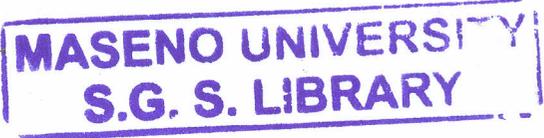


**EFFECT OF BANKING LIQUIDITY FACTORS ON PERFORMANCE OF  
COMMERCIAL BANKS IN KISUMU CITY, KENYA**



**BY**

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## ABSTRACT

Financial institutions and markets literature show that capital adequacy, loan growth and percentage of non-performing loans are important drivers of bank liquidity and performance. Despite the important role played by these factors, the effect of capital adequacy on bank performance, the relationship between loan growth and bank performance and the effect of non-performing loans on bank performance were unknown. The purpose of this study was therefore to investigate the effect of the banking liquidity factors on performance of commercial banks in Kisumu City, Kenya. Specific objectives of the study were to: establish the effect of capital adequacy on performance of commercial banks, determine the relationship between loan growth and performance of commercial banks and establish the effect of percentage of non-performing loans on performance of commercial banks in Kisumu City. The study was guided by an adapted conceptual framework with banking liquidity factors as independent variables and bank's performance as the dependent variable. A correlational research design was employed. The target population was all the 27 commercial banks operating in Kisumu City for a period of five years 2010 to 2014 yielding 135 data points. Secondary data was collected through desk review. Data was analyzed using descriptive statistics such as mean and standard deviation and inferential statistics namely Pearson's correlation and multiple regression analysis. Data was presented using tables and matrices. The findings were that: capital adequacy is a significant positive predictor of performance measured in terms of return on equity (ROE),  $\beta = .023$  ( $p = .003$ ) meaning that enhancing capital adequacy leads to improved performance as measured in terms of ROE; loan growth was an insignificant negative predictor of performance measured in terms of return on equity (ROE),  $\beta = -.056$  ( $p = .424$ ) implying that accelerated loan growth leads to decline in performance as measured in terms of ROE; non-performing loans is an insignificant negative predictor of performance measured in terms of return on equity (ROE),  $\beta = -.005$  ( $p = .257$ ) meaning that that increase in non-performing loans lead to decline in performance as measured in terms of ROE. The study concludes that: that enhancing capital adequacy leads to improved performance as measured in terms of ROE; accelerated loan growth leads to decline in performance as measured in terms of ROE and increase in non-performing loans lead to decline in performance as measured in terms of ROE. The study recommends that: commercial banks should continue to improving capital to enhance its adequacy as this was found to influence performance positively; should reduce the rate of growth of loans and reduce the percentage of non-performing loans as this were found to affect performance negatively. The research findings may be significant to bank liquidity policy makers in designing optimal liquidity level that maximize firm's value. It will also be useful to bank managers, financial advisors, CBK and depositors in designing bank policies and advising capital market investors respectively. The research may provide new empirical evidence on banking liquidity factors and bank's performance and form a basis for future research in the area.

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# CHAPTER ONE

## INTRODUCTION

This chapter sets the background to the study, statement of the research problem, study objectives, research questions, scope, justification and the conceptual framework.

### 1.1 Background of the Study

Liquidity is one of the key factors that determine the level of bank performance. Liquidity refers to the ability of the bank to fulfill its financial obligations as and when they fall due, mainly of depositors. According to Dang (2011) adequate level of liquidity is positively related with bank profitability. Moore (2009) asserts that a bank needs to hold liquid assets to meet the cash requirements the institution does not have the resources to satisfy its customers' demand, then it either has to borrow on the inter-bank market or the central bank. It follows therefore that a bank unable to meet its customers' demands leaves itself exposed to a run and more importantly, a systemic lack of confidence in the banking system. An asset is liquid if it can be sold quickly without significant losses (Yeager and Seitz, 1989).

According to Vodova (2011), there are three banking liquidity factors that commercial banks may encounter and which affect performance of financial institutions namely: capital adequacy, loan growth and percentage of non-performing loans. Patheja (1994) has defined banks capital as common stock plus surplus plus undivided profits plus reserves for contingencies and other capital reserves. In addition since a bank's-loss reserves loan also serves as a buffer for absorbing losses, a broader definition of bank capital include this account.

Empirical evidence (Wahiu, 2010; Semu, 2010; Worku, 2006; Shen *et al.*, 2009 and Stals, 2002) have identified capital adequacy as an important driver of bank performance. Whereas the works of Wahiu (2010) in their empirical study of the relationship between liquidity and macro-economic trends across industries using correlation analysis as tool of analysis, they concur with other scholars like Semu (2010); Worku (2006); Shen *et al.*, (2009) and Stals (2002), that there is less research examining the relationship between capital adequacy and bank performance therefore this requires to be investigated further. Other studies that studied influence of capital

adequacy but failed to link it with bank performance included the works of Lucchetta (2007) who found that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the inter-bank market. Other studies which deviated from capital adequacy and looked at other aspects of the banking liquidity factors are in the works of Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. The results were that there was positive and statistically significant effect of capital adequacy, lending interest rate, public expenditure to GDP, and growth on liquidity of banks. However, the study did not use correlational research design, did not cover commercial banks in Kisumu City, determinants of liquidity risk of banks as opposed to bank liquidity was studied, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City. It is therefore evident that no study has been done to establish the effect of capital adequacy on bank performance. It is therefore unknown particularly in the Kenyan context.

According to Comptrollers (1998) lending is the principal business activity for most commercial banks. The loan portfolio is typically the largest asset and the predominate source of revenue. As such, it is one of the greatest sources of risk to a bank's safety since and loans are soundness illiquid assets, increase in the amount of loans means increase in illiquid assets in the asset portfolio of a bank. According to Pilbeam (2005), in practice the amount of liquidity held by banks is heavily influenced by loan demand that is the base for loan growth.

Empirical studies (Bordeleau and Graham, 2010; Semu, 2010; Bunda and Desquilbet, 2008; Shen, Chen, Kao, dan Yeh, 2009 and Rauch *et al.*, 2009) have identified loan growth as an important factor in bank liquidity and performance. The results from the stream of research examining the link between loan growth and bank performance focused on relationship between liquid asset holdings and profitability (Bordeleau and Graham (2010). While some studies find that that deposit and capital have statistically significant relationship with bank's performance measure loan and liquidity have relationship with bank's performance measure return on asset (ROA) and ROE. (Semu (2010); Bunda and Desquilbet (2008), others find little evidence that loan growth has a significant impact on bank performance (Shen, Chen, Kao, dan Yeh (2009);

Rauch *et al.* (2009). It is therefore evident that no study has been done to determine the relationship between loan growth and performance. It is therefore unknown particularly in the Kenyan context. The few studies that have been done in this area were in developed countries.

Barr *et al.* (1994) has defined non-performing loans as those loans that are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract. It follows that any loan facility that is not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is non-performing. Therefore, the amount of non-performing loan measures the quality of bank assets. Non-performing loans can lead to efficiency problem for banking sector. Economists argue that failing banks tend to be located far from the most-efficient frontier because banks do not optimize their portfolio decisions by lending less than demanded (Barr *et al.* 1994).

Empirical literatures (Vodova, 2011; Saxegaard, 2006; Omran, 2003; Berger, 1995; Lucchetta, 2007 and Bunda and Desquilbet, 2008) have identified percentage of non-performing loans as one of the factors that influence bank performance. From the works reviewed, it is clear that none has focused on the effect of non-performing loans on performance of commercial banks in Kisumu City. Whereas the works of Vodova (2011) aimed at identifying the important factors affecting commercial banks liquidity of Czech Republic, it concurs with other scholars like Saxegaard (2006) Omran (2003) and Berger (1995); that there is little research examining the relationship between non-performing loans and bank performance therefore this requires to be investigated further. Other studies that studied influence of interest rates and non-performing loans but failed to link it with bank performance included the works of Lucchetta (2007) who found that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the inter-bank market. Other studies which deviated from non-performing loans and looked at other aspects of the banking liquidity factors are in the works of Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. There is no known information about the effect of non-performing loans on bank performance. This study therefore seeks to establish the effect of non-performing loans on bank performance.

Commercial banks play a vital role in the economic resource allocation of countries. They channel funds from depositors to investors continuously. They can do so, if they generate necessary income to cover their operational cost they incur in the due course. In other words for sustainable intermediation function, banks need to be profitable. Beyond the intermediation function, the financial performance of banks has critical implications for economic growth of countries. Good financial performance rewards the shareholders for their investment. This, in turn, encourages additional investment and brings about economic growth. On the other hand, poor banking performance as measured in terms of liquidity can lead to banking failure and crisis which have negative repercussions on the economic growth (Ongore, 2012).

## **1.2 Statement of the Problem**

Financial and institutions and markets literature show that capital adequacy, loan growth and percentage of non-performing loans are important drivers of bank liquidity and performance. Prior researches do not explore the link between capital adequacy and bank performance using correlational research design and regression analysis, use a small sample and do not study commercial banks' in Kisumu City. Therefore, it is unknown how capital adequacy associates with bank performance in Kisumu City. The results from the stream of research examining the link between loan growth and bank performance focused on relationship between liquid asset holdings and profitability. No study has been done to determine the relationship between loan growth and performance, particularly in the Kenyan context. The few studies that have been done in this area were in developed countries. There is no information focusing on the effect of non-performing loans on performance of commercial banks in Kisumu city. This study seeks to establish the effect of non-performing loans on performance of banks in Kisumu city.

## **1.3 Objectives of the Study**

The main objective of was to investigate the effect of the banking liquidity factors on performance of commercial banks in Kisumu City, Kenya.

Specifically, the study sought to:

- (i) Establish the effect of capital adequacy on performance of commercial banks in Kisumu City.

- (ii) Determine the relationship between loan growth and performance of commercial banks in Kisumu City.
- (iii) Establish the effect of percentage of non-performing loans on performance of commercial banks in Kisumu City.

#### **1.4 Research questions**

The research was guided by the following research questions:

- (i) What is the effect of capital adequacy on performance of commercial banks in Kisumu City?
- (ii) What is the relationship between loan growth and performance of commercial banks in Kisumu City?
- (iii) What is the effect of percentage of non-performing loans on performance of commercial banks in Kisumu City?



#### **1.5 Scope of study**

In Kenya, commercial banks are distributed in all the 47 counties but due to finance and time constraints the study concentrated only on commercial banks in Kisumu City, Kisumu County. The research was conducted on all the 27 commercial banks operating in Kisumu City making it a census study. The study was restricted to banking liquidity factors and performance of commercial banks in Kisumu City. The study covered a period of five years from 2010 to 2014. Besides, it is the most current period and within the same period financial turmoil originating in the developed world had since spread to developing countries and the Kenya's commercial banks had not been immune to the secondary effects of the globalization.

#### **1.6 Significance of the Study**

The study has great contribution to the existing knowledge in the area of banking liquidity factors affecting commercial banks' performance in the context of a developing country like Kenya. This in turn contributes to the well-being of the financial sector of the economy and the society as a whole. Therefore, the major beneficiaries from this study are the commercial banks, regulatory bodies, the academia and the society as a whole in the country.

## 1.7 Conceptual Frame Work

Independent Variables

Intervening Variable

Dependent Variable

### Banking Liquidity Factors

- Capital adequacy
- Loan growth
- Percentage of Non-Performing Loans

Political/Economic  
/Social/Technological  
Factors

### Commercial Banks' Performance

- ROE

**Figure 1.1: Banking Liquidity Factors and Performance of Commercial Banks Relationship**

Source: Adapted and modified from Vodova, 2011.

The above conceptual framework shows the relationship between banking liquidity factors and performance of commercial banks. The model is a modification of concepts studied by various researchers on control environment, monitoring, accountability, liquidity levels and performance of commercial banks. In the framework, the independent variables are the banking liquidity factors namely capital adequacy, loan growth and percentage of non-performing. The dependent variable is the bank performance which is measured in terms of ROE. In addition, there exist a number of intervening variables which include; political, economic and socio-economic factors which act as the control environment. It is assumed that there is a significant relationship between the independent and dependent variables, independent and intervening variables and independent, intervening and dependent variable. This model also will recognize other factors that determine liquidity levels in commercial banks.

## CHAPTER TWO

### LITERATURE REVIEW

This chapter first reviews theoretical literature on bank liquidity and its determinants. It then reviews empirical literature relevant to the study. Finally, it presents a summary of the gaps in the literature justifying the current research.

#### 2.1 Theoretical Literature

##### 2.1.1 Bank Liquidity Creation and Financial Fragility Theory Linking Bank Liquidity to Performance

According to the theory of financial intermediation, an important role of banks in the economy is to provide liquidity by funding long term, illiquid assets with short term, liquid liabilities. Through this function of liquidity providers, banks create liquidity as they hold illiquid assets and provide cash and demand deposits to the rest of the economy. Diamond and Dybvig (1983) emphasize the “preference for liquidity uncertainty of economic agents to justify the existence of banks: banks exist because they provide better liquidity insurance than financial markets. However, as banks are liquidity insurers, they face transformation risk and are exposed to the risk of run on deposits. More generally, the higher is liquidity creation to the external public, the higher is the risk for banks to face losses from having to dispose of illiquid assets to meet the liquidity demands of customers. A natural justification for the existence of deposit-taking institutions, hereby giving also an explanation for the economically important role of banks in providing liquidity, was initially modeled by (Bryant, 1980 and Diamond and Dybvig 1983). They showed that by investing in illiquid loans and financing them with demandable deposits, banks can be described as pools of liquidity in order to provide households with insurance against idiosyncratic consumption shocks.

The Bryant-Diamond/Dybvig models have been subject to a large number of follow-up researches, extending or testing the models. Of particular relevance for this study are the researches by Calomiris and Kahn (1991), Qi (1998) and Diamond and Rajan (2001), which develop and emphasize the point that demandable debt has interesting incentive implications for disciplining the bank management. The argument goes like this: on their asset side banks have illiquid loans whose market prices would be below their internal/book values in case of a fire

sale. Having to sell or to call loans prematurely would involve a loss. The greater part of the activities which banks undertake –and need to undertake –to monitor their loans, which includes their active involvement in the governance of borrowing corporations, are not really observable for outsiders.

However, at least a certain part of a commercial bank's definition and by law to be paid back on demand and on a first-come first-serve basis. This rule of distribution makes depositors wary that they might be late or stand too far behind in the waiting line in the case a bank encounters problems, and it makes them even aware of what little information they may have on the monitoring activity of the bank. This situation can lead to a bank run, and the danger of a run is what induces banks to do what their depositors want them to do, namely to be active delegated monitors in the spirit of (Diamond, 1984). Based on this argument Diamond and Rajan (2001), raised the question whether or not financial fragility where small shocks lead to can have large effects on assets prices is a desirable state for banks. They argue that the existence of the fragility itself gives banks the right incentives to create liquidity. According to them, any kind of regulation, such as capital standards, impair this liquidity creation and should thus be avoided.

Kashyap *et al.* (2002) also conducted a related analysis justifying the existence of banks' liquidity creation. They argue that because banks carry out lending and deposit taking under the same roof, synergies must exist between these two tasks. These synergies can be found in the way deposits and loan commitments are secured through the holding of liquid assets as collateral against withdrawals. They regard these liquid assets as costly overheads. These overheads can be share by the two separate functions, hence the synergy. A detailed analysis of the link between liquidity shortages and systemic banking crises is given by (Diamond and Rajan, 2005). It is argued that the failure of a single bank can shrink the pool of available liquidity to the extent that other banks could be affected by it. A contagion effect is the result. However, as solvency and liquidity effects interact it is hard to determine the root of a crisis.

Generally, liquidity risk arises from the fundamental role of banks in the maturity transformation of short-term deposits into long term loans. According to Kenya Financial Sector Stability Report (2010), banks liquidity risk includes two types of risk: funding liquidity risk and market

liquidity risk. Funding liquidity risk is the risk that the bank will not be able to meet efficiently both expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the firm. Market liquidity risk is the risk that a bank cannot easily offset or eliminate a position at the market price because of inadequate market depth or market disruption. There are strong interactions between funding liquidity risk and market liquidity risk, especially in periods of crisis.

Drehmann and Nikolau (2009) pointed to the fact that shock to funding liquidity can lead to asset sales and may lead to decrease of asset prices. Lower market liquidity leads to higher margin which increase funding liquidity risk. Global financial crisis in the second half of 2007 and early 2008 highlight the crucial importance of liquidity to the functioning of markets and the banking sector as well as links between funding and market liquidity risk, interrelationships of funding liquidity risk and credit risks, reputation effects on liquidity, and other links among liquidity and other typical banking features. Liquidity risk is not (although credit risk often arise as a liquidity shortage when the scheduled repayments fall due), but a „consequential risk“, with its o triggered or exacerbated by other financial and operating risks within the banking business (Chen *et al.* 2005). Therefore, the concepts of bank liquidity and performance are anchored on this theory.

### **2.1.2 Commercial Loan Theory Linking Bank Liquidity to Performance**

This theory is based on the assumption that repayment from the self-liquidating assets of the bank would be sufficient to provide for liquidity (Dodds, 1982). It ignores the fact that seasonal deposit withdrawals and meeting credit request could affect the liquidity position adversely. Moreover, the theory fails to reflect in the normal stability of demand deposits in the liquidity consideration (Nwankwo (1992). This view may eventually impact on the liquidity position of the bank. This theory has been subjected to various criticisms by Dodds (1982) and Nwankwo (1992). From the various points of view, the major limitation is that the theory is inconsistent with the demands of economic development especially for developing countries since it excludes long term loans which are the engine of growth. The theory also emphasizes the maturity structure of bank assets (loan and investments) and not necessarily the marketability or the

shiftability of the assets (Dodds, 1982). Therefore, the concepts of bank liquidity and performance are anchored on this theory.

## **2.2 Banking Liquidity Factors**



### **2.2.1 Capital Adequacy and Bank Performance**

Patheja (1994) has defined banks capital as common stock plus surplus plus undivided profits plus reserves for contingencies and other capital reserves. In addition since a bank's-loss reserves loan also serves as a buffer for absorbing losses, a broader definition of bank capital include this account. Opposing to the standard view of liquidity creation in which banks create liquidity by transforming liquid liabilities into illiquid assets, the recent theories indicate the creation of liquidity by changing asset mixes. Diamond and Rajan (2000, 2001) and Gorton and Winton (2000) showed that banks can create more or less liquidity by simply changing their funding mix on the liability side. Thakor (1996) shows that capital may also affect banks' asset portfolio liquidity creation through a change in the asset mix. The theoretical literature provides two opposite views on the relationship between bank capital and liquidity creation. Under the first view, bank capital tends to impede liquidity creation through two distinct effects: the financial fragility structure and the crowding-out of deposits hypothesis. Indeed, financial fragility structure, characterized by lower capital, tends to favor liquidity creation (Diamond and Rajan, 2000, 2001), while higher capital ratios may crowd out deposits and thereby reduce liquidity creation (Gorton and Winton 2000). Roughly described, the financial fragility structure effect is the outcome of the following process. The bank collects funds from depositors and lends them to borrowers. By monitoring borrowers, the bank obtains private information that gives it an advantage in assessing the profitability of its borrowers. However, this informational advantage creates an agency problem and the bank may extort rents from its depositors by requiring a greater share of the loan income. If depositors refuse to pay the higher cost, the bank withholds monitoring efforts or loan collecting efforts. As depositors know that the bank may abuse their trust, they become reluctant to put their money in the bank.

### **2.2.2 Loan Growth and Bank Performance**

Comptrollers (1998), states Handbook that lending is the principal business activity for most commercial banks. The loan portfolio is typically the largest asset and the predominate source of revenue. As such, it is one of the greatest sources of risk to a bank's safety since and loans are soundness illiquid assets, increase. in the amount of loans means increase in illiquid assets in the asset portfolio of a bank. According to Pilbeam (2005), in practice the amount of liquidity held by banks is heavily influenced by loan demand that is the base for loan growth. If demand for loans is weak, then the bank tends to hold more liquid assets (i.e. short term assets), whereas if demand for loans is high they tend to hold less liquid assets since long term loans are generally more profitable. Therefore, a growth in loans and advances has negative impact on banks liquidity.

### **2.2.3 Non-Performing Loans and Bank Performance**

Non-performing loans are loans that are outstanding in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract. It follows that any loan facility that is not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is non-performing. Therefore, the amount of non-performing loan measures the quality of bank assets. Non-performing loans can lead to efficiency problem for banking sector. It is found by a number of economists that failing banks tend to be located far from the most-efficient frontier because banks do not optimize their portfolio decisions by lending less than demanded (Barr et al. 1994). According to Bloem and Gorter (2001), though issues relating to non-performing loans may affect all sectors, the most serious impact is on financial institutions such as commercial banks and mortgage financing institutions which tend to have large loan portfolios. Besides, the large bad loans portfolios will affect the ability of banks to provide credit. Huge non-performing loans could result in loss of confidence on the part of depositors and foreign investors who may start a run on banks, leading to liquidity problems. Therefore, the amount of non-performing loans has a negative impact on banks liquidity.

## **2.3 Bank Performance Indicators**

Profit is the ultimate goal of commercial banks. All the strategies designed and activities performed thereof are meant to realize this grand objective. However, this does not mean that commercial banks have no other goals. Commercial banks could also have additional social and economic goals. However, the intention of this study is related to the first objective, profitability. To measure the profitability of commercial banks there are variety of ratios used of which Return on Asset, Return on Equity and Net Interest Margin are the major ones (Murthy and Sree, 2003; Alexandru *et al.*, 2008). In this study, bank performance was actualized using ROE which 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.

A business that has a high return on equity is more likely to be one that is capable of generating cash internally. Thus, the higher the ROE the better the company is in terms of profit generation. It is further explained by Khrawish (2011) that ROE is the ratio of net income after taxes divided by total equity capital. It represents the rate of return earned on the funds invested in the bank by its stockholders. ROE reflects how effectively a bank management is using shareholders 'funds. Thus, it can be deduced from the above statement that the better the ROE the more effective the management in utilizing the shareholders capital. However, this metric is general and it may not be appropriate for commercial banks.

## **2.4 Empirical Review**

### **2.4.1 Effect of Capital Adequacy on Performance of commercial banks in Kisumu City**

Berger (1995) used correlation analysis to investigate the statistical relationships between bank earnings and capital for U.S. banks over the period of 1983-1989 and found that, contrary to what one might expect in situations of perfect capital markets with symmetric information (see Modigliani and Miller 1958, 1963) in which there is no relationship between earning and bank capital), there was a positive relationship between capital and return on equity. However, only

capital as opposed to bank liquidity was studied, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

Using panel methodology, Vodova (2011) studied determinants of commercial banks' liquidity of Czech Republic using bank specific and macroeconomic data over the period from 2001 to 2009 and analyzed them with panel data regression analysis. The study considered four firm specific and eight macroeconomic independent variables which affect banks liquidity. The study findings were that bank liquidity was positively related to capital adequacy, interest rates on loans, share of non-performing loans and interest rate on interbank transaction. In contrast, financial crisis, higher inflation rate and growth rate of gross domestic product have negative impact on bank liquidity. The relation between the size of the bank and its liquidity was ambiguous as it was expected. The study also found that unemployment, interest margin, bank profitability and monetary policy interest rate/repo rate have no statistically significant effect on the liquidity of Czech commercial banks. However, the study looked at general liquidity factors and did not focus on capital adequacy and its association with bank performance using correlational research design. Besides, it did not cover commercial banks in Kenya.

A study by Fadare (2011) on the banking sector liquidity and financial crisis in Nigeria with the aim of identifying the key determinants of banking liquidity in Nigeria, and assessing the relationship between determinants of banking liquidity and financial frictions within the economy. It was employed a linear least square model and time series data from 1980 to 2009. The study found that only liquidity ratio, monetary policy rate and lagged loan-to-deposit ratio were significant for predicting banking sector liquidity. Secondly, it showed that a decrease in monetary policy rate, liquidity ratios, volatility of output in relation to trend output, and the demand for cash, leads to an increase in current loan-to-deposit ratios; while a decrease in currency in circulation in proportion to banking sector deposits; and lagged loan-to-deposit ratios leads to a decline in current loan-to-deposit ratios. Generally, the result suggested that during periods of economic or financial crises, deposit money banks were significantly illiquid relative to benchmarks, and getting liquidity monetary policies right during these periods is crucial in ensuring the survival of the banking sector. However, the study fails to investigate the specific

effect of capital adequacy on bank performance using correlational research design and regression analysis and did not study commercial banks in Kisumu City.

Moore (2010) investigated the effects of the financial crisis on the liquidity of commercial banks in Latin America and Caribbean countries. The result of the study showed that the volatility of cash-to-deposit ratio and money market interest rate had negative and significant effect on liquidity. Whereas, liquidity tends to be inversely related to the business cycle in half of the countries studied, suggesting that commercial banks tend to error on the side of caution by holding relatively more excess reserves during downturns. Generally, the results showed that on average, bank liquidity is about 8 % less than what is consistent with economic fundamentals. However, only financial crisis as opposed to capital adequacy was studied, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

Another study by Rauch *et al.* (2009) on determinants of liquidity created-owned by savings of all 457 state owned savings banks in Germany over the period 1997 to 2006. Germany's banks found that general macroeconomic influence shows that there is a positive relationship between the general health of the economy and the bank liquidity creation. The healthier the economy is the more liquidity is created. It was also found that banks with a higher ratio of interest to provision income create more liquidity. Other bank-related variables, such as size or performance revealed no statistically significant influence on the creation of liquidity by the banks. However, the study fails to investigate the specific effect of capital adequacy on bank performance using correlational research design and regression analysis and did not study commercial banks in Kisumu City.

Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. The results were that there was positive and statistically significant effect of capital adequacy, lending interest rate, public expenditure to GDP, and growth on liquidity of banks. However, the study did not use correlational research design, did not cover commercial banks in Kisumu City, determinants of liquidity risk of banks as opposed

to bank liquidity was studied, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

Lucchetta (2007) made empirical analysis of the hypothesis that interest rates affect banks risk taking and the European decision countries. The results of the study revealed that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the inter-bank market. Conversely, the inter-bank interest rate has a positive effect on such decisions. Typically, it is the smaller, risk-averse banks that lend in the inter-bank markets. Meanwhile, the risk-free interest rate is positively correlated with loans investment and bank risk-taking behavior. However, the study focused on interest rates and bank risk as opposed to banking liquidity factors and bank performance, fails to investigate the effect of capital adequacy on bank performance using correlational research design and regression analysis and did not study commercial banks in Kisumu City.

A study conducted by Stals (2002) investigating the factors that influence availability of money in an economy in South Africa revealed that depreciation of the exchange rate encouraged further capital outflows in form of negative leads and lags. The outflows of capital reduced liquidity in the banking sector and forced banks to borrow more from the reserve bank on a day-to-day basis. In his study on the monetary policy and money stability he observed that liquidity status would remain sensitive as money availability in a country reacted to rumors; the foreign exchange rate, interest rate and share prices tended to react to rumors. This had an indirect impact on volatility of speculative transactions and adverse international developments. He concluded that any deliberate actions taken by the monetary authorities to relax monetary policy must be implemented with caution because any turmoil leads to additional scars that may require time to heal. However, the study did not use correlational research design, did not cover commercial banks in Kisumu City, factors that influence availability of money as opposed to bank liquidity was studied, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

A study by Bordeleau and Graham (2010) on the relationship between liquid asset holdings and profitability for a panel of Canadian and U.S. banks over the period of 1997 to 2009 and found a

nonlinear relationship exists, whereby profitability was improved for banks that held some liquid assets, however, there was a point beyond which holding further liquid assets diminished bank's profitability. The researchers recommended that adopting a more traditional i.e., deposit and loan-based business model allows a bank to optimize profits with a lower level of liquid assets.

However, the study did not use correlational research design, did not cover commercial banks in Kisumu City, liquid assets holding and profitability as opposed to capital adequacy and performance was studied and fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

Using an unbalanced panel dataset of 12 advanced economies commercial banks over the period 1994-2006, Shen *et al.* (2009) empirically investigated the causes of liquidity risk and the relationship between bank liquidity risk and performance and the empirical results indicated that the bank-specific variable had the same effect on bank liquidity risk in two financial systems and liquidity risk was the endogenous determinant of bank performance. However, the study did not use correlational research design, did not cover commercial banks in Kisumu City and fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

A study in Ethiopia by Worku (2006) on the relationship between bank liquidity risk and financial performance by taking liquidity as an endogenous variable found that liquidity had an impact on the performance of commercial banks in Ethiopia and there was an inverse relationship between deposit/net loan and ROE. And the coefficient of liquid asset to total asset was positive and directly related with ROE. The study also found that the capital adequacy of all banks in Ethiopia were above threshold, meaning there was sufficient capital that could cover the risk-weighted assets. Depositors who deposit their money in all banks were safe because all the studied banks fulfilled NBE requirement. However, the study did not cover commercial banks in Kisumu City, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City using correlational research design.

The study conducted by Semu (2010) in Ethiopia intended to assess the impact of reducing or restricting loan disbursement on the performance of banks in Ethiopia. It also attempts to examine the possible factors that compel the banks to reduce or restrict lending. Quantitative

method particularly survey design approach was adopted for the study. The findings of the study showed that deposit and capital have statistically significant relationship with bank's performance measure loan and liquidity have relationship with bank's performance measure return on asset (ROA) and ROE. However, the relationship was found to be statistically insignificant. Deposit and capital have no performance in terms of ROA. The study suggested that when banks face lending constraints, they have to use their funds like by purchasing treasury bills and bonds. Moreover, banks must develop non-interest generating services. Excess cash maintained by banks should be used by diversifying credit options and to avoid inefficiencies. However, the study did not cover commercial banks in Kisumu City, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City using correlational research design.

Wahiu (2010) in Kenya investigated the relationship between liquidity and macro-economic trends across industries using correlation analysis as tool of analysis and found a significant positive relationship between interest rate and liquidity of firms listed at the NSE. However, the study focused on liquidity and macro-economic trends as opposed to banking liquidity factors and performance did not cover commercial banks in Kisumu City and fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

From the works reviewed above, it is clear that none has focused on the effect of capital adequacy on performance of commercial banks in Kisumu City. Whereas the works of Wahiu (2010) in their empirical study of the relationship between liquidity and macro-economic trends across industries using correlation analysis as tool of analysis, they concur with other scholars like Semu (2010); Worku (2006); Shen *et al.*, (2009) and Stals (2002), that there is less research examining the relationship between capital adequacy and bank performance therefore this requires to be investigated further. Other studies that studied influence of capital adequacy but failed to link it with bank performance included the works of Lucchetta (2007) who found that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the inter-bank market. Conversely, the inter-bank interest rate has a positive effect on such decisions. Typically, it is the smaller, risk-averse banks that lend in the inter-bank markets. Meanwhile, the risk-free interest rate is positively correlated with loans

investment and bank risk-taking behavior. Other studies which deviated from capital adequacy and looked at other aspects of the banking liquidity factors are in the works of Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. The results were that there was positive and statistically significant effect of capital adequacy, lending interest rate, public expenditure to GDP, and growth on liquidity of banks. However, the study did not use correlational research design, did not cover commercial banks in Kisumu City, determinants of liquidity risk of banks as opposed to bank liquidity was studied, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City. It is therefore evident that no study has been done to establish the effect of capital adequacy on bank performance. It is therefore unknown particularly in the Kenyan context.

#### **2.4.2 Relationship between Loan growth and Performance of commercial banks in Kisumu City**

Using panel methodology, Vodova (2011) studied determinants of commercial banks' liquidity of Czech Republic using bank specific and macroeconomic data over the period from 2001 to 2009 and analyzed them with panel data regression analysis. The study findings were that bank liquidity was positively related to interest rates on loans and interest rate on interbank transaction. The study also found that unemployment, interest margin, bank profitability and monetary policy interest rate/repo rate had no statistically significant effect on the liquidity of Czech commercial banks. However, the study looked at interest rates on loans and interest rate on interbank transaction as opposed to loan growth and did not focus on loan growth and its relationship with bank performance using correlational research design. Besides, it did not cover commercial banks in Kenya.

A study by Fadare (2011) on the banking sector liquidity and financial crisis in Nigeria employed a linear least square model and time series data from 1980 to 2009 and found that only liquidity ratio, monetary policy rate and lagged loan-to-deposit ratio were significant for predicting banking sector liquidity. However, the study fails to investigate the relationship

between banks' loan growth and bank performance using correlational research design and regression analysis and did not study commercial banks in Kisumu City.

Shen, Chen, Kao, dan Yeh (2009) studied the determinants of liquidity risk by utilizing panel data in 12 countries and found that liquid asset, external financing, supervisory, regulation, and macroeconomic influence liquidity risk. In the country with market based financial system, liquidity risk correlates negatively to bank's performance. On the contrary, in the country with bank-based financial system, liquidity risk does not correlate to bank's performance. However, the study fails to link loan growth to bank performance using correlational research design and regression analysis, did not study commercial banks' liquidity in Kisumu City.

Vuyyuri (2005) investigates the cointegrating relationship and the causality between the financial and the real sectors of the Indian economy using monthly observations from 1992 through December 2002. The financial variables used were interest rates, inflation rate, exchange rate, stock return and real sector was proxied by industrial productivity. However, the study fails to investigate the relationship between banks' loan growth and bank performance using correlational research design and regression analysis and did not study commercial banks in Kisumu City.

Johansen (1988) multivariate cointegration test supported the long-run equilibrium relationship between the financial sector and the real sector, and the Granger test showed unidirectional Granger causality between the financial sector and real sector of the economy. However, the study looked at the long run relationship, used Johansen multivariate cointegration test as opposed to correlational research design and regression analysis, and did not study commercial banks' loan growth in Kisumu City, Kenya.

Another study by Rauch *et al.* (2009) on determinants of liquidity created-owned by savings of all 457 state owned savings banks in Germany over the period 1997 to 2006. Germany's banks found that general macroeconomic influence shows that there is a positive relationship between the general health of the economy and the bank liquidity creation. The healthier the economy is the more liquidity is created. It was also found that banks with a higher ratio of interest to

provision income create more liquidity. Other bank-related variables, such as size or performance revealed no statistically significant influence on the creation of liquidity by the banks. However, the study fails to investigate the relationship between loan growth and bank performance using correlational research design and regression analysis and did not study commercial banks in Kisumu City.

Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. The results were that there was positive and statistically significant effect of capital adequacy, lending interest rate, public expenditure to GDP, and growth on liquidity of banks. However, the study did not use correlational research design, did not cover commercial banks in Kisumu City, determinants of liquidity risk of banks as opposed to bank liquidity factors was studied, fails to investigate the relationship between loan growth performance of Commercial banks in Kisumu City.

Lucchetta (2007) made empirical analysis of the hypothesis that interest rates affect banks' risk taking and the European decision countries. The results of the study revealed the inter-bank interest rate has a positive effect on banks' risk taking. However, the study focused on interest rates and bank risk as opposed to banking liquidity factors and bank performance, fails to study the relationship between loan growth and bank performance using correlational research design and regression analysis and did not study commercial banks in Kisumu City.

A study by Bordeleau and Graham (2010) on the relationship between liquid asset holdings and profitability for a panel of Canadian and U.S. banks over the period of 1997 to 2009 and found a nonlinear relationship exists, whereby profitability was improved for banks that held some liquid assets, however, there was a point beyond which holding further liquid assets diminished bank's profitability. The researchers recommended that adopting a more traditional i.e., deposit and loan-based business model allows a bank to optimize profits with a lower level of liquid assets.

However, the study did not use correlational research design, did not cover commercial banks in Kisumu City, liquid assets holding and profitability as opposed to capital adequacy and

performance was studied and fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City.

The study conducted by Semu (2010) in Ethiopia intended to assess the impact of reducing or restricting loan disbursement on the performance of banks in Ethiopia. It also attempts to examine the possible factors that compel the banks to reduce or restrict lending. Quantitative method particularly survey design approach was adopted for the study. The findings of the study showed that deposit and capital have statistically significant relationship with bank's performance measure loan and liquidity have relationship with bank's performance measure return on asset (ROA) and ROE. However, the relationship was found to be statistically insignificant. Deposit and capital have no performance in terms of ROA. The study suggested that when banks face lending constraints, they have to use their funds like by purchasing treasury bills and bonds. Moreover, banks must develop non-interest generating services. Excess cash maintained by banks should be used by diversifying credit options and to avoid inefficiencies.

However, the study did not cover commercial banks in Kisumu City, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City using correlational research design.

The results from the stream of research examining the link between loan growth and bank performance focused on relationship between liquid asset holdings and profitability (Bordeleau and Graham (2010)). While some studies find that that deposit and capital have statistically significant relationship with bank's performance measure loan and liquidity have relationship with bank's performance measure return on asset (ROA) and ROE. (Semu (2010); Bunda and Desquilbet (2008), others find little evidence that loan growth has a significant impact on bank performance (Shen, Chen, Kao, dan Yeh (2009); Rauch *et al.* (2009)). It is therefore evident that no study has been done to determine the relationship between loan growth and performance. It is therefore unknown particularly in the Kenyan context. The few studies that have been done in this area were in developed countries.

### **2.4.3 Effect of Percentage of Non-Performing Loans on Performance of commercial banks in Kisumu City**

Omran (2003) examined the impact of real interest rates as a key factor in the performance of the Egyptian stock market, both in terms of market activity and liquidity. The cointegration analysis through error correction mechanisms (ECM) indicated significant long-run and short-run relationships between the variables, implying that real interest rates had an impact upon stock market performance. However, the study fails to link non-performing loans to bank performance using correlational research design and regression analysis, did not study commercial banks' liquidity in Kisumu City.

Maghyereh (2002) investigated the long-run relationship between the Jordanian stock prices and selected macroeconomic variables, again by using Johansen's (1988) cointegration analysis and monthly time series data for the period from January 1987 to December 2000. The study showed that macroeconomic variables were reflected in stock prices in the Jordanian capital market. However, the study looked at the long run relationship, used Johansen multivariate cointegration test as opposed to correlational research design and regression analysis, and did not test the effect of non-performing loans on bank liquidity and omitted commercial banks' liquidity in Kisumu City.

Berger (1995) in the U.S.A analyses the statistical relationships between bank earnings and capital for U.S. banks over the period of 1983-1989 and finds that, contrary to what one might expect in situations of perfect capital markets with symmetric information in which there is no relationship between earning and bank capital), there is a positive relationship between capital and return on equity. However, the study looked at the relationship between bank earnings and capital as opposed to correlational research design and regression analysis, and did not test the effect of non-performing loans on bank liquidity and omitted commercial banks' liquidity in Kisumu City.

A study by Saxegaard (2006) on the pattern of excess liquidity in sub-sahara Africa countries using SVAR a (structural vector autoregression) found that excess liquidity impairs monetary

policy transmission so that monetary authority could not control money demand. However, the study fails to link non-performing loans to bank performance using correlational research design and regression analysis, did not study commercial banks in Kisumu City.

Vodova (2011) aimed at identifying the important factors affecting commercial banks liquidity of Czech Republic. In order to meet the study objective the researcher considered bank specific and macroeconomic data over the period from 2001 to 2009 and analyzed them with panel data regression analysis. The expected impact of the independent variables on bank liquidity were: capital adequacy, inflation rate and interest rate on interbank transaction/money market interest rate were positive and for the share of non-performing loans on total volume of loans, bank profitability, GDP growth, interest rate on loans, interest rate margin, monetary policy interest rate/repo rate, unemployment rate and dummy variable of financial crisis for the year 2009 were negative whereas, the expected sign for bank size was ambiguous (+/-).revealed that bank liquidity was positively related to capital adequacy, interest rates on loans, share of non-performing loans and interest rate on interbank transaction. In contrast, financial crisis, higher inflation rate and growth rate of gross domestic product have negative impact on bank liquidity. The relation between the size of the bank and its liquidity was ambiguous as it was expected. The study also found that unemployment, interest margin, bank profitability and monetary policy interest rate/repo rate have no statistically significant effect on the liquidity of Czech commercial banks. However, the study did not cover commercial banks in Kisumu City and did not use correlational research design.

From the works reviewed above, it is clear that none has focused on the effect of non-performing loans on performance of commercial banks in Kisumu City. Whereas the works of Vodova (2011) aimed at identifying the important factors affecting commercial banks liquidity of Czech Republic, it concurs with other scholars like Saxegaard (2006) Omran (2003) and Berger (1995); that there is little research examining the relationship between non-performing loans and bank performance therefore this requires to be investigated further. Other studies that studied influence of interest rates and non-performing loans but failed to link it with bank performance included the works of Lucchetta (2007) who found that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the inter-bank

market. Other studies which deviated from non-performing loans and looked at other aspects of the banking liquidity factors are in the works of Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. It is therefore evident that no study has been done to establish the effect of non-performing loans on bank performance. It is therefore unknown particularly in the Kenyan context.

## 2.5 Summary Literature and Gaps

In line with objective one which was to study the effect of capital adequacy on performance of commercial banks in Kisumu city. From the works reviewed above, it is clear that none has focused on the effect of capital adequacy on performance of commercial banks in Kisumu City. Whereas the works of Wahiu (2010) in their empirical study of the relationship between liquidity and macro-economic trends across industries using correlation analysis as tool of analysis, they concur with other scholars like Semu (2010); Worku (2006); Shen *et al.*, (2009) and Stals (2002), that there is less research examining the relationship between capital adequacy and bank performance therefore this requires to be investigated further. Other scholars who studied the influence of capital adequacy but failed to link it with bank performance included the works of Lucchetta (2007) who found that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the inter-bank market. Conversely, the inter-bank interest rate has a positive effect on such decisions. Typically, it is the smaller, risk-averse banks that lend in the inter-bank markets. Meanwhile, the risk-free interest rate is positively correlated with loans investment and bank risk-taking behavior. Other studies which deviated from capital adequacy and looked at other aspects of the banking liquidity factors are in the works of Bunda and Desquilbet (2008) who analyzed the determinants of liquidity risk of banks from emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. The results were that there was positive and statistically significant effect of capital adequacy, lending interest rate, public expenditure to GDP, and growth on liquidity of banks. However, the study did not use correlation research design, did not cover commercial banks in Kisumu City, determinants of liquidity risk of banks as opposed to bank liquidity was studied, fails to investigate the effect of capital adequacy on performance of Commercial banks in Kisumu City. It is therefore evident

that no study has been done to establish the effect of capital adequacy on bank performance. It is therefore unknown particularly in the Kenyan context. This study therefore seeks to establish the effect of capital adequacy on performance of commercial banks in Kisumu city.

The second objective was to determine the relationship between loan growth and performance of commercial banks in Kisumu. The results from the stream of research examining the link between loan growth and bank performance focused on relationship between liquid asset holdings and profitability (Bordeleau and Graham (2010)). While some studies find that that deposit and capital have statistically significant relationship with bank's performance measure loan and liquidity have relationship with bank's performance measure return on asset (ROA) and ROE. (Semu (2010); Bunda and Desquilbet (2008), others find little evidence that loan growth has a significant impact on bank performance (Shen, Chen, Kao, dan Yeh (2009); Rauch *et al.* (2009)). It is therefore evident that no study has been done to determine the relationship between loan growth and performance. It is therefore unknown particularly in the Kenyan context. The few studies that have been done in this area were in developed countries. This study therefore seeks to determine the relationship between loan growth and performance of commercial banks in Kisumu.

The third objective was to establish the effect of percentage of non-performing loans on performance of commercial banks in Kisumu. From studies done by different scholars, it is clear that none has focused on the effect of non-performing loans on performance of commercial banks in Kisumu City. Whereas the works of Vodova (2011) aimed at identifying the important factors affecting commercial banks liquidity of Czech Republic, it concurs with other scholars like Saxegaard (2006) Omran (2003) and Berger (1995); that there is little research examining the relationship between non-performing loans and bank performance therefore this requires to be investigated further. Other scholars who studied influence of interest rates and non-performing loans but failed to link it with bank performance included the works of Lucchetta (2007) who found that the risk-free interest rate negatively affects the liquidity retained by banks and the decision of a bank to be a lender in the inter-bank market. Other studies which deviated from non-performing loans and looked at other aspects of the banking liquidity factors are in the works of Bunda and Desquilbet (2008) analyzed the determinants of liquidity risk of banks from

emerging economies for a sample of commercial banks in 36 emerging countries between 1995 and 2000 with panel data regression analysis. It is therefore evident that no study has been done to establish the effect of non-performing loans on bank performance. It is therefore unknown particularly in the Kenyan context. This study therefore seeks to establish the effect of percentage of non-performing loans on performance of commercial banks in Kisumu city.

## CHAPTER THREE

### METHODOLOGY

This chapter presents the research methodology, research design, study area, target population, sampling frame, data collection methods, data analysis, data presentation and finally research ethics.

#### 3.1 Research Design

A correlational research design was used for this study. This research technique is used to relate two or more variables and allow predictions of outcomes based on causative relationships between the variables (Kothari, 2004).

#### 3.2 Study Area

This study was conducted in Kisumu City. Being a fast growing city, it has numerous commercial banks that operate in the area.

#### 3.3 Target Population

The unit of analysis was data on commercial bank collected from each bank in the sample. The population for this study comprised all the 27 commercial banks operating in Kisumu city hence a census study (see Appendix 3.0).

#### 3.4 Sampling frame

Data was collected from all 27 commercial banks operating within Kisumu City for a period of five years yielding 135 data points; this being a census study no sampling was required. Therefore, census approaches was used, since the units of study were not too many, are concentrated in Kisumu City and, therefore, accessible, and not prohibitive in terms of cost, time and other resources (Saunders *et al.*, 2007; Sekaran, 2000).

#### 3.5 Data Collection

The study employed secondary data. The secondary data on banking liquidity factors and bank performance of commercial banks covered a period of five years from 2010 to 2014 was collected using document review. It was collected from audited financial statements of

commercial banks which are readily available at the branch level. Since, the audited financial statements for the companies selected were used; the reliability and validity of the findings and conclusions were enhanced.

### **3.5.1 Sources of Data**

The study employed secondary data on banking liquidity factors and performance of commercial banks in Kisumu City. Secondary data was collected from different sources including audited published financial statements of the commercial banks as well as from CBK library and website.

### **3.5.2 Data Collection Procedure**

Data on banking liquidity factors and bank performance was extracted from financial reports of commercial banks and summaries provided by the CBK.

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

Secondary data on banking liquidity factors and bank performance was collected using document review using data collection sheet.

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

Reliability refers to the extent to which an experiment, test, or any measuring procedure yields the same results on repeated trials. Sekaran (2000) defines reliability as the extent to which an experiment, test, or any measuring procedure yields the same results on repeated trials. Use of secondary data derived from audited and published financial statements prepared through use of generally accepted accounting principles (GAAPs) was considered to be reliable since their preparation is guided by accounting principles, conventions and standards that are adopted globally.

### **3.5.5 Validity Test**

Validity is the amount of systematic or built-in error in measurement (Norland, 1990). Construct and face validities were checked using expert opinion of researchers in the field of finance and accounting who were asked to assess the extent to which the proxies used to measure variables of the study sufficiently addressed the subject area based on theoretical and practical consideration (Robson, 2002).

### 3.6 Data Analysis

Data was analyzed using both descriptive statistics such as mean, variance, standard deviation, mode and median; and inferential statistics such as Pearson correlation and multiple regression analyses. Pearson's correlation and multiple regression analyses were performed to fulfill specific objective (i), (ii) and (iii). Pearson correlation analysis was also be used to determine the direction, strength, and significance of the bi-variate relationships between liquidity and performance of commercial banks in Kisumu City.

#### 3.6.1 Model Specification

Regression analysis is the statistical technique that identifies the relationship between two or more quantitative variables: a dependent variable, whose value is to be predicted, and an independent or explanatory variable (or variables), about which knowledge is available. The technique is used to find the equation that represents the relationship between the variables. Multiple regressions provide an equation that predicts one variable from two or more independent variables.

The researcher conducted a multiple regression analysis so as to test relationship among variables (independent) on the financial performance of commercial banks in Kisumu City. The study adopted multiple regression guided by the following model:

$$ROE = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon_t \quad (3.1)$$

$X_1$  = Capital adequacy (total capital to total assets).

$X_2$  = Loan growth (annual loan growth rate).

$X_3$  = Non-performing loans (the percentage of non-performing loans on total volume of loans).

$\beta_0$  = Refers to time-invariant firm-specific effects

$\beta_1, \beta_2$  and  $\beta_3$  = are constants

$\epsilon$  = is a random disturbance

## CHAPTER FOUR

### RESULTS AND DISCUSSIONS

The chapter presents the results and discussions for each objective. A step by step analysis is done by first showing the descriptive statistics of the data used in the estimation. Thereafter both bi-variate and multivariate results and discussions are presented with respect to each objective.

#### **4.1 Descriptive Statistics of Capital adequacy, Loan growth, Non-performing Loans and Performance**

Table 4.1 displays the descriptive statistics for capital adequacy, loan growth, non-performing loans and performance across all the commercial banks sampled. Mean ROE is 0.16225 with the highest and lowest ROE of 0.693 and -0.238 respectively. ROE is the ratio of net earnings after tax divided by equity in book value and it measures the earnings generated by shareholders' equity for a period of time, usually one accounting year. This implies that on average, shareholders of commercial banks in the sample earn a return on their investment of 16.225 % and the highest return and lowest returns (loses) on equity are 69.3 % and -23.8 % respectively during the period 2010 to 2014. Consequently, this means that commercial banks generate Kshs16.225 profit on every Kshs 100 invested by their shareholders during the period under study.

The mean capital adequacy is 1.46725 meaning that total capital is 1.46725 times higher than total assets owned by commercial banks in the sample. Average loan growth is 0.24652, implying that loan portfolio growth rate for the commercial banks in the sample were 24.652 % annually for the period 2010- 2014. Mean percentage of non- performing loans was 0.69820, meaning that in every Kshs 100 loan extended to borrowers; Kshs 69.82 is not paid back.

**Table 4.1: Descriptive Statistics of Capital adequacy, Loan growth, Non-performing Loans and Performance**

Variables	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
CAP_ADEQ	135	.096	7.791	1.46725	1.532990
LOAN_GRW	135	.000	.794	.24562	.165690
NON_PERFLOANS	135	-.620	14.963	.69820	2.704712
ROE	135	-.238	.693	.16225	.128874
Valid N (listwise)	135				

Source: Field Data, 2014

## 4.2 Capital adequacy and Performance of Commercial Banks

In order to assess the effect of capital adequacy on performance, Pearson's correlation analysis is performed. It is a measure of strength of association between two variables. The result presents how capital adequacy associate with the dependent variable namely ROE.

**Table 4.2: Correlations of Capital Adequacy with ROE of Commercial Banks in Kisumu City**

Variables		CAP_ADEQ	ROE
CAP_ADEQ	Pearson Correlation	1	.304**
	Sig. (2-tailed)		.000
	N	135	135
ROE	Pearson Correlation	.304**	1
	Sig. (2-tailed)	.000	
	N	135	135

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

Source: Field Data, 2014

From Table 4.2 the association between capital adequacy and return on equity,  $r = .304$  ( $p = .000$ ) is weak though significant at 99 % confidence level. This implies that enhancing capital adequacy leads to improved performance as measured in terms of ROE. This finding is in

tandem with previous studies (Worku, 2006 and Shen *et al.*, 2009) who found that capital adequacy positively associated with performance metrics namely ROE and ROA.

The correlation coefficient of this association however, is small ( $r < .50$ ) indicating that some other variables might be influencing the associations between the variables (Maddala, 2005). As a result, further analysis permitting all variables that influence bank performance at once is necessary.

### **4.3 Multivariate Relationship between Capital Adequacy and Performance of Commercial Banks**

Multiple regression analysis, a multivariate analysis technique is used to estimate equation 3.1. Table 4.3 presents multiple regression results on the effect of banking liquidity factors on performance of commercial banks. The results indicate that capital adequacy is a significant positive predictor of performance measured in terms of return on equity (ROE),  $\beta = .023$  ( $p = .003$ ). This value is statistically significant since the p-value is less than 0.05. It can be inferred from this value that a unit change in capital adequacy leads to an increase in return on equity of commercial banks in Kisumu City of 0.023, all things being fixed. This finding is consistent with that of Bunda and Desquilbet (2008), Worku (2006) and Shen *et al.* (2009) who found a positive relationship between capital adequacy and performance, while it contradicts the works of Semu (2010) who found a negative relationship between capital adequacy and performance.

**Table 4.3: Multiple Regression Estimation Results on the Effect of Banking Liquidity Factors on Performance of Commercial Banks**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.146	.026		5.555	.000
LOAN_GRW	-.056	.069	-.071	-.802	.424
CAP_ADEQ	.023	.008	.269	3.005	.003
NON_PERFLOA NS	-.005	.004	-.095	-1.138	.257

Dependent Variable: ROE

Source: Field Data, 2014

The results in Table 4.4 indicate that the banking liquidity factors had a joint significant effect on financial performance of commercial banks in Kisumu City as shown by r value of 0.323. The R squared of 0.104 shows that the independent variables accounted for 10.4% of the variance on financial performance of commercial banks in Kisumu City.

**Table 4.4: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.323 <sup>a</sup>	.104	.084	.123356	1.383

a. Predictors: (Constant), NON\_PERFLOANS, LOAN\_GRW, CAP\_ADEQ

b. Dependent Variable: ROE

Source: Field Data, 2014

#### 4.4 Relationship between Loan Growth and Performance of Commercial Banks

In order to assess the relationship between loan growth and performance, Pearson's correlation analysis is performed. The results in Table 4.5 presents how loan growth associate with the dependent variable namely ROE.

**Table 4.5: Correlations of Loan Growth with ROE of Commercial Banks in Kisumu City**

Variables		LOAN_GRW	ROE
LOAN_GRW	Pearson Correlation	1	-.160
	Sig. (2-tailed)		.063
	N	135	135
ROE	Pearson Correlation	-.160	1
	Sig. (2-tailed)	.063	
	N	135	135

Source: Field Data, 2014

From Table 4.5 the association between loan growth and return on equity,  $r = -.160$  ( $p = .063$ ) is weak and insignificant at 95 % confidence level. This implies that accelerated loan growth leads to decline in performance as measured in terms of ROE. This finding is in tandem with previous studies (Vodova, 2011 and Fadare, 2011) who found that loan growth negatively associated with performance metric namely ROE. However, the finding is at variance with that of Rauch et al. (2009) who found a positive relationship between loan growth and performance.

Table 4.3 presents multiple regression results on the effect of banking liquidity factors on performance of commercial banks. The results indicate that loan growth is an insignificant negative predictor of performance measured in terms of return on equity (ROE),  $\beta = -.056$  ( $p = .424$ ). This value is statistically insignificant since the p-value is more than 0.05. It can be inferred from this value that a unit change in loan growth leads to an decrease in return on equity of commercial banks in Kisumu City of 0.056, all things being fixed. This finding is consistent with that of Bunda and Desquilbet (2008), Vodova (2011) and Fadare (2011) who found a negative relationship between loan growth and performance, while it contradicts the works of Rauch et al. (2009) who found a positive relationship between loan growth and performance.

#### 4.5 Effect of Non-Performing Loans on Performance of Commercial Banks

In order to establish effect of non-performing loans on performance, Pearson's correlation analysis is performed. The results in Table 4.6 indicate how non-performing loans associate with the dependent variable namely ROE.

**Table 4.6: Correlations of Non-Performing Loans with ROE of Commercial Banks in Kisumu City**

Variables		NON_PERFLOANS	ROE
NON_PERFLOANS	Pearson Correlation	1	-.118
	Sig. (2-tailed)		.174
	N	135	135
ROE	Pearson Correlation	-.118	1
	Sig. (2-tailed)	.174	
	N	135	135

Source: Field Data, 2014

Table 4.6 indicates the association between non-performing loans and return on equity,  $r = -.118$  ( $p = .174$ ) is weak and insignificant at 95 % confidence level. This implies that increase in non-performing loans lead to decline in performance as measured in terms of ROE. This finding is in tandem with previous studies (Vodova, 2011 and Fadare, 2011) who found that proportion of non-performing loans negatively associated with performance metric namely ROE. However, the finding is at variance with that of Rauch et al. (2009) who found a positive relationship between non performing loans and performance.

Table 4.3 presents multiple regression results on the effect of banking liquidity factors on performance of commercial banks. The results indicate that non performing loans is an insignificant negative predictor of performance measured in terms of return on equity (ROE),  $\beta = -.005$  ( $p = .257$ ). This value is statistically insignificant since the p-value is more than 0.05. It can be inferred from this value that a unit change in non-performing loans leads to an decrease in return on equity of commercial banks in Kisumu City of 0.005, all things being fixed. This finding is consistent with that of Bunda and Desquilbet (2008), Vodova (2011) and Fadare

(2011) who found a negative relationship between non-performing loans and performance, while it contradicts the works of Rauch et al.(2009) who found a positive relationship between the proportion of non-performing loans and performance.

## CHAPTER FIVE

### SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of study findings, conclusions and recommendations based on the major findings.

#### 5.1 Summary of the Findings

The first objective was to determine the effect of capital adequacy on performance of commercial banks. The findings were that that capital adequacy is a significant positive predictor of performance measured in terms of return on equity (ROE),  $\beta = .023$  ( $p = .003$ ).

The second objective of the study was to establish the relationship between loan growth and performance of commercial banks and the findings of the study were that loan growth was an insignificant negative predictor of performance measured in terms of return on equity (ROE),  $\beta = -.056$  ( $p = .424$ ).

The third objective of the study was to establish the effect of non-performing loans on performance of commercial banks and findings were that non performing loans is an insignificant negative predictor of performance measured in terms of return on equity (ROE),  $\beta = -.005$  ( $p = .257$ ).

#### 5.2 Conclusions of the Study

The study conclusions are outlined as per the objectives as follows:

From the findings of objective one, it can be concluded that that enhancing capital adequacy leads to improved performance as measured in terms of ROE. Based on objective two, it can be concluded that accelerated loan growth leads to decline in performance as measured in terms of ROE

Finally, with regard to the findings of objective three, it can be concluded that that increase in non-performing loans lead to decline in performance as measured in terms of ROE.

### **5.3 Recommendations**

Based on conclusion of objective one, the commercial banks should continue to improving capital to enhance its adequacy as this was found to be affect performance positively.

From the conclusion of objective two, commercial banks should reduce the rate of growth of loans as this was found to affect performance negatively.

Similarly, from conclusion of objective three, commercial banks should reduce the percentage of non-performing loans as this was found to affect performance negatively.

### **5.4 Limitations of the Study**

The outcome of the study cannot be generalized to all financial institutions since the study was limited to commercial banks in Kisumu City. The study adopted a correlational research design. Restricting the study to commercial banks only excludes a significant and most efficient institutional arrangement for undertaking productive activities thereby compromising its global generalizability.

Since the study covered only commercial banks, it left out other financial institutions such as insurance firms and these firms represent a proportion of companies in Kenya so the results of the study cannot be generalized for all companies in the Kenyan economy. Therefore, the researcher advises the readers to restrict generalization of the results within commercial banks sub-sector. Any generalization beyond these markets should be done with utmost caution.

The study relies on secondary data filed by individual companies with the CBK. The data is assumed to be reliable.

Furthermore, the data is subject to different accounting policies and since the firms had not adopted uniform accounting policies, random accounting year ends, the data may exhibit such weaknesses. Therefore, like many empirical studies that rely on disclosed proxy data, proxy disclosures may not represent all aspects of corporate performance. In order to redeem this weakness, data was standardized using financial ratio analysis.

## **5.5 Suggestions for Further Research**

In order to improve this study, the researcher would like to suggest the following for further investigation. An exclusive study on the liquidity factors that influence the banks' performance in Kenya. Future research should be conducted on categories of demographic characteristics. Such characteristics could be on the bank ownership and size of the bank among others.

Testing of the other factors that were put forward other than those included in the model to determine their relative importance.

Further research could be conducted based on various geographical areas since such areas represent a variation in target markets and consequently the customers banking habits. Comparisons could be done on whether or not there is any variation or similarity.

A study of the non-banking financial institutions should be undertaken in order to make a comparison of the results. Since the study tested only the banking institutions, other financial institutions should be studied in order to compare the results.

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