the managerial policy, structure of loans, investment strategies and the liquidity ratios in the commercial banks.

The R- Squared indicates the independent variables (managerial policy, structure of loans, investment strategies ) account for 0.061 (6.1%) of the variation in the dependent variable (Liquidity levels ) in the commercial banks. 0.0931 (93.1%) is accounted for by other factors that are attributed to monetary policy.

**4.1.2 Analysis of variance**

**Table 4.2: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32.242	4	8.060	.779	.005 <sup>b</sup>
	Residual	496.844	48	10.351		
	Total	529.086	52			

Source: Survey Data (2015)

The analysis of variance in table 4.27 indicates the F- statistics of 0.779 with the P-value of 0.005. The results indicate the model is significant thus stable at both 1% and 5%.

**4.7.3 Coefficients of variations**

**Table 4.3: Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	16.377	2.622		6.245	0
	Investment Strategies	0.595	2.433	0.081	0.244	0.008
	Management Policy	-1.754	0.336	-0.33	-5.22	0.006
	Structure of Loans	1.48	0.541	0.27	2.737	0.009

Source: Survey Data (2015)

From table 4.28, the coefficients of the model were positive for investment strategies (0.595) and loan structure (1.480) and significant at 0.05 significance levels. On the other hand, the coefficients for management policy was negative (-1.754) and significant at 0.05 significance levels. The findings show that all the variables had a significant effect on liquidity levels in commercial banks. The results show that with a one unit change in the investment strategies of the bank the liquidity levels will increase by approximately 0.595. Secondly with a one unit change in loan structure of the banks it alters liquidity levels by approximately 1.480. Lastly with one unit change in management policy the liquidity levels change by -1.754. This indicates that management policy has a negative influence on the liquidity levels in the commercial banks.

The model liquidity model is :

$$Y = 16.377 + 0.595X_1 - 1.754X_2 + 1.480X_3 \dots \dots \dots P=0.005$$

Where: Y = Liquidity ratio

X1 = Investment strategies

X2 = Management Policy

X3 = Structure of Loans

The findings in Table 4.28 indicated that liquidity ratio would be 16.377 holding best investment strategies, management policy and structure of loan at zero. The study established that effort by the commercial banks to enhance their investment strategies would increase liquidity ratio by ( $\beta_1=0.595$ ,  $p=0.008<0.05$ ). This implies that a unit increase in investment strategies by the commercial banks would lead to an increase in liquidity ratios of the banks.

The findings are in tandem with the findings of Kithinji (2010) who assessed the effect of credit risk management on the profitability of commercial banks in Kenya and found that the percentage of the profits of commercial banks originating from commissions and fees was higher than the percentage of profit earned from loans and advances.

The findings are also in line with the findings of Masuku (2014) who conducted a study of the determinants of excess liquidity in the listed banks in Kenya and established that the nature of investment options in the capital market and money market affected liquidity levels of commercial banks.

The study moreover found that management policy would significantly decrease liquidity ratios ( $\beta_2=-1.754$ ,  $p=0.006<0.05$ ). This clearly indicated that with increase in investment strategies and structure of loans the banks would reduce their liquidity ratios however more stringent management policies would reduce their liquidity ratios.

These findings lend credence to the findings by Loo (2007) who conducted a survey of the effects of liquidity management approaches on the profitability of commercial banks in Kenya and found that there existed various liquidity management approaches ranging from authorized sources of liquid assets, authorized channels of investment, limits of loans, limits of borrowings and general controls on liquid assets of commercial banks in Kenya.

The findings also corroborate with the assertions of Mayank and Mishra (2012) who in their study of the emerging trend of changing liquidity and liquidity risk management in Indian banking industry asserted that comprehensive contingency funding plan can provide a useful framework for meeting both temporary and long-range liquidity disruptions of commercial banks. However, this study confirmed the importance of contingency plans in liquidity management but did not explore other forms of management policies that would also contribute to attainment of adequate liquidity levels among the commercial banks listed on NSE. The study further established that effort by the commercial banks to improve their structure of loans would increase liquidity ratios by ( $\beta_3=1.4805$ ,  $p=0.009<0.05$ ).

The findings support the findings by Berger and Udell (2006) who explored how bank characteristics and the institutional environment influence the composition of banks' loan portfolios. In this study, the researchers sought to establish the determinants of the composition of banks' loan portfolios for 220 banks in 20 transition countries. Their study revealed that bank ownership, bank size, and legal creditor protection were important determinants of the composition of banks' loan portfolios. In addition, commercial banks that perceived pledge and mortgage laws to be of high quality chose to focus more on mortgage lending.

## **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Summary of findings**

The study sought to investigate the determinants of liquidity levels amongst listed commercial banks Kenya. The study specifically investigated the influence of investment strategies on liquidity levels, examined the influence of management policies on liquidity levels and analyzed the influence of loan structures on liquidity levels of commercial banks in Kenya.

The study sought to evaluate the influence of investment strategies on the liquidity levels of commercial banks listed on Nairobi Securities Exchange. The study established that investment strategies had a positive effect on the liquidity levels of commercial banks. The results show that with a one unit change in the investment strategies of the bank the liquidity levels will increase. In addition, the study found that most banks listed in the NSE undertook liabilities and assets matching for their investment strategies. This meant that long term investment strategies were primarily financed or matched with long term liabilities while short term investment strategies were financed or matched to short term liabilities. A similar approach was used for mid-term investment strategies which were matched to medium term liabilities.

The study also established that managerial policies overall had a negative influence on liquidity levels in listed commercial banks. The findings are validated by the findings that the all the managerial policies such as internal liquidity buffer policy, contingency plan policy and loan deposit ratio policy had an influence on all deposits and liabilities of the commercial banks. Nevertheless, the managerial policies were also focused on specific assets and liabilities as a liquidity management plan i.e. short term deposits and liabilities were influenced by internal liquidity buffer policy, medium term deposits and liabilities were managed using a contingency plan policy while long term loans and deposits were managed using the loan deposit ratio policy.

The study further determine the influence of structure of loans on the liquidity levels of commercial banks listed at Nairobi Securities Exchange and found that there was a positive effect of the structure of loan effect on liquidity levels of commercial banks listed in the NSE. From the findings it was revealed that short term loans had an effect on the most liquid assets e.g. discounting of invoices and had the highest influence on short term liabilities. Similarly, medium term loans had the highest effect on medium term liabilities and deposits of commercial banks while long term loans had the highest effect on long term loans and deposits. This implies that most banks matched their liabilities to assets with their structure i.e. Length of the assets and liabilities.

### **5.2 Conclusions**

From the summary of the findings the study concludes that the independent variable factors investment strategies and structure of loans all affect liquidity levels positively but at varying extents. However structure of loans was established to have more positive effect on liquidity levels. The study therefore concludes that most banks matched their liabilities to assets with their structure i.e. Length of the assets and liabilities. Therefore liabilities with similar structures were matched with assets of the commercial banks with similar structures. From the study Managerial policy had an overall negative effect on liquidity levels in listed commercial banks in Kenya. Banks utilized a variety of managerial policies to manage different liabilities and assets of the commercial bank in an effort to manage liquidity. Although management policy had a negative effect it had the highest correlation with liquidity levels.

### **5.3 Recommendations**

Based on the summary of the findings and conclusions, the study recommends:

- i. The bank managers make investment decisions based on risk and return. This is because though liquidity management is an objective for most banks it should go hand in hand with the profitability objective of the commercial bank. Consequently, banks must undertake due diligence on their investments options to ensure that though matching is done for liquidity management, risk and returns on the investments are also taken into consideration.
- ii. Managerial decision making must be made based on factual information and data rather than intuition. Banks must strengthen their data collection systems and strategies to aid in decision making especially in relation to liquidity management. This is because managerial policies have the highest effect on liquidity management in commercial banks. Banks must invest substantial amounts of time, resources and human capital on data collection for effective decision making on liquidity management.
- iii. Banks should diversify their loan structures from merely short term, medium term and long term classes. The banks can further classify the loan structures to include very short term and very long term classes. This will enhance in better decision making and liquidity management. For example: rather than classify all deposits of loans of less than 1 year as short term, there can be classes for immediate assets (0 – 3 months) and short term assets (4 – 12 months). A similar approach should be used for deposits in the banks.

## ACKNOWLEDGEMENT

We acknowledge the Almighty God for his strength that has enabled us finish this work. We also acknowledge our family for their encouragement, sacrifice and support through the entire period of this program.

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Albert Washington Ochung Tambo "Determinants Of Liquidity Levels Of Commercial Banks Listed On Nairobi Securities Exchange In Kenya "International Journal of Business and Management Invention (IJBMI) , vol. 07, no. 12, 2018, pp 40-52