

**THE EFFECT OF MACROECONOMIC VARIABLES ON OPERATIONAL
EFFICIENCY OF BANKING SECTOR IN KENYA**

BY

ROSELYNE AGADE

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DECLARATION

STUDENT’S DECLARATION

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

Signature:

Date.....

Roselyne Agade

Reg: D61/70406/09

SUPERVISOR’S DECLARATION

This Research Project has been submitted for examination with my approval as the University Supervisor.

Mr. Herick Ondigo,
Lecturer,
Department of Finance and Accounting,
School of Business, University of Nairobi.

Signature.....Date.....

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DEDICATION

This research project is dedicated to my Son Harvey Agade who has been my constant source of inspiration. You have consistently helped me to keep perspective on what is important in life and shown me how to deal with the reality

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LIST OF ABBREVIATIONS

APT	-	Arbitrage Pricing Theory
CBK	-	Central Bank of Kenya
DEA	-	Data Envelopment Analysis
GDP	-	Gross Domestic Product
IDX	-	Indonesia Stock Exchange
IPOs	-	Initial Public Offerings
KNBS	-	Kenya National Bureau of Statistics
MENA	-	Middle East and North Africa
MES	-	Minimum Efficient Scale
MPC	-	Monetary Policy Committee
MPT	-	Modern Portfolio Theory
NPA	-	Non Performing Assets
NPL	-	Non Performing Loans
OECD	-	Organization for Economic Development Countries
ROA	-	Return on Assets
ROI	-	Return on Investment
SPSS	-	Statistical Package for Social Sciences

ABSTRACT

Operational efficiency aspect for national banking industry is one of the most important aspects that must be considered by any banking managements in order to earn healthy and sustainable financial performances. Macroeconomic variables are factors that are pertinent to a broad economy at the regional or national level and affect a large population rather than a few select individuals. These factors are external and beyond the control of the bank and determine the operational efficiency of commercial banks. The study sought to establish the effect of macroeconomic variables on operational efficiency of banking sector in Kenya. The study employed descriptive as well as correlation research designs. This study used secondary data that was obtained from publications, government and private financial reports, newsletters, journals and business magazines. The figures for the operational efficiency were acquired from the central bank of Kenya libraries. In addition, annual reports of the banks were reviewed to obtain information on the variables. Data on macroeconomic variables was collected from the KNBS. Data Envelopment Analysis (DEA) was used to measure technical efficiency of the commercial banks. The research conducted regression statistical test to identify any common features of the efficient banks and to investigate the significance of the relationship between the technical efficiency score and various determinants. The study found out that there were factors influencing the operational efficiency of the banking sector in Kenya, which are exchange rates, lending rates, GDP and inflation. The study concluded that the relationship between inflation and operational efficiency of the banking sector in Kenya is negative and significant. The study recommends that the government should come up with strategies and policies to protect the banking sector due to its immense contribution to the economy of the country. Since the study focused on the effect of macroeconomic variables on operational efficiency of the banking sector in Kenya, further studies should be done on companies in micro finance institutions to find out whether the study will give the same results.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Operational efficiency aspect for national banking industry is one of the most important aspects that must be considered by any banking managements in order to earn healthy and sustainable financial performances. According to Wheelock and Wilson (1995), efficiency is an important measurement from banking operational conditions and is one of the indicator keys of the success of a bank. Berger and Mester (1997) regard that the importance of operational efficiency for a banking company can be viewed from either the micro perspective or the macro prospective. Based on the micro perspective within restricted rivalry condition, in order to be settled and developing, a bank must be efficient during the whole operational activities. From the macro perspective, an efficient banking industry can influence financial intermediation costs and, as a whole, the financial system stability. This is due to the immensely strategic role of the banking industry as an intermediary and a producer of financial services. By means of its higher efficiency level, the banking performance ought to be better in allocating its financial sources and finally can increase the investing activities and the economic growth (Weill, 2003).

In the last two decades, the global banking sector has experienced significant transformations in its operating environment. External and internal factors have affected the banking sector and banks' performance. Banks' role is still central for economic activity funding in general, and also in different market segments. Besides, the solid profitability of the banking sector contributes to the stability of the financial market. Therefore, the study of banking performance determinants has aroused

academic research, as well as bank administration, financial market and regulatory interests (Athanasoglou, Brissimis & Delis, 2008).

Maffoili and Souza (2007) argue that understanding the dynamics and functioning of financial institutions is of extreme social importance, as financial institutions permit a credit flow in the economy through depositors' resources, play a crucial role in resource allocation, transmit the effects of monetary policy and grant stability to the economy as a whole.

Empirical researches which estimate the relevance of macroeconomics variable towards banking efficiency performances are still limited. Empirical studies that are mostly developed focus on the efficiency performance measurement which use either parametric or non-parametric, not only within financially developed countries but also within developing countries (Bonin, Hasan & Watchtel, 2005).

1.1.1 Macroeconomic Variables

Macroeconomic variables are factors that are pertinent to a broad economy at the regional or national level and affect a large population rather than a few select individuals. These factors are external and beyond the control of the bank and determine the operational efficiency of commercial banks. Most of the empirical evidence suggests that banks non-performing assets are closely linked to the economic activity. In other words, macroeconomic variables such as; downturns or slowdowns in the economy, recessions, low rate of savings, weak markets, depressions in industrial production, reduction in per capita income levels and most importantly the inflation levels in the economy. A fair amount of the academic literature has dealt with determinants of banking crisis, which is the most severe of the consequences of bad loans in a banking system which is of valuable understanding

as a backdrop for the study of Non-Performing Assets. Gonzalez-Hermosillo (1999) analysed the role of microeconomic and macroeconomic variables in five episodes of banking system problems in the United States of America. The paper found that low capital equity and reserve coverage of problem loans ratio are the leading indicators of banking distress and failure.

Dermiguc-Kunt and Detragiache (2000) employed a Multivariate Logit Framework to develop an early warning system for banking crisis and a ratings system for bank fragility. Beck, Demirguc-Kunt and Levine (2005) examined the inter-linkage between bank concentration and banking system fragility where they have established that higher bank concentration is associated with lower profitability. Fernandez de Lis, Martinez-Pages and Surina (2000) have found that Gross Domestic Product growth, bank size and Capital had negative effect on NPAs while Loan growth, collateral, net interest margin, debt-equity, market power and regulation regime had a positive impact on NPAs.

With regard to the research on the operations and management attitudes of financial institutions, Saunders (1997) indicate that the bank managing conducted by stockholders is more likely to result in high-risk behavior than the bank managing conducted by employed managers. Chen et al (1998) study the relationship between the risks and the ownership structure, and it appears that a negative correlation exists between the managers' shareholdings and the risks faced by the financial institution. That means that if the managers' shareholding percentage increases, the financial institution will reduce its own risk behavior. While Berger and De Young (1997) mention that a management team with poor operating capability is unable to correctly appraise the value of collateral, which means that it is difficult for it to follow up on

its supervision of the borrower, its poor credit-rating technology will result in management being unable to control and supervise the operating expenses efficiently, thus leading to a significant increase in NPLs. Wahlen (1994) also points out that unexpected changes in the NPL Ratio may indicate that expected future loan losses are relatively non-discretionary and negatively related to bank stock returns.

1.1.2 Operational Efficiency

Bank efficiency has been discussed for years. Recently, because of the rapid growth of financial markets and financial innovations, it has become more important to measure the efficiency of financial institutions. If those financial institutions operate more efficiently, they might expect improved profitability and a greater amount of intermediated funds. Consequently, the consumer might expect better prices and service quality and greater security and soundness of financial systems (Berger, Hunter and Timme, 1993). The academic research on the performance of financial institutions has increasingly concentrated on X-efficiency (or Frontier efficiency), that measures deviations in performance from that of best-practice firms on the efficient frontier, holding constant a number of exogenous market factors like the prices faced in local market. The efficient frontier measures how well the financial institution performs relative to the predicted performance of the best firms facing the same market conditions in the industry. X-efficiency often measures cost efficiency of institutions more accurately than standard financial ratios (DeYoung, 1997).

Comparing the financial ratios of different banks is not appropriate unless the banks are nearly identical in term of product mix, bank size, market conditions, and other characteristics that can affect the costs of the banks. Thus, statistical based “efficient cost frontier” approaches would measure efficiency more accurately. The operating

performance of financial institutions has long been at the center of academic research and has received a substantial amount of attention. This is primarily due to the fact that operating efficiency is of particular interest for both managers, whose aim is to improve the performance of their financial firms, and policy makers, whose task is to assess the effects of market structure on performance and, therefore, to safeguard the stability of the financial system (Berger & Mester, 1997).

Banks play a dominant role in the financial system and economy of Kenya, as capital markets are practically limited to the equity markets and are, in general, quite fragile and underdeveloped. However, despite the dominance of the banking sector, the degree of financial penetration through banking products and services has been lagging behind that of other emerging markets in Kenya, owing to, among other factors, unsound economic policies and structural market inefficiencies, mainly in the previous decade. These factors, in many instances, have resulted in severe financial crises.

1.1.3 Effect of Macroeconomic Variable on Operational Efficiency

The relationship between banking efficiency and macroeconomic factors has been frequently investigated (Chan & Karim, 2010). The results show that the effect of macroeconomic factors on banking efficiency could be different across countries. For example, Drake et al. (2006) found that the South East Asian Crisis 1997/1998 did not have a significant impact on banking efficiency. On the other hand, Chan and Karim (2010) found that macroeconomic factors affected the level of efficiency in the commercial banks in Asia, Middle East/North Africa, and Africa.

The concept of efficiency in banking has been considered widely in the literature, utilising both nonparametric and parametric techniques (Hall, 2001). However, there

has been an on-going debate over whether the estimated efficiency scores ('scale efficiencies' or 'X-efficiencies') are biased, not only due to the techniques utilised to estimate them, but also due to endogenous and/or exogenous factors affecting the bank sample. With respect to the former, for example, McAllister and McManus (1993) argue that the Minimum Efficient Scale (MES) for banks can change as the total asset size of the banks in the sample increases, due to possible differences in the asset portfolios between the smaller and larger banks. With respect to the latter, it has long been recognised that external/environmental factors can have a significant impact on relative efficiency scores.

Recently, there have been advances made, however, in respect of how researchers incorporate the potential impact of environmental, economic and regulatory factors on bank efficiencies, for example, parametric studies by Akhigbe and McNulty (2003), Berger and Mester (2003), and non-parametric studies by Lozano-Vivas, Pastor and Pastor (2002). In the former set of studies, the external variables (which are added as control variables to the functional form equation) are assumed to have a direct effect on the production/cost structure. Hence, each bank is assumed to face a different production/cost frontier. In the latter set of non-parametric studies, the external factor variables are typically introduced as non-discretionary inputs and/or outputs, having a direct effect on the efficient production frontier.

1.1.4 Banking Sector in Kenya

In Kenya, the financial system comprises banks, non-bank financial institutions, insurance companies, microfinance institutions, stock brokerage firms, fund managers. The banking industry with asset base of over Kshs. 1.3 trillion is the largest sector in the Kenyan financial sector. With a limited and under developed capital

market, the banking sector plays pivotal role in intermediation process between savers and investors.

Recently, there has been serious contention between the Central Bank of Kenya Monetary Policy Committee (MPC) and the players in the banking industry on the high spread between lending and deposit rates. Such high spread is indicative of intermediation inefficiencies (Sologoub, 2006). In the Kenya context, the significant reforms initiatives undertaken, such as operationalization of credit reference bureaus, payments system improvements, operationalization of Microfinance Act and activation of horizontal repos presents opportunities for enhanced banking sector performance. These reforms are hinged on three key pillars of the Kenyan financial sector as envisioned in the Vision 2030 (the Government's Economic Blue Print) - Efficiency, Stability and Access. Thus, for Kenya to realize Vision 2030, the banking sector's efficiency is a critical element that remains the cornerstone of the targeted economic growth trajectory. In his speech at an official branch opening of a Kenyan bank, the Governor of the Central Bank of Kenya, appealing to banks on service delivery stated that banks should explore ways of enhancing efficiency in service delivery. By enhancing efficiency, banks are capable of offering more affordable banking services. This has the potential of drawing a larger number of Kenyans to the financial system resulting in an expandable banking clientele.

1.2 Research Problem

The concept of efficiency in banking has been considered widely in the literature, utilizing both nonparametric and parametric techniques (Hall, 2001). However, there has been an on-going debate over whether the estimated efficiency scores ('scale efficiencies' or 'X-efficiencies') are biased, not only due to the techniques utilized to

estimate them, but also due to endogenous and/or exogenous factors affecting the bank sample. With respect to the former, for example, McAllister and McManus (1993) argue that the Minimum Efficient Scale (MES) for banks can change as the total asset size of the banks in the sample increases, due to possible differences in the asset portfolios between the smaller and larger banks. With respect to the latter, it has long been recognized that external/environmental factors can have a significant impact on relative efficiency scores. Banking efficiency and macroeconomic factors and the relationship between them has been frequently investigated (Berger and Mester, 2003; Drake et al., 2006; Chan and Karim, 2010). The results show that the effect of macroeconomic factors on banking efficiency could be different across countries.

In the last five years, macroeconomics variables have been changing in Kenya. Inflation was 10.10%, 3.88%, 14%, and 9.36% 5.7% in 2009, 2010, 2011, 2012, and 2013 respectively. GDP growth rate was 2.7%, 5.8%, 4.4%, 4.2% and 4.5 % in 2009, 2010, 2011, 2012, and 2013 respectively. Interest rate was 7.8%, 7.2%, 13.79%, 16.3%, and 8.8% in 2009, 2010, 2011, 2012, and 2013 respectively the country have registered poor performance in most of the economic parameters as indicated by increasing interest rate, rising inflation rates, currency depreciation, and diminishing money supply in the economy. All these combined have had a negative influence on the operations of various organizations especially the commercial banks.

In Kenya, Illo (2012) carried out a study to establish the effect of macroeconomic factors affecting commercial banks financial performance in Kenya. Though this study was carried out among commercial banks in Kenya it only covered 10 banks, also it was on financial performance. There are no other major studies on

macroeconomic variables done in Kenya. It is also clear from the studies reviewed that there is no study that has focused on the effect of macroeconomic variables on operational efficiency of commercial banks in Kenya.

Many studies have been conducted on efficiency determinants within the banking industry. Some examples are Hassan and Sanchez (2007) who conducted their research on the banking industry in South America. Delis and Papanikolaou (2009) did a research concerning banking efficiency determinant within ten European Countries. Naceur et al (2009) evaluated the rate of banking efficiency of among banks in MENA countries and Endri (2014) did a study on macroeconomics and banking efficiency variables in Indonesia. However, despite that several studies have been conducted in the area there is no study done on the effect of macroeconomic variable on operational efficiency in Kenya. This study sought to answer the question: What is the relationship between macroeconomic variables and operational efficiency of commercial banks in Kenya?

1.3 Objective of the Study

To establish the effect of macroeconomic variables on operational efficiency of banking sector in Kenya.

1.4 Value of Study

This study is important to various stakeholders in the financial sector because it will provide an insight into the external determinants of efficiency in banks. Banks are the most reliable savings and credit facilities available in Kenya. The study will be valuable to investors because it will provide information on the risks and returns which will help them make sound decisions.

The banking system in developing countries like Kenya is facing increasing competition due to the globalization of the financial systems, so it is important for the banks to realize the factors of challenge and means to respond to them. Assessing banks' efficiency would help managers to examine the success of their managerial decisions; to better understand their management effectiveness and provides them with valuable reference for improving their performance.

The impact or the pass-through of the Central Bank policies depends on the competitive structure and efficiency of the banking system, the study will help in assessing the banking sector efficiency and the sources of inefficiency that will provide a helpful insight to CBK with this regard. On the other hand, it will help policy makers to develop a strong and healthy environment for the banking sector by examining the impact of economic and financial reforms that have been taking places.

The information that will be obtained will be useful to the Government and research institutions that may want to advance the knowledge and literature on efficiency. It will also add to literature on the subject as reference material and stimulate further research in the area. This study will be very valuable to the area of study of operational efficiency and the external factors affecting the same in commercial banks in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter delves into the literature on effect of macroeconomic variable on operational efficiency of commercial banks. The chapter also reviews literature done by other scholars touching on the area of operational efficiency and factors having an influence on operational efficiency of commercial banks. The theoretical and empirical underpinning of relationship between macroeconomic variables and operational efficiency of commercial banks is covered in this chapter. In addition a summary have also been provided at the end of the chapter.

2.2 Theoretical Review

This study was pinned under three theories that attempt to explain the relationship between macroeconomic factors and operational efficiency. These theories include the modern portfolio theory, arbitrage pricing theory and market power theory.

2.2.1 Modern Portfolio Theory

Any investment firm should have a portfolio of investments in different types of investment to maximize returns and minimize risks. Its standard practice for banks to invest in a diversified portfolio to minimize risk and harness the returns of the various investment options on offer (Cumming, 2009). The modern portfolio theory (MPT) is a theory of finance that attempts to maximize expected portfolio returns for a given amount of portfolio risk, or equivalently minimize risk for a given level of return by carefully choosing the proportions of various assets. MPT models a portfolio as

weighted combination of assets, so that the return of a portfolio is the weighted combination of the assets return.

The process of selecting a portfolio may be divided into two stages. The first stage starts with observation and experience and ends with beliefs about the future performances of available securities. The second stage starts with the relevant beliefs about future performances and ends with the choice of portfolio. One type of rule concerning choice of portfolio is that the investor does (or should) maximize the discounted (or capitalized) value of future returns. Since the future is not known with certainty, it must be "expected" or "anticipated" returns which are discounted. Through combining different assets whose returns are not perfectly positively correlated, MPT seeks to reduce the total variance of the portfolio return. MPT also assumes that investors are rational and the markets are efficient (Markowitz, 1952). Consistent with the diversification and risk minimization essentials of the portfolio theory, modern financial theory has focused on macroeconomic variables as the likely sources of systematic risk. This theory implies that the macroeconomic variables may have an effect to the efficiency and therefore performance of commercial banks.

2.2.2 Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) was developed primarily by Ross (1976). It is a one-period model in which every investor believes that the stochastic properties of returns of capital assets are consistent with a factor structure. Ross argues that if equilibrium prices offer no arbitrage opportunities over static portfolios of the assets, then the expected returns on the assets are approximately linearly related to the factor loadings. A bank manager has to continuously evaluate investment options in light of limited resources and the paramount need to maximize shareholders returns. This can

be termed as the process of arbitraging between the opportunities available. Arbitrage is the practice of taking positive expected return from overvalued or undervalued securities in the inefficient market without any incremental risk and zero additional investments. The arbitrage pricing theory (APT) is an asset pricing theory that states that the expected return of an investment or a financial asset can be modeled as a linear relationship of various macro-economic variables or where degree of correlation to changes in each variable is represented by a beta coefficient.

The model-derived rate of return will then be used to obtain the price or value of the asset correctly. The asset value should equal the expected end of period asset value or future cash flows discounted at the rate implied by the model. If the asset value changes, arbitrage should bring it back to the line (Dybvig & Ross, 2003). In the APT context, arbitrage consists of trading in at least two assets, with at least one being not its true market value. The arbitrageur sells the asset which is relatively too expensive and uses the proceeds to buy one which is relatively too cheap.

Beenstock and Chan (2007) presented a study proposing an alternative methodology for testing Arbitrage Pricing Theory (APT) in the context of the market for British securities. Using the macro variable model, they identified four macroeconomic variables for the UK market: Interest rates; Fuel and material costs; Money supply; Inflation. The inflation rate was found to be consistently priced. The significance of other factors was found to depend on their choice of sample period and estimation model. They found that: the rate of inflation, the short-term interest rate, and the money growth rate are priced factors. They found less support for output, employment, exchange rates and balance of payments. Under the APT, an asset is said to be under or overvalued if its current price deviates from the price predicted by the

model. The arbitrage pricing theory (APT) implies that the performance of a bank is heavily determined by the changes in each of the macroeconomic variables.

2.2.3 Market Power Theory

The Market Power hypothesis is empirically proved when concentration introduced in the explanatory equations of performance is found non-significant in contrast to market share which should be positively and significantly correlated with price and/or profitability. Nevertheless, it is not obvious that employing market structure in these equations produces unambiguous results (Aikaeli, 2008).

It is the Quite Life (Hicks, 1935) hypothesis according to which a bank management unit with a large market share is less centred on efficiency as the exploitation of market power in terms of fixing prices allows deriving automatically benefits. An increase in market power comes with a deterioration of efficiency which makes banks unable of earning higher profitability. The Quite Life hypothesis puts forward an explanation in the case of the absence of a presumed relationship between profitability and market structure.

A bank with a strong position in the market may either reinforce its domination over the market or achieve a higher efficiency by marshalling its assets. As such, total asset is a main determinant of operational efficiency of the banks. This theory implies that macroeconomic variables such as exchange rate, inflation and level of interest rate may have an effect on the performance of commercial banks.

2.3 Determinants of Operational Efficiency in Banks

The operational efficiency of banks can be assessed through several factors of financial soundness. There are several macroeconomic variables (external factors) that

determine the operational efficiency of commercial banks. These factors include inflation, Gross Domestic Product (GDP), Level of interest rate and exchange rate. Studies dealing with internal determinants employ variables such as size, ownership, capital and risk management.

2.3.1 Inflation

Inflation refers to the general increase in the price of commodities over a given duration. Inflation tends to push up the price of commodities without a corresponding increase in their real value. Banks are adversely affected by inflation since they tend to hold investment over duration of time between acquisition and exit (Nielsen, 2011). Inflation has an adverse effect on the exit returns when banks divest or dispose their stake in an investment (Parra-Bernal and Blount, 2011). IPOs form a favoured channel for banks when they choose to disinvest or sell their investments and stake in companies they have previously acquired. Gilson and Black (1997) established a relationship between the degree of development of a country's stock market and the overall volume of bank investments.

2.3.2 Gross Domestic Product

Several papers show that gross domestic product (GDP) growth plays a significant role in attracting bank operations. Gompers and Lerner (1998) established that higher GDP growth implies higher attractive opportunities for entrepreneurs, which in turn lead to a higher need for venture funds. While Jeng and Wells (2000) do not find a significant effect of GDP growth on operational efficiency of commercial banks, (Bernoth, Colavecchio & Sass, 2010) confirm the positive relationship between operational efficiency of commercial banks and GDP growth.

During period of high GDP growth and increase in aggregate demand, commercial banks experiences solid performance and easily obtain funds to fund their acquisitions. This translates to a larger and more diversified portfolio for commercial banks which subsequently are more likely to post good results. It is not surprising that cornerstone partner of commercial banks such as hedge funds, mutual fund managers, insurance companies and pension funds have sought to increase their exposure to this rapidly growing asset class in their fund allocations particularly when faced with high liquidity (Bernoth et al., 2010). GDP is expected to have a positive relationship with operational efficiency of commercial banks.

2.3.3 Level of Interest Rate

As debt is a key component of commercial banks, a key signal of the operational efficiency of commercial banks is the level of interest rates and the arbitrage opportunities to which they give rise. This is ultimately an issue of global savings availability and liquidity policies. When liquidity and savings are plentiful, and rates are low, investors will have a high appetite for investment and commercial banks' step in to fill this gap.

Miles and Ezzell (2010) discuss the Modigliani and Miller which presented the classical study on banks' capital structures, showing that in perfect capital markets, the value of a bank is unaffected by its capital structure. In essence, their theorem states that in markets with no taxes, no bankruptcy costs and with perfect information, the way a bank is financed does not determine its value, i.e. bank value is determined by its real assets and not by the securities it issues. In spite of much less than perfect capital markets real life presents, this pioneering work has provided a fundamental understanding of optimal capital structures. One important aspect of the theorem is

that it strongly suggests financial leverage as a way of financing firms. Banks finance bank buyouts by using high levels of debt, mainly because this is cheaper than equity financing. The LP structure essentially subordinates returns to equity investors with respect to creditor returns. Thus as a compensation, providers of equity capital require relatively larger returns. Since debt capital is more cost effective in this sense, debt financing which enable higher returns on investments. The inherent tax shield in debt is another important reason why debt financing is cheaper. Interest paid on debt is tax-deductible, thus the investment returns highly depends on the size of the tax shield.

2.3.4 Exchange Rate

Banks in Kenya usually have a high proportionate ownership of foreign LP partners. Currency exchanges between the investee country and the investors home currency have an impact on banks operational efficiency (Cumming and Johan, 2007). Real exchange rate is commonly known as a measure of international competitiveness. It is also known as index of competitiveness of currency of any country and an inverse relationship between this index and competitiveness exists. Lower the value of this index in any country, higher the competitiveness of currency of that country will be. It is a widely held view that exchange rate volatility should affect corporate expected cash flows and hence its performance by causing changes in the home currency denominated revenues (costs) and the terms of competition for firms with international activities (Hinchberger, 2013).

Metrick and Yasuda (2007) did a study on causal relationship between exchange rates and banks operational efficiency where it was established that fluctuations affects the profits repatriated to banks foreign investors. Depreciation of Kenya shilling against United States Dollar is expected to decrease commercial banks operational efficiency.

2.3.4 Size

One of the most important questions underlying bank policy is which size optimizes bank efficiency. Generally, the effect of a growing size on efficiency has been proved to be positive to a certain extent. However, for banks that become extremely large, the effect of size could be negative due to bureaucratic and other reasons. Hence, the size-efficiency relationship may be expected to be non-linear. We use the banks' real assets (logarithm) and their square in order to capture this possible non-linear relationship (Aikaeli, 2008).

Banking efficiency can be influenced by factors that can be controlled by the banks, as well as by factors that are not under the control of the banks. Controllable factors include everything related to management of inputs and outputs or transforming inputs into outputs. Bank size is generally introduced to account for existing economies of scale in the market banking. The relationship between size and efficiency is an important part of the firm's theory. Since larger banks are more able to realize economies of scale and reduce the cost of gathering and processing information, the bank size should be positively associated with its efficiency. However, extremely large banks might illustrate a negative relationship between size and efficiency. This is due to agency costs, the overhead of bureaucratic processes, and other costs related to managing large firms (Bernoth, Colavecchio & Sass, 2010).

2.3.5 Ownership

Foreign ownership may have an impact on bank efficiency due to a number of reasons: first, the capital brought in by foreign investors decrease fiscal costs of banks' restructuring (Bonin, Hasan & Watchtel, 2005). Second, foreign banks may bring expertise in risk management and a better culture of corporate governance, rendering banks more efficient (Berger & Mester, 1997). Third, foreign bank presence

increases competition, driving domestic banks to cut costs and improve efficiency (Athanasoglou, Brissimis & Delis, 2008). Finally, domestic banks have benefited from technological spillovers brought about by their foreign competitors. For these reasons, an examination of the impact of foreign ownership on the efficiency of banks is a useful exercise and this potential effect is captured by the evolution of the shares of foreign banks as a percent of the total bank assets (constructed on a country-specific basis).

2.3.6 Capital

Given by international prudential regulation, capital ratio was considered as an important tool for assessing capital adequacy and should capture the general safety and soundness of banks. Consequently, highly capitalized banks might reduce their funding costs, which affect positively their efficiency. By the other hand, highly capitalized banks usually have a reduced need to external funds, which has again a positive effect on their efficiency. However, if we consider the conventional risk-return hypothesis, we have to expect banks with lower capital ratios to have higher efficiency in comparison to better-capitalized financial institutions. Bourke (1989) report a positive and significant relationship between capital adequacy and efficiency. He concluded that the higher the capital ratio is, the more the bank's efficiency is. Kosmidou et al., (2005) confirm a positive and highly significant relationship between the equity ratio to total assets and efficiency. However, Dietrich and Wanzenried (2011) find no significant crisis in Switzerland. Nevertheless, it has a negative and significant impact on bank's efficiency during the financial crisis 2007–2009. Again, anticipating the net impact of changes in this ratio is complex.

2.3.7 Risk

While some studies considered the overall bank risk as a determinant of their efficiency, other studies focus on one particular and major risk affecting bank efficiency, such as the credit risk. In the literature on bank efficiency, the bank loans over total assets ratio is mainly used as a proxy for credit risk when data do not permit the calculation of the non performing loans (Maudos and De Guevara, 2004). DelisDietrich and Wanzenried (2011) was the first study approximating credit risk or credit quality by the Loan loss provisions over total loans ratio. Bourke (1989) and Molyneux and Thornton (1992), among others show that the level of credit risk tend to be negatively associated with bank's efficiency. Miller and Noulas (1997) suggest a negative relationship between credit risk and efficiency. This result might reflect the fact that the higher the loans-to-assets ratio (as a proxy for credit risk) is, the more financial institutions are exposed to high-risk loans and by far the greater accumulation of nonperforming loans will be. However, Kosmidou at al. (2005) and Fernandez (2007) provide the evidence that credit risk affect positively the bank efficiency.

2.3.8 Management Quality

In addition, many researchers include management quality as a specific-bank factor affecting their efficiency. Theoretically more competent management in banks is expected to be more efficient (Goddard et al., 2009). A further bank-specific variable is the ownership of a bank. According to Micco et al. (2007), in developing countries, state-owned banks tend to have a less efficient than privately owned banks. Iannotta et al. (2007) report a similar result; government ownership of banks is negatively related to bank efficiency. On the contrary, the results of Bourke (1989), Molyneux and Thornton (1992) suggest that ownership type is irrelevant for explaining efficiency.

Authors find a little evidence to support the theory that state-owned banks are less efficient than privately owned ones. However, we can notice that ownership structure is always measured in empirical literature by a dummy variable that take a value of one if bank is publicly owned and Zero otherwise.

2.4 Empirical Review

Mukherjee and Naka (1998) applied Johansen's (1995) VECM to analyze the relationship between the Japanese Stock Market and exchange rate, inflation, money supply, real economic activity, long-term government bond rate, and call money rate. They used secondary data in their study. The study concluded that a cointegrating relation indeed existed and that stock prices contributed to this relation. Maysami and Koh (2000) examined such relationships in Singapore. They found that inflation, money supply growth, changes in short- and long-term interest rate and variations in exchange rate formed a co integrating relation with changes in Singapore's stock market levels.

Ibrahim (1999) also investigated the dynamic interactions between the KLSE Composite Index, and seven macroeconomic variables (industrial production index, money supply M1 and M2, consumer price index, foreign Relationship between Macroeconomic Variables and Stock Market Indices 51 reserves, credit aggregates and exchange rate). Observing that macroeconomic variables led the Malaysian stock indices, he concluded that Malaysian stock market was informational inefficient.

According to Muniappan (2002), there are many internal and external variables affecting NPAs in India. While the internal variables might be taking up new projects, promoting associate concerns, time to cost overruns during the project implementation stage, business failure, inefficient management, strained labour

relations, inappropriate technology/technical problems, product obsolescence etc., the external variables include GDP growth, default in other countries, high inflation, accidents and natural calamities. Bank specific parameters in their study were Ratio of Net worth to Net Assets, Banks exposure to peso loans, and type of banks such as foreign, private or public. Macroeconomic variables in this study were credit growth, reserves adequacy, foreign interest rate and monetary expansion. They have established that variables such as operating cost, exposure to peso loans, credit growth, and foreign interest rate had a negative effect on NPAs.

Romain and Pottelsberghe, (2004) investigated the macro economic impact of banks among the Organization for Economic Development Countries (OECD) Europe member states. They developed a theoretical model which took into account the variables that affect the demand and supply of venture capital. These factors are the GDP growth, the interest rate, technological opportunity, the growth rate of business, research and development capital stock, the number of triadic patents, the labor market rigidities, the level of entrepreneurship and the impact of corporate income tax rate. Secondly, they conducted an empirical analysis. They used a panel data set of 16 Organization for Economic Development Countries (OECD) covering the period of 1990 to 2000. Regression analysis was employed where interest rates, unemployment rate, market capitalization and GDP growth rate were taken to be the independent macroeconomic determinants of banks investment. They observed that GDP growth and both short term and long term interest rate have a positive impact on banks financial performance.

Hassan and Sanchez (2007) did a research concerning efficiency determinant within a banking industry in South-America. This study relied on secondary data to determine

the determinants of efficiency in the banks. The result showed that the rate of capitalisation, profitability ratios and interest rate difference affected positively towards a bigger banking efficiency. Whereas, the loan loss reserve, the traded stock-exchange, and the rate of inflation influenced the banking efficiency negatively.

Delis and Papanikolaou (2009) conducted a research concerning banking efficiency determinant within ten European Countries. This research used two-sequence semi-parametric arranged to assess the specific relevance of a bank, industry and macroeconomics variable towards banking efficiency. The important findings of this research were foreign ownership and market interest rates by which overall influenced positively towards the banking efficiency. Meanwhile credit risk and industrial concentration affected the banking efficiency negatively.

Naceur et al (2009) evaluated the rate of banking efficiency of among banks in MENA countries by using estimated Meta line through DEA. Afterwards, the research applied Tobit regression in attempt to investigate the relevance of institutions, financial specific and banks as banking efficiency determinant. Their findings figured out that the banking efficiency scores within MENA countries ranged 67 percent. For the efficiency determinant, it showed that the bank whose capital is estimated to be plentiful, with substantial liquidity as well as with stock-exchange market development increased the banking efficiency. Meanwhile big amount of credit supply and market concentration to private sectors had caused low banking efficiency.

Locally, Olweny and Omondi (2011) sought to find out the impact of macro-economic factors on the performance of the stock market. The results showed evidence that Foreign exchange rate, Interest rate and Inflation rate, affect stock return

volatility. On foreign exchange rate, magnitude of volatility as measured by beta was relatively low at 0.209138 and significant since the probability is almost zero, 0.3191. This implies that the impact of foreign exchange on stock returns is relatively low though significant. Volatility persistence as measured by alpha was found low at -0.251925 and significant. This implies the effect of shocks takes a short time to die out following a crisis irrespective of what happens to the market. There was evidence of leverage effect as measured by λ , 0.6720. This means that volatility rise more following a large price fall than following a price rise of the same magnitude.

Ilo (2012) carried out a study to establish the effect of macroeconomic factors affecting commercial banks financial performance in Kenya. The author identified interest rates, GDP growth rate, currency exchange rate, money supply and inflation as the main macroeconomic factors affecting commercial banks financial performance. A total of 10 commercial banks were sampled in the study for a 10 year period from 2002 to 2012. Regression analysis was used with the factors taken as the independent variables and Return on Assets (ROA) taken to be the dependent variable. Commercial banks financial performance was found to be positively correlated with money supply, interest rates and GDP growth. On the other hand a negative relationship was established between inflation and depreciation of the local currency. Though this study was carried out among commercial banks, macroeconomic variables remain the same and they affect every economic activity albeit with varying degree of proportions.

Otuori (2013) by investigating the Influence of exchange rate determinants on the performance of commercial banks in Kenya sought to determine the relationship between inflation rate and bank profitability in Kenya. The study found that inflation

rate had a negative and significant effect on bank profitability. This effect was significant at 5% level of confidence.

Osoro and Ogeto (2014) did a study on how macroeconomic fluctuations effects on the operational efficiency of listed manufacturing firms in Kenya. There is a paucity of knowledge in the existing empirical literature regarding the effects of exchange rate, interest rate, inflation rate and GDP fluctuations on the performance of the manufacturing industry in Kenya. Previous studies on the effects of exchange rate, interest rate, inflation rate and GDP on the performance of a firm have concentrated on the banking industry and the entire stock exchange market. The nature and extent of the effects macro economic factors are unique from one industry to another. This seminar paper therefore sought to determine the effects of the macroeconomic environment on the financial performance of firms listed in the manufacturing and allied market segment of the Nairobi stock exchange. The research adopted an explanatory survey research approach and the targeted population was the nine companies listed in the manufacturing and allied market segment. Secondary data was obtained from the Nairobi Stock Exchange and the Kenya National Bureau of Statistics. The data collected was analyzed with the use Microsoft Excel and SPSS version 20. The study concluded that exchange rate, interest rate, inflation rate and GDP had an insignificant effect on the performance.

Kiganda (2014) sought to establish effect of macroeconomic factors on bank profitability in Kenya with Equity bank in focus to understand country and bank specific characteristics. Specific objectives were to determine, examine and evaluate effect of; economic growth (real GDP), inflation and exchange rate on bank profitability in Kenya with Equity bank in focus respectively. This study was

modelled on the theory of production and based on correlation research design. Sample size consisted annual data spanning 5 years from 2008- 2012. Data was obtained from the World Development Indicators, published Equity bank documents (annual reports, investor briefings and financial statements). To accomplish this task the study used Cobb-Douglas production function transformed into natural logarithm. This study employed OLS to establish the relationship between macroeconomic factors and bank profitability. The results indicated that macroeconomic factors (real GDP, inflation and exchange rate) have insignificant effect on bank profitability in Kenya with Equity bank in focus at 5% level of significance. We concluded that macroeconomic factors do not affect bank profitability in Kenya. In view of this, it is clear that internal factors which relate to bank management significantly determine bank profitability in Kenya. The study therefore recommends that banks to adopt policies that enhance managerial efficiency for higher profits to be realized.

2.5 Summary of Literature Review

This chapter examined the determinants of commercial banks operational efficiency such as IPOs, GDP, Legal environment, exchange rate, risk and investment horizon and their impact. It also delves into theories relating to operational efficiency such as the modern portfolio theory, arbitrage pricing theory and market power theory. The modern portfolio theory focus on investing of firms in different type of investments to minimize risks and maximize returns, the theory do not focus specifically on macroeconomic factors and their effect to the operation efficiency of banks. The arbitrage pricing theory also emphasizes on strategies and minimizing of risk and increasing investment by bank managers but do not focus on macroeconomic factors specifically. The market power theory also in relation to current study leaves a gap as

it focuses on market power and effect on efficiency. The study established a research gap in literature for example from the study by Illo (2012), a study that was carried out a study to establish the effect of macroeconomic factors affecting commercial banks financial performance in Kenya there is yet to be a study on the effect of macroeconomic factors effect on operational efficiency among banks Kenya

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the procedures and methodologies that were undertaken in conducting the study to arrive at conclusions regarding the effect of macroeconomic variables on the operational efficiency of commercial banks in Kenya. Specifically, the chapter covers: research design, population, study sample; data collection, data analysis and model specification.

3.2 Research Design

Dul and Hak (2008) describe a research design as an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance with the research purpose. The study employed descriptive as well as correlation research designs. The choice of the descriptive survey research design was made based on the fact that in the study, the research was interested on the state of affairs already existing in the field and no variable was 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 as indicated by Cooper and Schindler (2003). Descriptive research portrays an accurate profile of persons, events, or situations (Kothari, 2001). Descriptive design allows the collection of large amount of data from a sizable population in a highly economical way.

3.3 Population

Cooper and Schindler (2003) define target population as the entire group that is of interest to the researcher. The target population for this study was 44 commercial banks in Kenya as at September 2013. The study used census approach to pick all the 44 commercial banks in Kenya (Appendix I).

3.4 Data Collection

This study used secondary data that was obtained from publications, government and private financial reports, newsletters, journals and business magazines. The figures for the operational efficiency were acquired from the central bank of Kenya libraries. In addition, annual reports of the banks were reviewed to obtain information on the variables. Data on macroeconomic variables was collected from the KNBS.

3.5 Data Analysis

Data Envelopment Analysis (DEA) was used to measure technical efficiency of the commercial banks. Data Envelopment Analysis (DEA) was used to measure technical efficiency of the commercial banks where coefficients are calculated from the most efficient commercial bank that have the ability to produce maximum output from a given set of inputs. In this research, intermediate approach of DEA was adopted. According to the research point of view, it was more representative of research objectives and it measures the efficiency of operation rather than capital investment efficiency.

Inputs:

1. Labor (LAB), which was represented by the number of employees
2. Fixed Assets (FA)

3. Total Deposits (TD),

Outputs:

1. Direct Credit Facilitation (DCF), which includes loans and overdrafts

2. Other Earning Assets (OEA), which represents mainly investments in stocks

In addition to the DEA model, the research conducted regression statistical test to identify any common features of the efficient banks and to investigate the significance of the relationship between the technical efficiency score and various determinants. Efficiency was the dependent variable while the determinants were the independent variables.

3.5.1 Analytical Model

The results were subjected to test the extent of relationship using the following linear regression equation model as used by Naceur et al (2009) who evaluated the rate of banking efficiency among banks with banking efficiency determinant and Osoro and Ogeto (2014) who did a study on macroeconomic fluctuations effects on the operational efficiency of listed manufacturing firms in Kenya:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where Y = Efficiency (Output of (DCF and OEA)/ Input of (LAB, FA and TD))

X₁ Inflation Rate (Consumer Price Index used as proxy).

X₂ GDP Growth Rate

X₃ Weighted Commercial Bank Lending Interest Rate

X₄ Exchange Rate of Ksh against US Dollar

β₀ = Constant, the value of Y when the value of X is zero.

β_i (i= 1, 2, 3, 4) = Coefficients of determinants

ε = Error term

DCF is Direct Credit Facilitation

OEA is Other Earning Assets

LAB is Labor

FA is Fixed Assets

TD is Total Deposits

3.5.2 Test of Significance

The coefficient of determination (R^2) was used to measure the extent to which the variation in efficiency was explained by the variations in its determinants. F-statistic was also computed at 95% confidence level to test whether there is any significant relationship between efficiency and its determinants. This analysis was done using SPSS (V 21) software and the findings presented in form of a tables and graphs to aid in the analysis and ease with which the inferential statistics were drawn.

The model's test of significance was measured on how well the regression model fits the data by comparing explanatory variables that were proposed actually explain variations in the dependent variable. Quantities known as goodness of fit statistics are available to test how well the sample regression function (SRF) fits the data how or how close' the fitted regression line is to all of the data points taken together. The most common goodness of fit statistic is known as R^2 (Brooks, 2008). A correlation coefficient must lie between -1 and $+1$ by definition. Since R^2 defined in this way is the square of a correlation coefficient, it must lie between 0 and 1. If this correlation is high, the model fits the data well, while if the correlation is low (close to zero), the model is not providing a good fit to the data. R^2 is the square of the correlation

coefficient between the values of the dependent variable and the corresponding fitted values from the model.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the information processed from the data collected during the study on the determinants of operational efficiency of banking sector in Kenya. The sample composed of 44 commercial banks in Kenya as at September 2013.

4.2 Descriptive Analysis Results

Table 4. 1: Summary of the Descriptive Analysis Results

Year	Mean	Std. Deviation
Efficiency	0.6479	0.2969
Inflation Rate	9.0967	1.2738
GDP Growth Rate	4.071	0.2382
Weighted Commercial Bank Lending Interest Rate	16.3933	0.59811
Exchange Rate of Ksh against US Dollar	85.3167	2.8166

Source: Research Findings

Table 4.1 shows that the average of efficiency for the commercial banks for the five years was 0.64789 with a standard deviation of 0.2969, the inflation rate was 9.0967 with a standard deviation with a standard deviation of 1.2738, GDP growth rate 4.071

with a standard deviation of 0.2382, weighted commercial bank lending interest rate 16.3933 with a standard deviation of 0.59811 and exchange rate of Ksh against US dollar 85.3167 with a standard deviation of 2.8166.

4.3 Regression Results

The study conducted a cross-sectional multiple regression on several determinants over the period 2009 - 2013 and of operational efficiency of the banking sector in Kenya. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (operational efficiency of the commercial banks in Kenya) that is explained by all the four independent variables (Exchange rates, Lending Rates, GDP, and Inflation).

Table 4. 2: Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.878	0.771	0.729	0.146

Source: Research Findings

The four independent variables that were studied, explain only 72.9% of the operational efficiency of the banking sector in Kenya as represented by the adjusted R^2 . This therefore means the four variables contribute to 72.9% of efficiency of the commercial banks in Kenya, while other factors not studied in this research contributes 27.1% of operational efficiency of commercial banks in Kenya. Therefore,

further research should be conducted to investigate the other (27.1%) factors influencing operational efficiency of commercial banks in Kenya.

Table 4. 3: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	3.421	4	0.855	19.973	0.00051
Residual	1.67	39	0.043		
Total	5.091	43			

Source: Research Findings

From the ANOVA statistics in table 4.3, the processed data, which are the population parameters, had a significance level of 0.00051 which shows that the data is ideal for making a conclusion on the population's parameter. The F calculated at 5% Level of significance was 19.973. Since F calculated is greater than the F critical (value = 2.612), this shows that the overall model was significant i.e. there is a significant relationship between efficiency and its determinants.

Table 4.4: Regression coefficients of four predictive variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.723	0.409		2.003	0.0364
	Inflation Rate	-.025	.020	-.495	-1.259	.0248
	GDP Growth Rate	.754	.041	.682	.108	.0417
	Weighted Commercial Bank Lending Interest Rate	.427	.211	.409	1.307	.0233
	Exchange Rate of Ksh against US Dollar	.264	.028	.246	-.875	.0411
Dependent variable: Operational efficiency of the banking sector in Kenya						

Source: Research Findings

The coefficient of regression in Table 4.4 above was used in coming up with the model below:

$$OE = 0.723 - 0.025 I + 0.754 GDP + .427LR + 0.264 ER$$

Where OE is Operational Efficiency, I is inflation, GDP is GDP Growth Rate and LR is Weighted Commercial Bank Lending Interest Rate and ER is Exchange Rate of Ksh against US Dollar. According to the model, all the variables were significant as

their significance value was less than 0.05. However, inflation was negatively correlated with operational efficiency of the commercial banks in Kenya while GDP, lending rates and exchange rate were positively correlated with operational efficiency of banking sector in Kenya. From the model, taking all factors (Exchange rates, Lending Rates, GDP and Inflation) constant at zero, operational efficiency of the banking sector in Kenya was 0.723. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in inflation will lead to a 0.025 decrease in operational efficiency of the banking sector in Kenya; unit increase in GDP growth rate will lead to a 0.754 increase in operational efficiency of the banking sector in Kenya; a unit increase in lending rates will lead to a 0.427 increase in operational efficiency of the banking sector in Kenya while a unit increase in Exchange Rate of Ksh against US Dollar will lead to a 0.264 increase in operational efficiency of the banking sector in Kenya. This infers that GDP growth rate contributed most to the operational efficiency of the banking sector in Kenya followed by weighted commercial bank lending interest rate then exchange rate of Ksh against US Dollar while inflation had a negative significant effect on the operational efficiency of the banking sector in Kenya.

4.4 Interpretation of the Findings

From the above regression model, the study found out that there were factors influencing the operational efficiency of the banking sector in Kenya, which are exchange rates, lending rates, GDP and inflation. They either influenced it positively or negatively. The study found out that the intercept was 0.723 for all years.

The four independent variables that were studied (Exchange rates, Lending Rates, GDP and Inflation) explain a substantial 72.9% of operational efficiency of the

banking sector in Kenya as represented by adjusted R^2 (0.809). This therefore means that the four independent variables contributes 72.9% of the operational efficiency of the banking sector in Kenya while other factors and random variations not studied in this research contributes a paltry 19.1 % of the operational efficiency of banking sector in Kenya.

The study found out that the coefficient for inflation was -0.025, meaning that inflation negatively and significantly influenced the operational efficiency of banking sector in Kenya. This is in line with Nielsen (2011) who states that Banks are adversely affected by inflation since they tend to hold investment over duration of time between acquisition and exit. In addition, Parra-Bernal and Blount (2011) argue that inflation has an adverse effect on the exit returns when banks divest or dispose their stake in an investment.

The study also deduced that GDP growth rate positively influenced operational efficiency of the banking sector in Kenya as it had positive coefficient (0.754). The result was consistent with prior research by Gompers and Lerner (1998) who established that higher GDP growth implies higher attractive opportunities for entrepreneurs, which in turn lead to a higher need for venture funds. As a result banks operational efficiency is positively influenced from the increasing flow of clients. Bernoth, Colavecchio & Sass (2010) confirm the positive relationship between operational efficiency of commercial banks and GDP growth. They continue to state that during period of high GDP growth and increase in aggregate demand, commercial banks experiences solid performance and easily obtain funds to fund their acquisitions. This translates to a larger and more diversified portfolio for commercial banks which subsequently are more likely to post good results.

The study found out that the coefficient of the weighted commercial bank lending interest rate to be 0.427. This depicts that, according to findings, weighted commercial bank lending interest rate positively influences the operational efficiency of the banking sector in Kenya. According to the findings it follows that when the lending rates are low more people tend to borrow more which in turn has a positive effect on efficiency. This concurs with Miles and Ezzell (2010) who posit that when liquidity and savings are plentiful, and rates are low, investors will have a high appetite for investment and commercial banks' step in to fill this gap. This means a higher operating efficiency is expected.

The study further found out that the coefficient for exchange rate of Ksh against US Dollar was 0.264, which was positive and significant. This means that exchange rate of Ksh against US Dollar positively influences the operational efficiency of the banking sector in Kenya. These findings are contradictory with Metrick and Yasuda (2007) who did a study on causal relationship between exchange rates and banks operational efficiency where it was established that exchange rate affects the profits repatriated to banks foreign investors. Depreciation of Kenya shilling against United States Dollar is expected to decrease commercial banks operational efficiency.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary, conclusion and recommendations of the main findings on the effect of macroeconomic variables on operational efficiency of banking sector in Kenya.

5.2 Summary

Operational efficiency aspect for national banking industry is one of the most important aspects that must be considered by any banking managements in order to earn healthy and sustainable financial performances. The study used descriptive research design. The population of the study comprised of 44 active commercial banks in Kenya from which a census approach was taken to collect data from the commercial banks. The secondary data in this analysis covered a period of 5 years (2009– 2013) and extracted from central bank of Kenya libraries, the annual reports of the banks and data on macroeconomic variables was collected from KNBS. Data was analyzed using a linear regression equation model to test the extent of relationship. The purpose of the study was to investigate the effect of macroeconomic variables on operational efficiency of banking sector in Kenya. From the regression model, the study found out that there were factors influencing the operational efficiency of the banking sector in Kenya, which are exchange rates, lending rates, GDP and inflation. They either influenced it positively or negatively. The four independent variables that were studied (Exchange rates, Lending Rates, GDP and Inflation) explain a

substantial 72.9% of operational efficiency of the banking sector in Kenya as represented by adjusted R^2 (0.809). The study concludes that exchange rates, lending rates and GDP growth rate positively and significantly influenced operational efficiency of the banking sector in Kenya while inflation adversely affected the operational efficiency of the banking sector in Kenya.

5.3 Conclusion

This study examined the effect of macroeconomic variables on operational efficiency of banking sector in Kenya. The study concludes that exchange rates positively and significantly influenced the operational efficiency of the banking sector in Kenya. The study also concludes that GDP growth rate positively and significantly influenced operational efficiency of the banking sector in Kenya. The study also deduced that exchange rate of Ksh against US Dollar positively and significantly influenced the operational efficiency of the banking sector in Kenya. The study finally concluded that the relationship between inflation and operational efficiency of the banking sector in Kenya is negative and significant.

5.4 Recommendations for Policy and Practice

The study established that the selected macroeconomic variables had an effect on the operational efficiency of the banking sector in Kenya. Future forecasts should take into account inflation rate and GDP in particular as having the greatest influence on the direction taken by operational efficiency of the banking sector in Kenya.

The study recommends that the government should come up with strategies and policies to protect the banking sector due to its immense contribution to the economy of the country. Through agencies such as the central bank the government should

formulate policies that are aimed at controlling the effects of rapid fluctuations of the macro economic factors and their effects on the various sectors.

The study shows that macroeconomic factors have insignificant effect operational efficiency the banking sector in Kenya. Specifically; GDP growth rate (economic growth), lending rate and exchange rate have a positive insignificant effect whereas exchange inflation has a negative significant effect at 5 % level. It can therefore be concluded that external factors which are basically influenced by other factors other than the bank management determine the operational efficiency of banks in Kenya. It is therefore prudent for the bank management to put measures of mitigating the effect of the factors especially inflation which has negative a negative effect.

The study finally recommends that the banks should be careful while setting the level of interest rate to ensure they attract more clients to seek financial assistance from them. This will increase banks profits from the interest earned from the loans advanced to clients.

5.5 Limitations of the Study

Carrying out empirical studies of this nature has its own demands which sometimes if not met may yield results which are not reflective of the true picture on the ground. One such requirement is that the study period be long enough so that the sample size should also be sufficiently large. In the case of this study, this was one of the major limitations. The sample period for this study was 5 years and such a short period may have some implications on the results obtained.

The inflation rates have been consistently high in the country forcing the Central Bank to raise its CBR rate which is passed on to other sectors in the economy thereby

influencing the overall economic development of the country. This impact negatively on the operational efficiency of the banking sector in Kenya.

5.6 Suggestions for Further Research

Since the study focused on the effect of macroeconomic variables on operational efficiency of the banking sector in Kenya, further studies should be done on companies in micro finance institutions to find out whether the study will give the same results.

This study was narrowed to commercial banks in Kenya yet there are many sectors that can be affected by macroeconomic variables. Therefore, there is a need to look at the effect of macroeconomic variables in other sectors, for example manufacturing, agriculture, and construction among others.

The study recommends that further studies can be undertaken to establish the relationship between operational efficiency and financial performance of commercial banks in Kenya. Other studies can also be done on the effect of microeconomic variables (internal factors) and their effect on operational efficiency of commercial banks in Kenya.

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APPENDIX

Appendix I: List of Commercial Banks in Kenya as at September 2013

1. African Banking Corporation Limited
2. Bank of Africa Kenya Ltd
3. Bank of Baroda (K) Ltd.
4. Bank of India
5. Barclays Bank of Kenya Ltd
6. CFC-Stanbic Bank Ltd
7. Charterhouse Finance Bank Ltd
8. Chase Bank Ltd
9. Citibank N.A. Kenya
10. City Finance Bank Ltd
11. Commercial Bank of Africa Ltd
12. Consolidated Bank of Kenya
13. Co-operative Bank of Kenya Ltd
14. Credit Bank
15. Development Bank of Kenya
16. Diamond Trust Bank Ltd
17. Dubai Bank Kenya Ltd
18. Eco Bank Limited
19. Equatorial Commercial Bank
20. Equity Bank
21. Family Bank Ltd
22. Fidelity Commercial Bank Ltd
23. Fina Bank Ltd
24. First Community Bank Ltd
25. Giro Commercial Bank Ltd
26. Guardian Bank Limited
27. Gulf African Bank Limited
28. Habib Bank A.G. Zurich
29. Habib Bank Ltd

30. Imperial Bank Ltd
31. Investment & Mortgages Bank Ltd
32. Kenya Commercial Bank Limited
33. K-Rep Bank Ltd
34. Middle East Bank (K) Ltd
35. National Bank of Kenya Ltd
36. NIC Bank Ltd
37. Oriental Commercial Bank Ltd
38. Paramount Universal Bank Ltd
39. Prime Bank Ltd
40. Southern Credit Banking Corporation Ltd
41. Standard Chartered Bank (K) Ltd
42. Transnational Bank Ltd
43. United Bank of Africa Kenya Bank Limited
44. Victoria Commercial Bank Ltd

Source: CBK Report, 2013