

**RELATIONSHIP BETWEEN CORPORATE LIQUIDITY RISK AND
SOLVENCY OF COMMERCIAL BANKS IN KENYA**

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DECLARATION

STUDENT'S DECLARATION

I declare that this project is my original work and has never been submitted for a degree in any other university or college for examination/academic purposes.

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

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DEDICATION

I dedicate this research work to my lovely family: My dear husband Mike, my daughter Abigael Wambui, my parents Mr. and Mrs. Muthike and my brothers and sister Murugi for their love and support throughout the program. May God bless you.

ABSTRACT

Risk-taking is an inherent element of banking and, indeed, profits are in part of the reward for successful risk taking in business. However, excessive or poorly managed risk can lead to losses and thus endanger the safety of a bank's deposits. The management of financial institutions should recognize measure, monitor and control the overall levels of risks undertaken. The purpose of the study was to establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya. The study was anchored on; shiftability theory liquidity, anticipated income theory of liquidity, liquidity motive theories and financial economics theory. The study adopted a descriptive research design. The population consisted of 43 licensed commercial banks in Kenya and that had been in operation during the period 2012 to 2016. A census study was carried out therefore no sampling was done. The study was facilitated by use of secondary data that was extracted from published financial reports of the commercial banks, articles and papers relating to relationship between corporate liquidity risk and solvency of commercial banks in Kenya and five-year period commencing 2012 up to 2016. The data collected was cleaned, coded and systematically organized in a manner that facilitates analysis using the Statistical Package for Social Sciences (SPSS). Quantitative analysis was used through descriptive statistics such as measure of central tendency to generate relevant percentages, frequency counts and mean where possible. The coefficient of determination (R^2) was used to measure the extent to which the variation in solvency is explained by the corporate liquidity risk. F-statistic and t-statistics were also computed at 95% confidence level to test whether there is any significant relationship between variables of corporate liquidity risk and solvency of commercial banks in Kenya. The study found that leverage with a coefficient of 0.823, liquidity risk with a coefficient of 0.723; firm size with a coefficient of 0.812, capital adequacy with a coefficient of 0.576 and operation efficiency with a coefficient of 0.673 were positively and significantly related to the Solvency of Commercial Banks. The study concluded that leverage had the greatest effect on the Solvency of Commercial Banks followed by firm size then liquidity risk then operational efficiency while capital adequacy had the least effect to the Solvency of Commercial Banks. The study recommends that bank managers should take note of the fact that the size of the banks influences their solvency, that the management of commercial banks should to formulate strategies to be adopted in order to militate against liquidity risks for a better financial performance and a need for Commercial banks in Kenya to increase their short term assets it was revealed that increase in banks liquidity positively influence the solvency of the banks.

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LIST OF ABBREVIATIONS

AMFI	Association of Micro Finance Institutions Reports
CBK	Central Bank of Kenya
CMA	Capital Markets Authority
DPFB	Deposit Protection Fund Board
DTMFIs	Deposit Taking Micro Finance Institutions
KCPA	Kenya Credit Providers Association
LOLR	Lender of Last Resort
LRM	Liquidity Risk Management
ROA	Return on Asset
SACCOs	Savings and Credit Cooperative Societies
SPSS	Statistical Package for Social Sciences

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A risk that represents about an investment that has less marketability or that cannot be sold early in order to protect from potential loss is named as liquidity risk. Liquidity in banking sector frequently consists of power money created by central banks, broad money created through traditional bank lending system, securitized debts created by capital markets, and derivatives. The point and time when certain liquidity featured investment pinches to face subordinate composition against these investments are elaborated as investment under liquidity risk. Liquidity risk forces entire entity to execute alternative decision rather than investment conversion into cash. Liquidity risk parameters are widely investigated scientifically. Liquidity risk depends upon liquidity risk management (LRM) strategies regarding global and domestic environment, majorly on proportionate of prime deposits (Correa, Goldberg & Rice, 2014).

The study is anchored on; shiftability theory liquidity, anticipated income theory of liquidity, liquidity motive theories and financial economics theory. The shiftability theory by Harold (1915) held that banks could most effectively protect themselves against massive deposit withdrawals by holding, as a form of liquidity reserve, credit instruments for which there existed a ready secondary market. Embodied these ideas and equated intrinsic soundness of term loans, which were of growing importance, with appropriate repayment schedules adapted to the anticipated income or cash flow of the borrower. The economics and finance literature analyze possible reasons for

firms to hold liquid assets. Financial economics theory by Copeland (1946) suggests that corporate risk management is apt to increase firm value in the presence of capital market imperfections such as bankruptcy costs, a convex tax schedule, or underinvestment problems.

Liquidity risk in commercial banks is defined as the possibility that over a specific horizon, the bank will become unable to settle obligations with immediacy (Drehmann & Nikolaou, 2013). As liquidity problems of some banks during global financial crisis showed, liquidity is very important for functioning of financial market and the banking sector. And the return of such financial instruments is associated to the nature of risk on stock indices categorized by risk premium theory (Abdalla, 2012). The players in the banking sector have since experienced increased competition over the last few years resulting from increased innovations among the new players and entrants in to the market. Such cross sectional matter of liquidity risk is valued contextually that shows it as an antecedent of stock returns. Moreover, the term structure of fixed income financial instruments also determines liquidity risk (Jarrow & Roch, 2013).

1.1.1 Commercial Banks Liquidity Risk

The liquidity risk, for a bank, is the expression of the probability of losing the capacity of financing its transactions; it is the probability that the bank cannot honor its obligations to its clients, which include but are not limited to withdrawal of deposits, maturity of other debt, covering additional funding requirements for the loan portfolio and investment. The management of the liquidity risk is important at least for two reasons: primarily an inadequate level of liquidity may lead to the need to attract additional sources of with higher costs thus reducing the profitability of the

bank which may ultimately lead to insolvency; and secondly an excessive liquidity may lead to a decrease of the return on assets and in consequence poor financial performance. A bank has a potential of appropriate liquidity when (Greuning & Bratanovic, 2004).

The liquidity level of a bank, which refers to the ability of a bank to fulfill its obligations to depositors, determines the level of bank performance. According to Dang (2011) adequate level of liquidity is positively related with bank profitability. The most common financial ratios that reflect the liquidity position of a bank according to the above author are customer deposit to total asset and total loan to customer deposits. Therefore, the vulnerability of banks to liquidity risk is determined by the funding risk and the market risk. The funding liquidity risk is caused by the maturity mismatch between inflows and outflows and/or the sudden and unexpected liquidity needs due to contingency conditions (Duttweiler, 2009).

Liquidity risk arises from situations in which a party interested in trading an asset cannot do it because nobody in the market wants to trade that asset. An investment may sometimes need to be sold quickly. Unfortunately, an insufficient secondary market may prevent the liquidation or limit the funds that can be generated from the asset. Some assets are highly liquid and have low liquidity risk such as stock of a publicly traded company, while other assets are highly illiquid and have high liquidity risk such as a house (Kiyotaki & Moore, 2008).

Liquidity risk will be measured using current ratio, quick ratio and cash ratio. The current ratio is a liquidity ratio that measures a company's ability to pay short-term and long-term obligations. The quick ratio, also known as the acid-test ratio, is a liquidity ratio that further refines the current ratio by measuring the level of the most

liquid current assets. The cash ratio is another measurement of a company's liquidity and their ability to meet their short-term obligations.

1.1.2 Solvency of Commercial Banks

Solvency is the ability of a financial institution to meet its obligations in the event of cessation of activity or liquidation. It refers to a company's long run financial viability and its ability to cover long-term obligations. Bank is considered solvent if the total assets exceed total liabilities. If the total assets are lower than total liabilities, the bank faces an insolvency risk and is said to be technically insolvent. Insolvency risk shows the probability of default of a representative Insurance. The solvency problem tends to be more long-term than the previously described liquidity issue and historically, insurance have always held on to funds and stopped lending when there is a solvency crisis (Kyule, 2015).

The solvency margin is designed to take care of problems that are usually not anticipated. It also provides elbow room to the managers of insurers to rectify problems and take precautionary measures. However, whether an insurance company fails also depends upon the magnitude of the crisis. Ordinarily, an insurance company with the requisite solvency margin is not likely to fail. However, insurance Business is risky in nature and there can be no absolute guarantee. Events such as the terrorist attack on the World Trade Centre in New

York can create unexpected liabilities of intense difficulty to anticipate and cover. Liabilities can also increase manifold as a result of fraud by employees. No insurance regulator or company can completely guard against fraud, solvency margin norms notwithstanding. However, such occurrences are rare (Weebly, 2013).

The solvency indicates whether a company's cash flow is sufficient to meet its short-term and long-term liabilities. Banks can use ratios to analyze solvency. The interest coverage ratio divides operating income by interest expense to show a company's ability to pay the interest on its debt, with a higher result indicating a greater solvency. The debt-to-assets ratio divides a company's debt by the value of its assets to show whether a company has taken on too much debt, with a lower result indicating a greater solvency.

1.1.3 Commercial Banks Liquidity Risk and Solvency

While the liquidity of a bank relates to its ability to meet short-term commitment when they fall due, solvency is the ability of a bank to ultimately to meet all its obligations (Casu et al, 2006). For a bank to be solvent means that the value of assets has to be greater than liabilities then the difference between the two being the bank's capital. There are situations in which some assets goes bad, for instance unpaid loans, then the banks must make charges against the loan portfolio that are paid for from retained earnings. When profits are sufficient, then the level of bank capital and its capital adequacy ratio remained unchanged.

The liquidity and solvency position of a bank are related because a severe liquidity shortfall can ultimately result in a solvency problem. Generally if a bank is unable to meet its liquidity requirements it will first attempt to obtained support through the Lender of Last Resort (LOLR) facility by borrowing from the central bank. However, if this option is not available then the bank will have to consider bearing the losses from its capital resources thus reducing the bank's capital position (Johnson, 2002).

Liquidity and solvency are two important aspects of overall banks management, liquidity refers to the balance between assets in the form of cash or readily convertible

into cash (current assets) and current liabilities, whereas solvency states the relationship between borrowed funds and owner's funds in the capital structure of a bank. It includes debt, common equity that are used to finance the bank's total assets, operations and financial growth (Goel et al., 2015). Liquidity can be defined as the ability to provide cash to meet day-to-day needs as they arise (Walsh, 2008). These ratios help to determine whether an entity will be able to meet its financial obligations in the short-term, whereas solvency indicates the ability to meet long term financial obligation, Solvency is traditionally viewed as arising from financing activities: firms borrow to raise cash for operations.

Liquidity is essential in all banks to meet customer withdrawals, and provide funds for growth, so Banks must maintain sufficient levels of cash, liquid assets, and prospective borrowing lines to meet expected and contingent liquidity demands. Liquidity risk increase in commercial bank has an inversely relationship on its solvency

1.1.4 Commercial Banks in Kenya

Commercial banks play a vital role in the economic resource allocation of countries (Ongore, 2013). They contribute to economic growth of the country by making funds available for investors to borrow as well as financial deepening in the country (Otuori, 2013). The banking industry in Kenya is regulated by the companies Act, the banking Act, the central bank of Kenya Act and other guidelines issued by the central bank of Kenya. According to the Central Bank of Kenya (2016), there are 43 licensed commercial banks in Kenya. Among these, three of them are public financial institution with government and other state corporations being the majority shareholders. The rest of the banks are private with 27 of them being local

commercial banks and 13 being foreign banks. There are 7 Tier 1 banks commanding 58.2 per cent market share, 12 Tier 2 Medium size Banks with 32.42 per cent and 21 Tier 3 small banks with a market share of 9.24 per cent (CBK, 2016).

Moreover, commercial banks having a large exposure in long-term lending face problems of liquidating the same during times of immense liquidity pressure raising their liquidity risk. In financial leverage of commercial banks, debt and equity are the basic components of the firm's financial leverage. Capital adequacy of commercial banks in Kenya is highly regulated because capital plays a crucial role in reducing the number of bank failures and losses to depositors when a bank fails as highly leveraged firms are likely to take excessive risk in order to maximize shareholder value at the expense of finance providers. Operational efficiency found a positive impact of operational efficiency on the future performance of banks. Size of the Firm Large banks with market power have typically been viewed as having incentives that minimize their risk-taking behaviour and improve the quality of their assets. High liquidity risk has greatly contributed to collapsing of some of commercial banks in Kenya from 2007 to 2015; Chase bank, Trade bank, Euro bank and Charter House (CBK, 2016).

1.2 Research Problem

Commercial banks worldwide play an important role as financial intermediaries for savers and borrowers (Said, 2012). According to Kenya Credit Providers Association (KCPA, 2010) commercial banks in the country disbursed over US\$10 billion in loans. Non-formal financial institutions served the remainder of the loans market. These included credit union/SACCOs, which disbursed US\$2 billion in loans, and micro finance institutions (MFI), which managed only US\$300 million (KCPA,

2010). Oloo (2009) described the banking sector in Kenya as the bond that holds the country's economy together. Despite the growth in the Kenyan banking sector, the sector still faces many challenges with respect to management of risks that banks they are exposed to (Mwega, 2009). According to CBK, operating efficiency is one of the most critical risks faced by financial institutions in Kenya and Kenyan banks are yet to adopt model-based approaches in assessing their operating efficiency (CBK, 2011).

Risk-taking is an inherent element of banking and, indeed, profits are in part the reward for successful risk taking in business. However, excessive or poorly managed risk can lead to losses and thus endanger the safety of a bank's deposits. The management of financial institutions should recognize measure, monitor and control the overall levels of risks undertaken. Sound risk management systems enable managers to take risks knowingly, reduce risks where appropriate and strive to prepare for a future that cannot be predicted with absolute certainty. The types and degree of risks a bank may be exposed to depend upon a number of factors such as its size, complexity of business activities and volume. According to CBK report (2014), the most common risks in financial institutions were; credit risk, liquidity risk, interest rate risk, reputational risk and compliance/regulatory risks.

Banks operate efficiently by directing society's savings toward those enterprises with highest expected social returns and monitoring them carefully after lending society's scarce resources are allocated more efficiently. In contrast, banks that simply operate with waste and inefficiency will slow down economic growth and reduce society's welfare. Efficiency in intermediation of funds from savers to borrowers enables allocation of resources to their most productive uses (Said, 2012). The importance of operating efficiency for banks was put into evidence by a study done on Indian

scheduled commercial banks (Siraj & Pillai 2011). Its findings were that key determinants of operational efficiency were affected by the global financial crisis. This reinforces the need to understand the drivers of operational efficiency for proper management of commercial banks.

The key challenges faced by the institutions during formulation and implementation of the liquidity risk management function were the lack of the appropriate risk management policies, lack of adequate, skilled manpower, lack of appreciation by the rest of the organization, of the role played by the Risk Management function, and inadequate management information systems (CBK, 2015). Further, according to the Deposit Protection Fund Board (DPFB) report, operating efficiency was one of the most critical risks faced by financial institutions in Kenya and Kenyan banks were yet to adopt model-based approaches in assessing their operating efficiency (Central Bank of Kenya, 2015).

Locally, a number of studies have been done on liquidity with various aspects of organizations operations; Bowa (2015) determined the effect of bank capitalization on liquidity of commercial banks in Kenya, Karani (2013) conducted a study on the effect of liquidity management on profitability of commercial banks in Kenya, Kibuchi (2015) established the relationship between liquidity risk and financial performance of commercial banks in Kenya, Kyule (2015) assessed the impact of liquidity and solvency on financial performance of firms listed at the Nairobi securities exchange. However, the studies above did not estimate the direct relationship between capital requirements and liquidity risk position of the banks. The studies have not centered on the liquidity risk especially risks arising from the asset side. As a result of this gap, the current research sought to answer the following

question: what is the relationship between corporate liquidity risk and solvency of commercial banks in Kenya?

1.3 Research Objectives

The objective of the study was to establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

1.4 Value of the Study

Commercial Banks Management

The study findings would benefit management and staff of commercial banks who would gain insight into how their institutions can effectively manage their liquidity creation process by coming up with appropriate practices. This study would offer an understanding on the relationship between corporate liquidity risk and solvency of commercial banks in Kenya that would enable them to compete effectively with other banks in the emerging economies. Several practices on liquidity creation process would be discussed for the benefit of the managers.

Governments and Policy Makers

The understanding of the relationship between corporate liquidity risk and solvency of commercial banks in Kenya would help policy makers, governments and other stakeholders to design targeted policies and programs that would actively stimulate the growth and sustainability of the commercial banks in the country, as well as help those policy makers to support, encourage, and promote the establishment of appropriate policies to guide the banks capitalization process. Regulatory bodies such as Central Bank of Kenya (CBK), Capital Markets Authority (CMA) and the Kenya

Revenue Authority can use the study findings to improve on the framework for regulation.

Researchers and Academicians

It is hoped that the findings would be valuable to the academicians, who may find useful research gaps that may stimulate interest in further research in the future. Recommendations would be made on possible areas of future studies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, theories surrounding the study of the relationship between corporate liquidity risks on solvency of commercial banks in Kenya are presented. Empirical literature related to relationship between investment and solvency margins of insurance companies is reviewed as presented by various scholars and researchers in both global and local perspectives. This chapter presents the theoretical review, determinants of solvency, empirical studies and summary of literature review.

2.2 Theoretical Review

The study was anchored on; shiftability theory liquidity, anticipated income theory of liquidity, liquidity motive theories and financial economics theory

2.2.1 The Shiftability Theory of Liquidity

The Shiftability theory liquidity was developed by Harold, Moulton in 1915, the shiftability theory held that banks could most effectively protect themselves against massive deposit withdrawals by holding, replaced the commercial loan theory and was supplemented by the doctrine of anticipated income. As a form of liquidity reserve, credit instruments for which there existed a ready secondary market (Drehmann & Nikolaou, 2013). Included in this liquidity reserve were commercial paper, prime bankers' acceptances and, most importantly as it turned out, Treasury bills. Under normal conditions all these instruments met the tests of marketability and, because of their short terms to maturity, capital certainty.

A major defect in the Shiftability theory was discovered similar to the one that led to the abandonment of the commercial loan theory of credit, namely that in times of general crisis the effectiveness of secondary reserve assets as a source of liquidity vanishes for lack of a market (Casu et al, 2006). The shiftability theory survived these realizations under a modified form that included the idea of ultimate liquidity in bank loans resting with shiftability to the Federal Reserve Banks. Under this institutional scheme, the liquidity concerns of banks were partially returned to the loan portfolio, where maintenance of quality assets that could meet the test of intrinsic soundness was paramount (Allen & Gale, 2004).

2.2.2 Anticipated Income Theory of Liquidity

Anticipated income theory of liquidity was formalized by Herbert Prochnow in 1949, embodied these ideas and equated intrinsic soundness of term loans, which were of growing importance, with appropriate repayment schedules adapted to the anticipated income or cash flow of the borrower (Abdalla, 2012).

The credit demands of business were well accommodated under this system of banking policy, and the use of loan commitments was freely pursued. Changing economic conditions, however, placed extra demands on the banking system that resulted in a new approach to balance sheet management, and businesses faced new financial challenges (Jarrow & Roch, 2013). Under this emerging state of affairs, bank loan commitment policies would come to play a more important part in the credit process.

2.2.3 Liquidity Motive Theories

Almeida et al (2002) proposed a theory of liquidity motive that is based on the assumption that choices regarding liquidity would depend on firms' access to capital markets and the importance of future investments to the firms. The model predicts that financially constrained firms would save a positive fraction of incremental cash flows, while unconstrained firms would not. The economics and finance literature analyze possible reasons for firms to hold liquid assets. Keynes (1936) identified three motives on why people demand and prefer liquidity. The transaction motive, here firms hold cash in order to satisfy the cash inflow and cash outflow needs that they have. Cash is held to carry out transactions and demand for liquidity is for transactional motive. The demand for cash is affected by the size of the income, time gaps between the receipts of the income, and the spending patterns of the cash available. The precautionary motive of holding cash serves as an emergency fund for a firm.

Empirical evidence confirms that firms classified as financially constrained save a positive fraction of their cash flows, while firms classified as unconstrained do not. The cost incurred in a cash shortage is higher for firms with a larger investment opportunity set due to the expected losses that result from giving up valuable investment opportunities (Greuning & Bratanovic, 2004). To the extent that liquid assets other than cash can be liquidated in the event of a cash shortage, they can be seen as substitutes for cash holdings. Consequently, firms with more liquid asset substitutes are expected to hold less cash. It is generally accepted that leverage increases the probability of bankruptcy due to the pressure that rigid amortization plans put on the firm's treasury management. To reduce the probability of

experiencing financial distress, firms with higher leverage are expected to hold more cash. On the other hand, to the extent that leverage ratio acts as a proxy for the ability of the firms to issue debt it would be expected that firms with higher leverage (higher ability to raise debt) hold less cash. Thus, the predicted relationship between cash holdings and leverage is ambiguous.

2.2.4 Financial Economics Theory

This theory suggests that corporate risk management is apt to increase firm value in the presence of capital market imperfections such as bankruptcy costs, a convex tax schedule, or underinvestment problems. According to Carter et al (2006), risk management can increase shareholder value by harmonizing financing and investment policies. When raising external capital, firms may under invest. Derivatives can be used to increase shareholder value by coordinating the need for and availability of internal funds. Conflicts of interest between the shareholders and debt holders can also lead to underinvestment.

An underinvestment problem can occur when leverage is high and shareholders only have a small residual claim on a firm's assets, thus the benefits of safe but profitable investment projects accrue primarily to bondholders and may be rejected (Bessembinder, 1991). A credible risk management can mitigate underinvestment costs by reducing the volatility of firm value. As the underinvestment problem is likely to be more severe for firms with significant growth and investment opportunities, various measures such as the market-to-book ratio, research and development to sales ratio, capital expenditure to sales, net assets from acquisitions to size are used for testing the underinvestment hypothesis.

2.3 Determinants of Solvency

Solvency is determined by commercial banks liquidity risk, financial leverage, size of the firm, operational efficiency and capital adequacy as discussed below.

2.3.1 Commercial Banks Liquidity Risk

In easier terms, commercial banks liquidity risk can be defined as the risk of being unable to liquidate a position timely at a reasonable price (Muranaga & Ohsawa, 2002). From this definition, there are two key dimensions of commercial banks liquidity risk cited namely liquidating the assets as and when required; and at a fair market value. Banks face liquidity risk if they are not liquidating their assets at a reasonable price. The price fetching remains precarious due to frazzled sales conditions, while liquidating any of the bank's assets urgently. This may result in losses and a significant reduction in earnings. Large-scale withdrawal of deposits may create a liquidity trap for banks (Kumar, 2008), but this may not be always the primary source of liquidity risk. Moreover, banks having a large exposure in long-term lending may face problems of liquidating the same during times of immense liquidity pressure. As such, the two elements of a bank's liquidity are intertwined.

Banks do not need to be worried about the maturity transformation if they have the assets that can be sold without bearing any loss. Whereas, banks having assets that are going to be matured in a shorter period may have a less need to keep the liquid assets. This increases the demand of depositors creating liquidity risk. This may cause the failure of a given bank or even the entire banking system due to contagion effect (Diamond & Rajan, 2005). High liquidity increases the leverage and a highly leveraged bank may turn into the consumer of liquidity from the provider.

2.3.2 Financial Leverage

The combination of debt and equity to finance firm's short term and long-term assets is stated as financial leverage of the firm (Smaghi, 2007). Debt and Equity are the basic components of the firm's financial leverage. Financial structure is most often referred to as firm's debt-to-equity ratio, which provides insight into how risky a company is. According to Jensen (1986), there's an optimal debt ratio that maximizes the value of a firm and that there is an advantage to financing with debt as interest paid on debt by firms is lower than the interest paid on equity.

A company that is more heavily financed by debt poses greater risk, as this firm is relatively highly leveraged. Maximizing the wealth of shareholders requires a perfect combination of debt and equity, whereas cost of capital has a negative correlation in this decision and it has to be as minimum as possible Kosmidou (2009), asserted that by changing the financial structure of debt and equity composition a firm can increase its value in the market.

2.3.3 Size of the Firm

Large banks with market power have typically been viewed as having incentives that minimize their risk-taking behavior and improve the quality of their assets. Keeley (1990) as cited by Northcott (2004) argues that the rise in bank failures in the United States during the 1980s was due in part to an increase in competition in the banking industry. Flamini et al (2009) noted that if high returns are the consequence of market power, this implies some degree of inefficiency in the provision of financial services. In this case it should prompt policymakers to introduce measures to lower risk, remove bank entry barriers if they exist, as well as other obstacles to competition, and re-examine regulatory costs. But bank profits are also an important source for equity.

If bank profits are reinvested, this should lead to safer banks, and, consequently high profits could promote financial stability.

Firm size is the speed and extent of growth that is ideal for a specific business and it's indicated by the management group or the amount of assets a firm possesses compared to others in the same industry (Kigen, 2014). Larger firms are said to be able to produce goods more cheaply compared to small firms. This is because the former have achieved more learning, greater cumulative experience and they are able to spread their fixed costs over a greater amount of production. A study by Omondi and Muturi (2013), suggest that firms should expand in a controlled way with the aim of achieving an optimum size so as to enjoy economies of scale which can ultimately result in higher level of profitability. An oligopoly model by Reinhard (1983) suggests that size is positively related to a firm's ability to produce technologically complicated products which in turn leads to concentration. Such firms have few competitors and are therefore, more profitable. Thus, larger firms have access to the most profitable market segments.

2.3.4 Operational Efficiency

According to Abuzayed and Molyneux (2009), operational efficiency is the extent to which changes in the cash conversion cycle, operating expenses to sales revenue ratio, operating cash flow, total asset turnover, total debt to total assets ratio, firm size, and operating risk impact the future performance of the firm. The term efficiency is the product of firm-specific factors such as management skills, innovation, cost control, and market share as determinants of current firm performance and its stability. Amarjit et al, (2014) found a positive impact of operational efficiency on the future performance of Indian manufacturing firms.

2.3.5 Capital Adequacy

Capital adequacy refers to the sufficiency of the amount of equity to absorb any shocks that the bank may experience (Kosmidou, 2009). In most of the countries, the capital structure of banks is highly regulated because capital plays a crucial role in reducing the number of bank failures and losses to depositors when a bank fails as highly leveraged firms are likely to take excessive risk in order to maximize shareholder value at the expense of finance providers (Kamau, 2009). Although there is general agreement that statutory capital requirements are necessary to reduce moral hazard, the debate is on how much capital is enough.

Regulators would like to have higher minimum requirements to reduce cases of bank failures, whilst bankers in contrast argue that it is expensive and difficult to obtain additional equity and higher requirements restrict their competitiveness (Koch, 1995). Beckmann (2007) argue that high capital lead leads to low profits since banks with a high capital ratio are risk-averse, they ignore potential investment opportunities and, as a result, investors demand a lower return on their capital in exchange for lower risk. The quality of assets held by a bank depends on exposure to specific risks, trends in non-performing loans, and the health and profitability of bank borrowers (Baral, 2005). Aburime (2008) asserts that the profitability of a bank depends on its ability to foresee, avoid and monitor risks, possibly to cover losses brought about by risks arisen.

Capital adequacy is the Percentage ratio of an institution's primary capital to its assets (loans and investments), used as a measure of its financial performance or the company's financial strength and stability. Profitable institutions which have a considerably more capital adequacy are shown to have higher sustainability,

efficiency and outreach. Shareholders who are the external suppliers of company's capital entrust their money to companies' managers in hope that the latter would increase the shareholders' value (Smaghi, 2007). Findings by Olalekan and Adeyinka (2013) showed a positive and significant relationship between capital adequacy and profitability of financial institutions in Nigeria. This shows that capital adequacy is a prerequisite for a firm's financial health.

2.4 Empirical Studies

The number of researchers dealt with the subject of the corporate liquidity risk on various aspects of the firm from several different directions, Ahmad (2016) did a study on how liquidity and solvency affect banks profitability in listed banks in Jordan. This paper examines the impact of liquidity and solvency on banks profitability. All banks listed in Amman exchange were selected (15 banks) for the period 2012- 2014. To measure the liquidity the quick ratio was calculated, Debt ratio was calculated to measure the solvency, whereas return on assets ratio was calculated to measure the profitability. Simple regression was used to examine the relations; the results showed that the liquidity has a negative (inverse) significant impact on profitability, whereas the solvency has a no impact on profitability. However, the study was carried out in Jordan, which is a different context to that of commercial banks in Kenya.

Carrow (2011) established the impact of liquidity on profitability of commercial banks in Liberia. The study used the liquidity asset and liquidity assets for estimating liquid asset and profitability relationship. The estimated relationship between liquid assets and bank profitability was as expected. Coefficients for the liquid assets ratio, its square, business cycle, and its product of interactive business cycle and regulation

were positive and also statistically significant. The regulation coefficient was though negative. As expected, we find evidence of a non-linear relationship between profitability and liquid asset holdings. An important finding of this study is that the business cycle of a commercial bank significantly affects its profit. The coefficient of regulation is negative and significant. Therefore if regulators reduce the constraints imposed on banks, banks obtain profit. However, the study was carried out in Liberia, which is a different context to that of commercial banks in Kenya.

Bowa (2015) determined the effect of bank capitalization on liquidity of commercial banks in Kenya. The results of panel data regression reveal that bank size, capital asset ratio and the asset quality are positively related to bank liquidity and are all significantly related to bank liquidity. The implication is that better capitalized banks tend to create more liquidity, which supports the 'financial fragility-crowding out' hypothesis. This finding has important policy implications for emerging countries like Kenya as it suggests that bank capital requirements, that is, recapitalization policy, implemented to support financial stability, may enhance the level of liquidity. The financial regulatory body needs to provide appropriate effective measures to adequately enhance transparent accountability in the capitalization process. However, the study was carried out on bank capitalization on liquidity of commercial banks while this study would focus on establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

Karani (2013) conducted a study on the effect of liquidity management on profitability of commercial banks in Kenya. The study involved secondary data collection of the return on assets to measure profitability, Cash and cash equivalent to measure liquidity, Capital ratio and Deposit ratio as profitability determinants during a specific year. The study used secondary data obtained from audited financial statements of the banks at the end of the years of study. The study used descriptive statistics and regression analysis to establish the relationship between the study variables. The response rate was 63% that is a total 27 out of 40 that satisfied the data collection criteria. The study found out that there is a positive relationship between profitability and liquidity management of commercial banks in Kenya. Liquidity management is found to be one of the determinants of profitability of commercial banks in Kenya over the years of study. However, the study focused on effect of liquidity management on profitability while this study would establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

Kibuchi (2015) established the relationship between liquidity risk and financial performance of commercial banks in Kenya. The study adopted descriptive research design. In addition, the study was cross-sectional in which data was gathered just once over the period 2010 to 2014 and as such, a causal study was undertaken in a non-contrived setting with no researcher interference. Multiple regressions was applied to assess the impact of liquidity risk on banks' profitability. The study findings was that there has been an increase in value of cash balance over the five year period studied though there has been an increase in the volume of liquidity gap in commercial banks of Kenya over the five year period studied. However, the study focused on effect of liquidity risk on financial performance while this study would establish the

relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

Kyule (2015) assessed the impact of liquidity and solvency on financial performance of firms listed at the Nairobi securities exchange. The study also tested whether financial leverage, Operational efficiency, Capital adequacy, and Size of the firm also affect the financial performance of these firms. Descriptive research design was used. The study covered a five year period from 2009 to 2013. Secondary data was collected from the annual reports of firms listed at the NSE. Data was then analyzed using a regression analysis model, SPSS version 21 and Microsoft Excel 2010. However, the study focused on effect of 1 liquidity and solvency on financial performance while this study would establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

Mwangi (2014) analyzed the effects of liquidity and financial performance of Deposit taking microfinance institutions in Kenya for the period 2009 to 2013. Data was extracted from the published institution's annual audit reports, Association of Micro Finance Institutions Reports (AMFI) and CBK's banks supervision annual reports for the five years under examination. The study used inferential statistics to explain the main features of a collection of data in quantitative terms while correlation and linear regression analysis were used for analyzing the data. Financial performance was measured using return on assets while liquidity of DTMFIs was measured by cash and cash equivalents divided by total average assets. The results revealed that there is a positive relationship between liquidity and financial performance. The study concluded that efforts to stimulate the MFIs' liquidity would see the micro financial sector realize increased financial performance which would result to increased

efficiency in the sector's operations. However, the study focused on liquidity and financial performance while this study would establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

Banafa et al (2015) sought to establish the effects of liquidity on non-financial performance of listed non-financial firms in Kenya. The study used causal research design and the target population constituted 42 listed non - financial firms at the NSE under different categories. The researchers used secondary panel data contained in the annual reports and statements of financial positions of listed non-financial companies. The results were presented using descriptive statistics and inferential analysis. The results of statistical tests show that liquidity has positive effect on corporate performance (ROA). The study recommends that financial managers must decide both how much liquidity to hold and the way in which they hold this liquidity. However, the study focused on liquidity on non-financial performance of listed non-financial firms while this study would establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

2.5 Summary of Literature Review

This chapter has reviewed the literature on the relationship between corporate liquidity risks on solvency of commercial banks in Kenya. The study is anchored on; shiftability theory liquidity, anticipated income theory of liquidity, liquidity motive theories and financial economics theory. Our review of the various theories show that the relationship between corporate liquidity risks on solvency of commercial banks. Liquidity risk has become a serious concern and challenge for the modern era banks characterized by high competition for consumer deposits and capital markets with technological advancements and as a result, banks should be equipped to deal with the

changing monetary policy that shapes the overall liquidity trends and the banks' own transactional requirements and repayment of short term borrowing.

Studies have been done on liquidity with various aspects of organizations operations; Bowa (2015) determined the effect of bank capitalization on liquidity of commercial banks in Kenya, Karani (2013) conducted a study on the effect of liquidity management on profitability of commercial banks in Kenya, Kibuchi (2015) established the relationship between liquidity risk and financial performance of commercial banks in Kenya, Kyule (2015) assessed the impact of liquidity and solvency on financial performance of firms listed at the Nairobi securities exchange while Mwangi (2014) analyzed the effects of liquidity and financial performance of Deposit taking microfinance institutions in Kenya. These studies have not however been extensive on commercial banks. This study therefore seeks to establish the relationship between corporate liquidity risks on solvency of commercial banks in Kenya.

2.6 Conceptual Framework

Independent variables

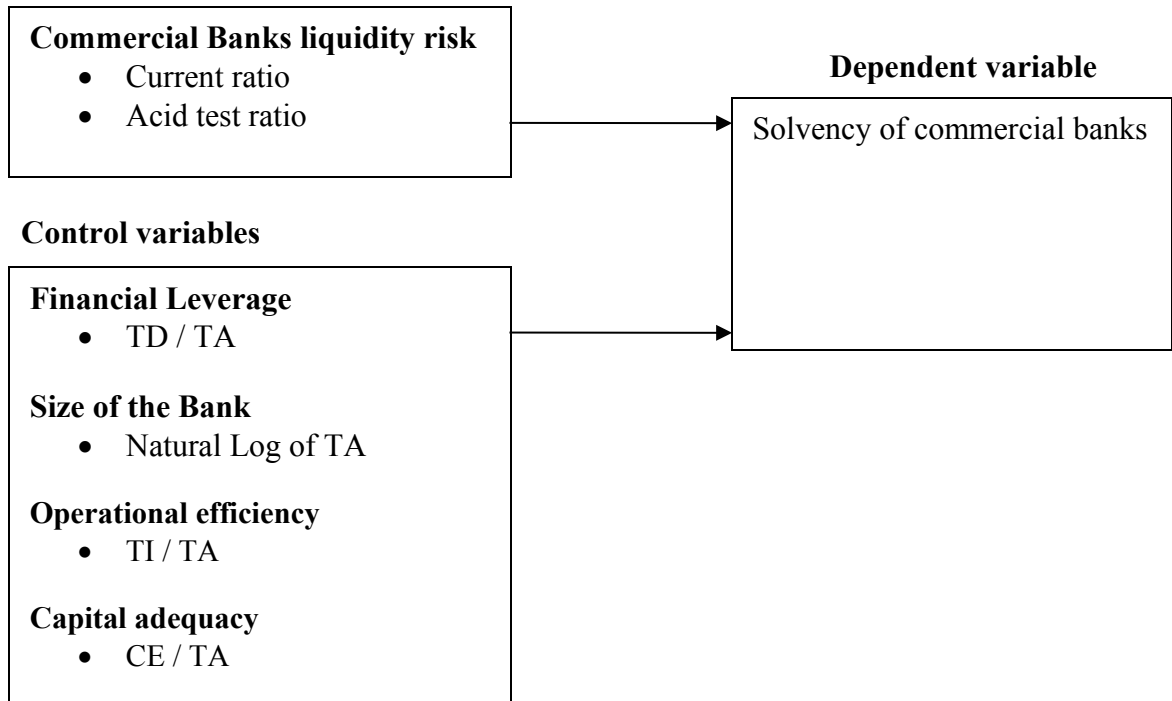


Figure 2. 1: Conceptual Model

Source: Author (2017)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter includes the various stages that were followed to complete the study. The chapter therefore comprised of the following subsections: research design, target population, data collection and data analysis and presentation.

3.2 Research Design

The study adopted a descriptive research design. The choice of the descriptive survey research design has been made based on the fact that in the study, the researcher is interested on the state of affairs already existing in the field and no variable will be manipulated. A descriptive study attempts to describe or define a subject, often by creating a profile of a group of problems, people, or events, through the collection of data and tabulation of the frequencies on research variables or their interaction (Babbie, 2004). Descriptive research portrays an accurate profile of persons, events, or situations (Ngechu, 2004). Descriptive design allows the collection of large amount of data from a sizable population in a highly economical way.

3.3 Population and Sample

In this study, the population consisted of 43 licensed commercial banks in Kenya and that had been in operation during the period 2012 to 2016 (Appendix II). A census study was carried out therefore no sampling was done.

3.4 Data Collection

The study was facilitated by use of secondary data that was extracted from published financial reports of the commercial banks, articles and papers relating to relationship between between corporate liquidity risk and solvency of commercial banks in Kenya and five-year period commencing 2012 up to 2016. For 1) commercial banks liquidity risk; current assets and current liabilities, 2) financial leverage; total debt and total assets, 3) size of the firm; total assets, 4) operational efficiency; total income and total assets, 5) capital adequacy; capital expense and total assets. The secondary data will be collected by the use of data collection form designed to record data.

3.5 Data Analysis

The data collected was therefore cleaned, coded and systematically organized in a manner that facilitates analysis using the Statistical Package for Social Sciences (SPSS). Quantitative analysis was used through descriptive statistics such as measure of central tendency to generate relevant percentages, frequency counts, mode, and median and mean where possible. In order to make the data more user friendly and attractive to the readers, graphic interactive tables was generated using the computer spread sheet to present the data. Regression analysis was used to determine the relationship between between corporate liquidity risk and solvency of commercial banks in Kenya.

3.5.1 Analytical Model

The following regression model was used to establish the relationship between the variables; $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$

Where Y = Solvency of Commercial Banks as measured through Debt to Equity ratio

$$= (\text{Customer Deposits} + \text{Borrowed funds} + \text{Other Liabilities}) / (\text{Capital and Reserves})$$

$$X_1 = \text{Commercial banks liquidity risk} = (\text{Cash balances} + \text{Balances at Central Bank} + \text{Deposits and balances due from local banking institutions} + \text{Deposits and balances due from banking institutions abroad} + \text{Tax recoverable} + \text{Balances due from group companies}) / (\text{Customer Deposits} + \text{Taxation payable} + \text{Dividends payable})$$

$$X_2 = \text{Financial Leverage} ((\text{Customer Deposits} + \text{Borrowed funds} + \text{Other Liabilities}) / (\text{Cash} + \text{Balances at Central Bank} + \text{Placements} + \text{Government securities} + \text{Investments} + \text{Net Loans and Advances} + \text{Other assets}))$$

$$X_3 = \text{Size of the Firm (Log of Total Assets)}$$

$$X_4 = \text{Operational efficiency} = (\text{Interest on Advances} + \text{Fees and Commission} + \text{Interest on Government Securities} + \text{Interest on Placement}) / \text{Total assets}$$

$$X_5 = \text{Capital adequacy} = (\text{Core Capital} / \text{Total Risk Weighted Assets}), (\text{Total Capital} / \text{Total Risk Weighted Assets}), (\text{Core Capital} / \text{Total Deposits})$$

$$\alpha = \text{Constant}$$

$$\beta_i \text{ (i= 1, 2, 3, 4, 5) = Regression Coefficients.}$$

$$e = \text{Error Term}$$

3.5.2 Test of Significance

The coefficient of determination (R^2) was used to measure the extent to which the variation in solvency is explained by the corporate liquidity risk. F-statistic and t-statistics was also computed at 95% confidence level to test whether there is any significant relationship between variables of corporate liquidity risk and solvency of commercial banks in Kenya.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DUSCUSSION

4.1 Introduction

This chapter presents the analysis of the data collected concerning the subject under study, its presentation (in tables) and interpretation of the findings drawn.

4.2 Descriptive Statistics

This illustrates the general description of the study variables characteristics including the Mean, standard deviation, skewness and kurtosis.

Table 4. 1: Descriptive Statistics

	Mean		Std. Dev	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Solvency	.4874	.00464	.01037	-.088	.913	-2.398	2.000
Liquidity risk	.1495	.03022	.06758	-1.974	.913	3.938	2.000
Leverage	.7829	.00261	.00584	.087	.913	-.260	2.000
Firm size	12.4750	.03676	.08220	-.625	.913	-1.236	2.000
Operational efficiency	.1145	.00306	.00685	1.027	.913	1.525	2.000
Capital Adequacy	.1822	.00551	.01232	-.195	.913	.262	2.000

From the findings, the study showed that solvency had a mean score of 0.4874, liquidity risk had a mean score of 0.1495, leverage had a mean score of 0.7829 and firm size had a mean score of 12.4750. The study findings also showed that operational efficiency had a mean of 0.1145 while capital Adequacy had a mean score of 0.1822. The study results also showed that solvency, liquidity risk, firm size and capital adequacy were skewed to the left while liquidity risk, operational efficiency and capital adequacy exhibited positive kurtosis.

4.3 Inferential Statistics

The regression analysis and correlation were done was used to determine the relationship between between corporate liquidity risk and solvency of commercial banks in Kenya.

4.3.1 Correlation Analysis

A Pearson's Product Moment Correlation was conducted to establish the strength of the relationship between the variables. The findings are presented in table 4.2.

Table 4. 2: Correlation Matrix

		Solvency	Liquidity risk	Leverage	Firm size	Operational efficiency	Capital Adequacy
Solvency	Pearson Correlation	1					
	Sig. (2-tailed)	.					
Liquidity risk	Pearson Correlation	.712	1				
	Sig. (2-tailed)	.012	.				
Leverage	Pearson Correlation	.806	.606	1			
	Sig. (2-tailed)	.029	.000	.			
Firm size	Pearson Correlation	.803	.522	.412	1		
	Sig. (2-tailed)	.016	.017	.001	.		
Operational efficiency	Pearson Correlation	.699	.742	.587	.434	1	
	Sig. (2-tailed)	.028	.013	.018	.013	.	
Capital Adequacy	Pearson Correlation	.511	.442	.387	.234	.123	1
	Sig. (2-tailed)	.026	.018	.001	.006	.000	.

The study results in table 4.2 reveal that there is a strong and significant correlation between liquidity risk and solvency of commercial banks ($r= 0.712$, $p\text{-value}=0.012$).

In addition, the study reveals that the correlation between leverage and solvency of commercial banks ($r=0.806$, $p\text{-value}=0.029$). Further, the study reveals that the correlation between firm size and solvency of commercial banks is positive and

significant ($r=0.803$, $p\text{-value}=0.016$). The study establishes that there was a very strong, positive and significant correlation between operational efficiency and solvency of commercial banks ($r=0.699$, $p\text{-value}=0.029$). Finally the study showed that capital adequacy and solvency of commercial banks were positively and significantly correlated ($r=0.511$, $p\text{-value}=0.026$). This implies that all the variables had a positive and significant correlation with solvency of commercial banks.

4.3.2 Regression Analysis

The study focused on establishing the relationship between corporate liquidity risk and solvency of commercial banks in Kenya. Model summary, Anova and regression coefficients were utilized.

Table 4. 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.882	0.778	0.748	0.008

The outcome of table 4.3 found that R-Square value (coefficient of determination) is 0.748, which indicates that the independent variables explain 74.8% of the variation in Solvency of Commercial Banks.

Table 4. 4: Analysis of Variance

		Sum of Squares	df	Mean Square	F	Sig.
Model						
1	Regression	0.0098	5	0.002	25.901	1.13E-13
	Residual	0.0028	37	7.722E-4		
Total		0.0126	42			

The ANOVA results are shown in Table 4.4 above which found that the model had predictive value and thus it was significant. This was because its p-value was less than 5%, $p=.000$ and F calculated (25.902) was significantly larger than the critical F value (2.4495).

Model coefficients provide unstandardized and standardized coefficients to explain the direction of the regression model and to establish the level of significance of the study variables. The results are captured in Table 4.5.

Table 4. 5: Regression Coefficients

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	2.554	0.855		2.987	.005
Liquidity risk	0.723	0.293	0.712	2.468	.018
Leverage	0.823	0.144	0.397	5.715	.000
Firm size	0.812	0.239	0.802	3.397	.002
Operational efficiency	0.673	0.278	0.581	2.421	.021
Capital Adequacy	0.576	0.104	0.459	5.538	.000

As per the SPSS generated table above, the equation ($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$) becomes:

$$Y = 2.544 + 0.723X_1 + 0.823X_2 + 0.812X_3 + 0.673X_4 + 0.576X_5$$

The findings showed that if all factors were held constant at zero solvency of commercial banks will be 2.554. The findings presented also show that taking all other independent variables at zero, a unit increase in the liquidity risk would lead to a

0.723 increase in the scores of Solvency of Commercial Banks. This variable was significant since $0.005 < 0.05$.

The findings also show that a unit increase in the scores of leverage would lead to a 0.823 increase in the scores of Solvency of Commercial Banks. This variable was significant since $0.018 < 0.05$. Further, the findings shows that a unit increases in the scores of firm size would lead to a 0.812 increase in the scores of Solvency of Commercial Banks. This variable was significant since $0.002 < 0.05$.

The study also found that a unit increase in the scores of operation efficiency would lead to a 0.673 increase in the scores of Solvency of Commercial Banks. This variable was significant since $0.021 < 0.05$. The findings also indicated that a unit increase in the scores of capital adequacy would lead to 0.576 increases in the Solvency of Commercial Banks.

As per the findings, at 95% confidence level, all the variables were significant as the p-value was less than 0.05. The study infer that leverage had the greatest effect on the Solvency of Commercial Banks followed by firm size then liquidity risk then operational efficiency while capital adequacy had the least effect to the Solvency of Commercial Banks.

4.4 Interpretation of the Findings and Discussions

The descriptive statistics showed that solvency, liquidity risk, firm size and capital adequacy were skewed to the left while liquidity risk, operational efficiency and capital adequacy exhibited positive kurtosis. Further from the correlation results, the study found that all the variables (leverage firm size then liquidity risk, operational efficiency, capital adequacy and liquidity risks) had a positive and significant

correlation with solvency of commercial banks. This is similar to Aburime (2008) who asserts that the profitability of a bank depends on its ability to foresee, avoid and monitor risks, possibly to cover losses brought about by risks arisen.

From the regression model, the study found out that, leverage firm size then liquidity risk, operational efficiency, capital adequacy and liquidity risks had positive relationship with Solvency of Commercial Banks. The study concluded that the intercept was 2.554 for all years.

The independent variables studied were found to explain 74.8% of the variation in Solvency of Commercial Banks as represented by adjusted R^2 (0.748). This consequently meant that the five variables add to 74.8% of solvency of commercial banks, while other factors not studied in this research contribute 26.2% of solvency of commercial banks. This is in line with Karani (2013) conducted a study on the effect of liquidity management on profitability of commercial banks in Kenya. The study involved secondary data collection of the return on assets to measure profitability, Cash and cash equivalent to measure liquidity, Capital ratio and Deposit ratio as profitability determinants during a specific year. The study found out that there is a positive relationship between profitability and liquidity management of commercial banks in Kenya. Liquidity management is found to be one of the determinants of profitability of commercial banks in Kenya over the years of study.

The findings show that liquidity risk had a coefficient of 0.723 implying that it is positively and significantly related to the Solvency of Commercial Banks. This conforms to Diamond and Rajan (2005) where banks having assets that are going to be matured in a shorter period may have a less need to keep the liquid assets. This

increases the demand of depositors creating liquidity risk. This may cause the failure of a given bank or even the entire banking system due to contagion effect.

The findings also show that if leverage increases, Solvency of Commercial Banks will positively increase by 0.823. This concurs with Bowa (2015) who notes that the financial regulatory body needs to provide appropriate effective measures to adequately enhance transparent accountability in the capitalization process. However, the study was carried out on bank capitalization on liquidity of commercial banks while this study would focus on establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

The study found that firm size had a coefficient of 0.812 implying that it is it is positively and significantly related to Solvency of Commercial Banks. This agrees with Kigen (2014) who noted that firm size is the speed and extent of growth that is ideal for a specific business and it's indicated by the management group or the amount of assets a firm possesses compared to others in the same industry.

The findings indicated that capital adequacy had a coefficient of 0.576 showing that it is positively and significantly to Solvency of Commercial Banks. Beckmann (2007) argue that high capital lead leads to low profits since banks with a high capital ratio are risk-averse, they ignore potential investment opportunities and, as a result, investors demand a lower return on their capital in exchange for lower risk.

The study also found that a unit increase in the scores of operation efficiency would lead to a 0.673 increase in the scores of Solvency of Commercial Banks. This correlate with Abuzayed and Molyneux (2009) who argue that operational efficiency is the extent to which changes in the cash conversion cycle, operating expenses to

sales revenue ratio, operating cash flow, total asset turnover, total debt to total assets ratio, firm size, and operating risk impact the future performance of the firm.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary, conclusion and recommendations of the findings on relationship between between corporate liquidity risk and solvency of commercial banks in Kenya.

5.2 Summary

The objective of the study was to establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya. Solvency is the ability of a financial institution to meet its obligations in the event of cessation of activity or liquidation. It refers to a company's long run financial viability and its ability to cover long-term obligations. Bank is considered solvent if the total assets exceed total liabilities. In this study, the population consisted of 43 licensed commercial banks in Kenya and that had been in operation during the period 2012 to 2016. A census study was carried out therefore no sampling was done. The study was facilitated by use of secondary data that was extracted from published financial reports of the commercial banks, articles and papers relating to relationship between between corporate liquidity risk and solvency of commercial banks in Kenya and five-year period commencing 2012 up to 2016. The data collected was therefore cleaned, coded and systematically organized in a manner that facilitates analysis using the Statistical Package for Social Sciences (SPSS). Regression analysis was used to determine the relationship between between corporate liquidity risk and solvency of commercial banks in Kenya. From the above regression model, the study

found out that, leverage firm size then liquidity risk, operational efficiency, capital adequacy and liquidity risks had positive relationship with Solvency of Commercial Banks. The study concluded that the intercept was 2.554 for all years.

The independent variables studied were found to explain 74.8% of the variation in Solvency of Commercial Banks as represented by adjusted R^2 (0.748). This consequently meant that the five variables add to 74.8% of solvency of commercial banks, while other factors not studied in this research contribute 26.2% of solvency of commercial banks.

The findings show that liquidity risk had a coefficient of 0.723 implying that it is positively and significantly related to the Solvency of Commercial Banks. The findings also show that if leverage increases, Solvency of Commercial Banks will positively increase by 0.823. The study found that firm size had a coefficient of 0.812 implying that it is it is positively and significantly related to Solvency of Commercial Banks.

The findings indicated that capital adequacy had a coefficient of 0.576 showing that it is positively and significantly to Solvency of Commercial Banks. The study also found that a unit increase in the scores of operation efficiency would lead to a 0.673 increase in the scores of Solvency of Commercial Banks.

5.3 Conclusion

The study concluded that liquidity risk has a positive and significant relationship with the Solvency of Commercial Banks. This conforms to Diamond and Rajan (2005) where banks having assets that are going to be matured in a shorter period may have a less need to keep the liquid assets. This increases the demand of depositors creating

liquidity risk. This may cause the failure of a given bank or even the entire banking system due to contagion effect.

The study concluded that leverage is significantly related to solvency of commercial Banks. This concurs with Bowa (2015) who notes that the financial regulatory body needs to provide appropriate effective measures to adequately enhance transparent accountability in the capitalization process.

The study concluded that firm size is positively and significantly related to Solvency of Commercial Banks. This agrees with Kigen (2014) who noted that firm size is the speed and extent of growth that is ideal for a specific business and it's indicated by the management group or the amount of assets a firm possesses compared to others in the same industry.

The study concluded that capital adequacy is positively and significantly to Solvency of Commercial Banks. Beckmann (2007) argue that high capital lead leads to low profits since banks with a high capital ratio are risk-averse, they ignore potential investment opportunities and, as a result, investors demand a lower return on their capital in exchange for lower risk.

The concluded that there was a positive relationship between operation efficiency and Solvency of Commercial Banks. This correlate with Abuzayed and Molyneux (2009) who argue that operational efficiency is the extent to which changes in the cash conversion cycle, operating expenses to sales revenue ratio, operating cash flow, total asset turnover, total debt to total assets ratio, firm size, and operating risk impact the future performance of the firm.

5.4 Limitations of the Study

The study focused on Commercial Banks in Kenya. This means that the results are limited to Kenya and may not be applicable to other countries with different operating environments. The uniqueness of the operating environment may hinder application of these results in other countries where the environment is different. Further, this study focused on commercial banks alone. Thus, the results of this study are limited to the Commercial Banks examined in this study. Any attempt to apply the findings to other financial institutions other than commercial banks should therefore be approached with care.

Time was a major challenge the researcher faced in the course of doing this study. Time wasn't sufficient for the student to read materials on the topic, collect all the data from all the 43 commercial banks within the stipulated deadline. Future scholars are advised to allocate more time to the project work and manage this time efficiently.

The study used secondary data from annual reports of firms listed at the CBK. Secondary data involves past information which may not be a true reflection of the current needs of the study. This data can also be general and vague and may not really help with decision making, the information and data may not be accurate. This might have exposed that study to bias and assumptions and impacted negatively on the study findings.

The study also used annual data in performing the analysis. While this was done due to availability of annual data on most of the banks, it would have been prudent to use quarterly data in order to increase the number of observations and, therefore, the predictive ability of the model and its accuracy.

5.4 Recommendations

The study also recommends that bank managers should take note of the fact that the size of the banks influences their solvency. As such, Commercial Banks should strive to have higher asset base in the industry in order to record better performance in terms of profitability.

The study recommends that the management of commercial banks should to formulate strategies to be adopted in order to militate against liquidity risks for a better financial performance.

Liquidity risk arises from a bank's inability to meet its obligations when they come due without incurring unacceptable losses. This risk can adversely affect both bank's earnings and the capital. Therefore, it recommends that bank's management should ensure the availability of sufficient funds to meet future demands of providers and borrowers, at reasonable costs.

A bank having good asset quality, strong earnings and sufficient capital may fail if it is not maintaining adequate liquidity. The study recommends that banks should be equipped to deal with the changing monetary policy that shapes the overall liquidity trends and the banks' own transactional requirements and repayment of short term borrowing.

There is need for Commercial banks in Kenya to increase their short term assets it was revealed that increase in banks liquidity positively influence the solvency of the banks. There is need for commercial banks to decrease their operation risk as it was found that risk is negatively associated with solvency of commercial banks.

The study also recommends that the potential investors should monitor the liquidity and capital adequacy levels of commercial banks they intend to invest in, so as to check whether they are questionable or favorable. This will help these investors in making wise investment decisions. Control variables included will also shed light on other various factors that could be related to the solvency. This will benefit investors to take advantage on the investment opportunities available when these variables vary.

5.6 Recommendations for Further Research

This study only focused on the commercial banks. Another study should be done focusing on other firms such as insurance companies other than banks to determine and establish the relationship between corporate liquidity risk and solvency of commercial banks in Kenya.

The study also recommends that another study should be done on the effect of liquidity and solvency on the profitability of the financial institutions.

Future researchers interested in studying the commercial banks are advised to ensure their study cover a longer period of time. This study used approximately five years, a period of study that may not quite be adequate to make undisputable conclusions.

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APPENDICES

Appendix I: Secondary data Collection sheet

		2012	2013	2014	2015	2016
Commercial banks liquidity risk	Current assets					
	Current liabilities					
Financial Leverage	Total debt					
	Total Assets					
Size of the Firm	Total Assets					
Operational efficiency	Total income					
	Total assets					
Capital adequacy	Capital expense					
	Total assets					

Appendix II: List of Licensed Commercial Banks

1. ABC Bank (Kenya)
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank of Kenya
6. Chase Bank Kenya
7. Citibank
8. Commercial Bank of Africa
9. Consolidated Bank of Kenya
10. Cooperative Bank of Kenya
11. Credit Bank
12. Development Bank of Kenya
13. Diamond Trust Bank
14. Dubai Islamic Bank
15. Ecobank Kenya
16. Equity Bank
17. Family Bank
18. Fidelity Commercial Bank Limited

19. First Community Bank
20. Giro Commercial Bank
21. Guaranty Trust Bank Kenya
22. Guardian Bank
23. Gulf African Bank
24. Habib Bank AG Zurich
25. Housing Finance Company of Kenya
26. I&M Bank
27. Imperial Bank Kenya (In receivership)
28. Jamii Bora Bank
29. Kenya Commercial Bank
30. Mayfair Bank
31. Middle East Bank Kenya
32. National Bank of Kenya
33. NIC Bank
34. Oriental Commercial Bank
35. Paramount Universal Bank
36. Prime Bank (Kenya)
37. Sidian Bank
38. Spire Bank

39. Stanbic Bank Kenya
40. Standard Chartered Kenya
41. Trans National Bank Kenya
42. United Bank for Africa
43. Victoria Commercial Bank